Addendum #3 to the Comprehensive General Plan Update certified Final Environmental Impact Report (EIR, EIR 13-02)

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AUGUST 2022

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APPENDICES

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AQMP	Air Quality Management Plan
BANL	Base Ambient Noise Level
BESS	Battery Energy Storage System
BMP	Best Management Practice
BSU	Battery Step Up Transformer
CBC	California Building Code
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFD	Community Facilities Districts
CGP	Construction General Permit
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
DEH	Department of Environmental Health
DOC	California Department of Conservation
EIR	Environmental Impact Report
ESA	Environmental Assessment Report
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
GHG	greenhouse gas
GPU	General Plan Update
HCP	Habitat Conservation Plan
LHMP	Local Hazard Mitigation Plan
MBTA	Migratory Bird Treaty Act
MLD	Most Likely Descendant
MRZ	Mineral Resource Zone
MS4	Municipal Separate Storm Sewer System
MW	megawatt
MWh	megawatt-hour
NPDES	National Pollutant Discharge Elimination System
PDF	Project Design Feature
RWQCB	Regional Water Quality Control Board
SR	State Route
SRA	State Responsibility Area
SWP	State Water Project
SWPPP	Stormwater Pollution Prevention Plan
TCR	tribal cultural resource
USACE	U.S. Army Corps of Engineers
UWMP	Urban Water Management Plan
VHFHSZ	Very High Fire Hazard Severity Zones
VMT	vehicle miles traveled
WM	Waste Management
WQMP	Water Quality Management Plan

Executive Summary

This Third Addendum to the Final Certified Comprehensive General Plan Update (Addendum #3) has been prepared by the City of Carlsbad in conformance with the California Environmental Quality Act (CEQA, Public Resources Code section 21000 et seq.), the regulations promulgated thereunder (CEQA Guidelines, 14 California Code of Regulations section 15000 et seq.), and the city's environmental review procedures (Chapter 19.04 of the Carlsbad Municipal Code) to consist of the following (collectively referred to herein as the "Project"):

1. Zoning and land use change to reconcile split zoning; and
2. Construction of four proposed condominium units and professional office space.

As part of its approval of the Comprehensive General Plan Update on Sept. 22, 2015, the City Council adopted City Council Resolution No. 2015-242, certifying Environmental Impact Report (EIR 13-02) and adopting Findings of Fact, a Statement of Overriding Considerations, and a Mitigation Monitoring and Reporting Program. Addendum #1 to the Final EIR was prepared for the 2020 Climate Action Plan Update, and was adopted by City Council Resolution No. 2020-146 on July 14, 2020. Addendum #2 to the Final EIR was prepared for the updated Housing Element by City Council Resolution No. 2021-073 on August 6, 2021.

Addendum #3 is associated with the Project, which would reconcile split zoning. The population and economic growth assumptions under the Project are the same as what was utilized for the Comprehensive General Plan Update. The Project accommodates growth, rather than inducing it. The purpose of this Addendum is to provide updated information to the Final Certified EIR. Section 15164(a) of the CEQA Guidelines states that "[t]he lead agency or a responsible agency shall prepare an addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred."

Section 15162 of the CEQA Guidelines provides that a subsequent EIR is required when (1) substantial changes are proposed in the project or circumstances that will require major revisions of the prior EIR due to new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or (2) new information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the prior EIR was certified, shows that (a) the project will have one or more significant effects not discussed in the prior EIR, (b) significant effects previously examined will be substantially more severe than shown in the prior EIR, (c) mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project but the project proponents decline to adopt the mitigation measure or alternative, or (d) mitigation measures or alternatives that are considerably different from those analyzed in the prior EIR would substantially reduce one or more significant effects on the environment but the project proponents decline to adopt the mitigation measure or alternative.

As discussed in the following sections, the new information and minor technical modifications are not considered "significant" pursuant to CEQA. Specifically, Addendum #3 to the Final EIR finds that the impacts resulting from implementation of the General Plan Update as described in the Final EIR remain the same, aside from the Project's proposed modification, and the mitigation measures would remain unchanged and are still valid and enforceable. No considerably different mitigation measures or feasible alternatives have been identified. The Addendum to the Final EIR finds that the previously identified impacts and mitigation measures, as described in the Final EIR, are still applicable. Therefore, the Final EIR, as certified, remains adequate and complete.

All other environmental analysis sections are not contained herein because the original Final EIR for those environmental areas are still applicable and do not require updated information. CEQA does not require that the original Final EIR be circulated with the Addendum, but the original Final EIR is available for public review from the city upon request. Therefore, please refer to the original Final EIR for other environmental topics not contained in this Addendum.

1 Introduction

1.1 Project Overview

The Jefferson Mixed Use: Townhome and Professional Office Project (Project) is located within the City of Carlsbad (city) on two existing lots on Jefferson Street (2754 and 2770 Jefferson Street; see Figure 1 – Project Location). Each lot is currently developed with a single-family residence (see Figure 2 – Project Site). The proposed project involves the demolition of the two existing single-family units and development of four condominium units with a standalone professional office building. The project would also include a Tentative Tract Map to create one, 0.33-acre lot for air space condominium units and a Zone Change and General Plan Amendment to allow the proposed office and residential uses on the same parcel as explained below.

Condominium Units

The four proposed condominium units would range in size from 1,905 square feet to 2,076 square feet in three stories. Each unit would include a two-car garage, and two additional guest parking spaces would be provided. Maximum building height would be approximately 34 feet and 11 inches. The architectural style of the condo units is designed to be contemporary beach cottage.

Professional Office

The standalone professional office would be approximately 683 square feet in size, with an additional 214 square feet of mezzanine, and a maximum building height of approximately 23 feet and 9 inches. The professional office would include a total of three parking spaces, in accordance with city requirements. The architectural style is designed to be compatible with the proposed condominium units.

Zoning and Land Use Designation

To accommodate the development of the proposed condominiums and professional office, the Project would include a Tentative Tract Map, Zone Change, and General Plan Amendment for land use re-designation to allow for the construction of four residential air-space condominiums and an office use. The Tentative Tract Map will consolidate two lots and subdivide the project site for residential air-space and commercial condominiums.

The lot addressed as 2770 Jefferson Street has a land use designation of R-15/O and is zoned R-P-Q, which allows for an office use with residential uses. 2754 Jefferson Street has a land use designation of R-15 and is zoned RD-M and allows for multi-family residential uses. To avoid a split zone development, the General Plan Amendment and Zone Change are proposed to change the land use designation to R—15/O and the zone to R-P-Q to allow both multi-family residential and office on one lot. The proposed General Plan Amendment and Zone Change would not increase the density/intensity of development permitted on the project site because the proposed land uses are located where the existing land use and zoning designations allow for it. More specifically, the proposed office would occupy the area on 2770 Jefferson Street that currently allows for office uses and residential uses, and the residential component will span across both lots and allow for multi-family residential uses. Table 1 provides a breakdown of the existing and proposed zoning and General Plan land use designations for the Project site (see also Figures 3a, 3b, 4a and 4b).

Table 1. Existing and Proposed Zoning and Land Uses

	Zoning	Land Use Designation
Existing		
2754 Jefferson	RD-M – Residential Density-Multiple Zone	R-15 – Residential
2770 Jefferson	R-P-Q– Residential Professional Zone	R-15/O – Residential/Office
Proposed		
Project	R-P-Q– Residential Professional Zone	R-15/O – Residential/Office

Notes:
RD-M: Residential Density-Multiple Zone
R-P-Q: Residential Professional – Qualified Development Overlay Zone
R-15: Residential (15 dwelling units/acre)
R-15/O: Residential (15 dwelling units/acre and office)

As shown in Table 1, the existing zoning and land use designations of the Project site allow for residential and office uses, consistent with the uses proposed by the Project. However, the Project would include office uses where the project site is designated as R-15 (Residential) and residential units where the project site is designated as R-15/O (Residential and Office). Therefore, because the existing lots have different zoning as shown in Table 1, the Project would require a Zone Change and General Plan Amendment to be in compliance with the R-P-Q zone; however, the project would not increase the intensity or density of development.

Construction

Grading associated with Project construction would result in 202 cubic feet of cut and 80 cubic feet of fill, with 122 cubic feet of export or which would balance on-site through compaction. Construction is anticipated to begin in mid to late 2022 and take approximately 18 months to complete.

Discretionary Actions

The Project would require the processing and approval of the following:

- General Plan Amendment (GPA 2021-0004)
- Zone Change (ZC 2021-0004)
- Tentative Tract Map (CT 2021-0001)
- Planned Development Permit (PUD 2021-0004)
- Nonresidential Planned Development Permit (PUD 2022-002)
- Site Development Plan (SDP 2021-0014)

1.2 Project Planning Setting

The city is located in the northwestern portion of San Diego County (County) and the Project site is located in the northwestern portion of the city. Specifically, the Project site is approximately 1,500 feet west of Interstate 5 (I-5), 1,700 feet southeast of Buena Vista Lagoon, and 0.6 mile east of the Pacific Ocean. The Project site encompasses 0.33-acres and is an infill lot that is relatively flat (approximately 56 feet above mean sea level). As an existing infill site developed with existing single-family residential units, there are no significant or sensitive biological or

environmental resources onsite or in the adjacent vicinity. The Project site is also located outside of the city's Coastal Zone.

1.3 California Environmental Quality Act Compliance

CEQA Guidelines Sections 15162 through 15164 set forth the criteria for determining the appropriate additional environmental documentation, if any, to be completed when there is a previously adopted ND or a previously certified EIR for the project. CEQA Guidelines, Section 15162(a) and 15163 state that when an ND has been adopted or an EIR certified for a project, no Subsequent or Supplemental EIR or Subsequent Negative Declaration shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in light of the whole public record, one or more of the following:

1. Substantial changes are proposed in the project which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.
2. Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.
3. New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows any of the following:
    a. The project will have one or more significant effects not discussed in the previous EIR or Negative Declaration; or
    b. Significant effects previously examined will be substantially more severe than shown in the previously adopted Negative Declaration or previously certified EIR; or
    c. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
    d. Mitigation measures or alternatives which are considerably different from those analyzed in the previous Negative Declaration or EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

CEQA Guidelines, Section 15164(a) states that an Addendum to a previously certified EIR may be prepared if some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a Subsequent or Supplemental EIR have occurred.

CEQA Guidelines, Section 15164(b) states that an Addendum to a previously adopted Negative Declaration may be prepared if only minor technical changes or additions are necessary.

If the factors listed in CEQA Guidelines Sections 15162, 15163, or 15164 have not occurred or are not met, no changes to the previously certified EIR or previously adopted ND are necessary. See Section 2, Summary of Findings, for further information.

The Project is consistent with the analysis performed for the city's General Plan & Climate Action Plan Final Environmental Impact Report (GP/CAP FEIR) certified in September 2015 (City of Carlsbad 2015a). A comprehensive environmental evaluation has been completed for the Project as documented in the attached Checklist. This evaluation concludes that the Project qualifies for an exemption from additional environmental review because it is both consistent with the land use characteristics established by the city's General Plan, as analyzed by the GP/CAP FEIR, and all required findings can be made.

2 Summary of Findings

The Project is consistent with the analysis performed for the city's GP/CAP FEIR certified in September 2015. A comprehensive environmental evaluation has been completed for the Project as documented throughout Chapter 3 of this document. This evaluation concludes that the Project qualifies for an exemption from additional environmental review because it is consistent with the development density and land use characteristics established by the city's General Plan, as analyzed by the city's GP/CAP FEIR, and all required findings can be made.

CEQA: 15162. Subsequent EIRs and Negative Declarations	
15162. (a) When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:	
(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;	*The project does not propose substantial changes compared to the analysis contained in the GP/CAP FEIR. While the project would include a Zone Change and General Plan Amendment, the underlying uses would be consistent with the development type and intensity anticipated by the General Plan. The Project would include a Tentative Tract Map, Zone Change, and General Plan Amendment for land use re-designation to allow for the construction of four residential air-space condominiums and an office use. The Tentative Tract Map will consolidate two lots and subdivide the project site for residential air-space and commercial condominiums. To avoid a split zone development, the General Plan Amendment and Zone Change are proposed to change the land use designation to R—15/O and the zone to R-P-Q to allow both multi-family residential and office on one lot. As explained in Section 3.1, below, such changes would not result in new significant environmental effects or a substantial increase in the severity of previously identified significant effects.*
(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;	*Since adoption of the GP/CAP FEIR, CEQA has been updated to provide for new or revised guidelines related to energy, cultural resources/tribal cultural resources, transportation, and wildfire. As described in Section 3, below, the proposed project would be consistent with the development type and intensity anticipated by the General Plan and would not result in new significant environmental effects or a substantial increase in the severity of previously identified significant effects.*
Or	
(3) New information of substantial importance, which was not known and could not have been	

known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows any of the following:	
(A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;	*As described below, all project impacts would be less than significant.*
(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;	*As described below, all project impacts would be less than significant.*
(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or	*As described below, all project impacts would be less than significant and no measures that would have previously been considered infeasible are required.*
(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.	*As described below, all project impacts would be less than significant and no measures that were previously declined to be implemented are required.*

3 Checklist

1. **Project title:**

   Jefferson Mixed Use: Townhome and Professional Office Project

2. **Lead agency name and address:**

   City of Carlsbad,
   1635 Faraday Avenue
   Carlsbad, California 92008

3. **Contact person and phone number:**

   Ms. Lauren Yzaguirre, (442) 339-2634

4. **Project location:**

   The Project site is located at 2754 and 2770 Jefferson Street, Carlsbad, CA 92008.

5. **Project sponsor's name and address:**

   Mr. Ed Scarpelli, (760) 685-0947

6. **General plan designation:**

   Northern lot (2754 Jefferson): R-15 (15 du/acre)

   Southern lot (2770 Jefferson): R-15/O (15 units/acre and office)

7. **Zoning:**

   Northern lot (2754): RD-M (Residential Density-Multiple)

   Southern lot (2770): R-P-Q (Residential Professional Qualified Development Overlay Zone)

8. **Description of project. (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary):**

   The project proposes the demolition of two, existing single-family homes and the construction of four, attached townhomes and an 897 square foot office space. See Figure 5, Preliminary Site Plan. The project would include the following components:

   - Tentative Tract Map
   - General Plan Amendment
   - Zone Change

- Planned Development Permit
- Nonresidential Planned Development Permit
- Site Development Plan

9. **Surrounding land uses and setting (Briefly describe the project's surroundings):**

The Project is surrounded on the north, northeast, and east by multi-family housing; single family homes to the south, and Jefferson Street and professional/office uses to the west.

10. **Other public agencies whose discretionary approval is required (e.g., permits, financing approval, or participation agreement):**

N/A.

11. **Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?**

Yes, please refer to Section 3.18.

Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact," as indicated by the checklist on the following pages.

☐ 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

Determination (To be completed by the Lead Agency)

On the basis of this initial evaluation:

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

☐ I find that although the proposed 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 by 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 ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature Date

3.1 Aesthetics

Since the previous EIR was certified, are there any changes in the project, changes in circumstances under which the project is undertaken and/or "new information of substantial importance" that cause one or more effects to aesthetic resources including: scenic vistas; scenic resources including, but not limited to, trees, rock outcroppings, or historic buildings within a state scenic highway; existing visual character or quality of the site and its surroundings; or day or nighttime views in the area?

YES	NO
☐	☒

The GP/CAP FEIR concluded impacts to scenic vistas would be less than significant. Scenic vistas in the city consist of the scenic corridors and views to and from the coastline, open spaces, and hillsides. The city's General Plan regulates development of these areas, and contains policies to ensure that opportunities to enjoy scenic views are either preserved or enhanced. The majority of land uses introduced in the city's General Plan and analyzed in the GP/CAP FEIR, including the Project site, focused development in infill areas to relieve pressure on development of open space and agricultural areas. Future development within the city would generally result in the intensification of existing urban uses, as well as conversion of vacant land into urban uses.

The Project site is located on a previously disturbed infill site with two existing single-family residences and is immediately surrounded by single and multi-family residential and commercial/office uses. There are no scenic vistas or scenic corridors in the immediate Project vicinity. The Project would be consistent with the uses, aesthetic, and scale surrounding the Project site. Thus, impacts would be less than significant.

The GP/CAP FEIR concluded there to be no impact related to state scenic highways. The city does not contain officially designated State Scenic Highways. The closest eligible State Scenic Highway is I-5, located approximately 1,500 feet east of the Project site (Caltrans 2021). The Project site is an infill site surrounded by existing development similar to that proposed by the Project (multi-family residential and office uses). Existing development within the city between the Project site and I-5 disrupts any potential views of the eligible state scenic highway from the Project site and immediate vicinity. Thus, because the Project site is not visible from any scenic highway and does not contain scenic resources including trees, rock outcroppings or historic buildings, no impact to scenic resources within a state scenic highway would occur.

The GP/CAP FEIR concluded impacts to consistency with applicable zoning and other regulations governing scenic quality would be less than significant. The General Plan directs new development into underutilized or previously developed areas, where any proposed changes in land use and physical design are intended to increase visual quality. The General Plan also seeks to ensure that any development or redevelopment observes design guidelines to ensure visual compatibility with the surrounding environment. Accordingly, the GP/CAP FEIR determined that because the General Plan recognizes the sensitivity of preserving the visual character of the existing neighborhoods and open spaces throughout the city, development in accordance with General Plan land use designations would be unlikely to result in visual degradation of the city or surroundings (City of Carlsbad 2015a).

The Project site is designated as R-15 (Residential) and R-15/O (Residential and Office) and zoned RD-M (Residential Density-Multiple Zone) and R-P-Q (Residential Professional – Qualified Development Overlay

Zone). The Project would include a Tentative Tract Map, Zone Change, and General Plan Amendment for land use re-designation to allow for the construction of four residential air-space condominiums and an office use. The Tentative Tract Map will consolidate two lots and subdivide the project site for residential air-space and commercial condominiums. To avoid a split zone development, the General Plan Amendment and Zone Change are proposed to change the land use designation to R—15/O and the zone to R-P-Q to allow both multi-family residential and office on one lot.. Thus, upon approval of the proposed Zone Change and General Plan Amendment, the proposed uses would comply with the zoning and land use designations on the Project site. In addition, upon approval, the Project would be consistent with the city's Zoning Ordinance and General Plan and would be visually compatible with surrounding development including the residential and office uses in the immediate vicinity. The Project would be constructed pursuant to development standards contained in the Zoning Ordinance, including building setbacks, building heights, lot coverage, land uses, grading, and parking. Thus, because the Project would not conflict with land use designation and zoning of the site upon approval, would be consistent with surrounding uses, and would adhere to city's development standards in the Zoning Ordinance; impacts would be less than significant.

The GP/CAP FEIR impact to light and glare would be less than significant. Development pursuant to the General Plan would introduce new sources of light into the city including residential and non-residential interior and exterior lighting, parking lot lighting, commercial signage lighting, and lamps for streetscape and public recreational areas. Although all new development pursuant to the General Plan would incrementally contribute to light pollution throughout the city, new development would take place in or near developed and urbanized areas, where moderate light and glare already exist. The General Plan includes polices related to buffering between development and sensitive habitats, and between commercial, residential, and industrial uses. New development would also be required to comply with the city's Zoning Ordinances regulating light and glare and development buffers (City of Carlsbad 2015a).

Through adherence to the applicable city standards, the Project would not generate excessive light or glare. The Project would introduce new development consistent with the existing development surrounding the Project site. Lighting associated with the Project would consist of typical residential and commercial lighting, such as internal lighting and external building lighting for security purposes. Windows included in the Project could result in some minimal glare. However, such glare would be typical of surrounding uses and would not be substantial. Lighting on the Project site would also comply with applicable zoning ordinance development standards. Finally, the Project site is surrounded by existing development, and not subject to Habitat Management Plan or Local Coastal Program lighting requirements. Therefore, impacts associated with light and glare would be less than significant.

3.2 Agriculture and Forestry Resources

Since the previous EIR was certified or previous ND was adopted, are there any changes in the project, changes in circumstances under which the project is undertaken and/or "new information of substantial importance" that cause one or more effects to agriculture or forestry resources including: conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to a non-agricultural use, conflicts with existing zoning for agricultural use or Williamson Act contract, or conversion 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))?

YES	NO
☐	☒

The GP/CAP FEIR concluded impacts to Farmland be less than significant.

According to the California Department of Conservation California Important Farmland Finder, the Project site is designated as Urban and Built-Up Land (DOC 2018). The Project site is also designated and zoned for residential and office uses and is surrounded by existing residential and commercial/office uses. The Project would include a Tentative Tract Map, Zone Change, and General Plan Amendment for land use re-designation to allow for the construction of four residential air-space condominiums and an office use. The Tentative Tract Map will consolidate two lots and subdivide the project site for residential air-space and commercial condominiums. To avoid a split zone development, the General Plan Amendment and Zone Change are proposed to change the land use designation to R—15/O and the zone to R-P-Q to allow both multi-family residential and office on one lot. However, it is noted that the proposed uses are consistent with the intensity and density allowed under the existing zoning and land use designations of the Project site. Thus, because the Project would not convert agricultural land and is consistent with the designated land use and zoning of the site, no impact would occur.

The GP/CAP FEIR concluded impacts related to conflicts with existing agricultural zoning or Williamson Act contracts would be less than significant. The only Williamson Act contract within the city is located at the Flower Fields property and the General Plan does not include any new land uses that would affect the status of the Flower Fields Williamson Act contract.

The Project site is designated and zoned for residential and office uses and currently contains existing single-family residences. The Project site is also surrounded by existing residential and commercial uses and there are no agriculturally zoned lands in the project vicinity. Therefore, the Project would not conflict with existing zoning for agricultural use or a Williamson Act contract and no impact would occur.

The GP/CAP FEIR concluded no impact would occur to forest land, timberland, or timberland production. There are no properties within the city that are zoned for forest land, timberland, or timberland production (City of Carlsbad 2019).

The GP/CAP FEIR also concluded no impact would occur due to the loss or conversion of forest land. There are no forest lands within the city (City of Carlsbad 2019).

No forestland timberland, or timberland production exists within the city, including the Project site; therefore, no impact would occur.

The GP/CAP FEIR concluded this impact related to changes to the existing environmental which could result in the conversion of Farmland to non-agricultural uses would be less than significant.

The Project site is designated and zoned for residential and office uses and the Project proposes development of four condominiums, a professional office, and associated parking consistent with the existing zoning and land use designations. Therefore, the Project would not result in the conversion of any farmland to non-agricultural use or forest land to non-forest use. Therefore, no impact would occur.

3.3 Air Quality

Since the previous EIR was certified, are there any changes in the project, changes in circumstances under which the project is undertaken and/or "new information of substantial importance" that cause one or more effects to air quality including: conflicts with or obstruction of implementation of the San Diego Regional Air Quality Strategy or applicable portions of the State Implementation Plan (SIP); violation of any air quality standard or substantial contribution to an existing or projected air quality violation; 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; exposure of sensitive receptors to substantial pollutant concentrations; or creation of objectionable odors affecting a substantial number of people?

YES	NO
☐	☒

The GP/CAP FEIR concluded impacts to conflicts or obstruction of implementation of the applicable air quality plans would be less than significant. The San Diego Air Pollution Control District (SDAPCD) and San Diego Association of Governments (SANDAG) are responsible for developing and implementing the clean air plan for attainment and maintenance of the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) in the San Diego Air Basin (SDAB). The San Diego County Regional Air Quality Strategy (RAQS) relies on information from California Air Resources Board (CARB) and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in San Diego County and the cities in the county, to project future emissions and then determine from that the strategies necessary for the reduction of emissions through regulatory controls. CARB mobile source emission projections and SANDAG growth projections are based on population, vehicle trends, and land use plans developed by San Diego County and the cities in the county as part of the development of their general plans (City of Carlsbad 2015a).

If a project proposes development that is greater than that anticipated in the local general plan and SANDAG's growth projections, the project might be in conflict with the RAQS and may contribute to a potentially significant cumulative impact on air quality. The proposed project would be consistent with the zoning and land use designation of the site. Therefore, the proposed project would not conflict with SANDAG's growth projections or the RAQS, and the project would not conflict with or obstruct implementation of the applicable air quality plan. Impacts would be less than significant.

A comparison between the project and the GP/CAP FEIR analysis was conducted to determine whether the project's construction and operation would result in a cumulatively considerable net increase in emissions of criteria air pollutants for which the SDAB is designated as nonattainment under NAAQS or CAAQS compared to the previous CEQA analysis.

Construction

The Project would include a Tentative Tract Map, Zone Change, and General Plan Amendment for land use re-designation to allow for the construction of four residential air-space condominiums and an office use. The Tentative Tract Map will consolidate two lots and subdivide the project site for residential air-space and commercial condominiums. To avoid a split zone development, the General Plan Amendment and Zone Change are proposed to change the land use designation to R—15/O and the zone to R-P-Q to allow both

multi-family residential and office on one lot. However, it is noted that the proposed uses are consistent with the intensity and density allowed under the existing zoning and land use designations of the Project site. Therefore, the construction emissions associated with grading, building construction, architectural coating, and asphalt paving are determined to be adequately addressed in the GP/CAP EIR. Furthermore, it is anticipated that equipment and vehicle emissions would decrease compared to emissions evaluated in the GP/CAP FEIR due to more stringent standards for in-use off-road equipment and heavy-duty trucks, as well as fleet turnover replacing older equipment and vehicles in later years. The project would be subject to SDAPCD Rule 55, Fugitive Dust Control, which requires the project take steps to restrict visible emissions of fugitive dust beyond the property line. Compliance with Rule 55 would limit fugitive dust (PM_{10} and $PM_{2.5}$) generated during grading and construction activities. The project would also be subject to SDAPCD Rule 67.0.1 – Architectural Coatings, which establishes maximum VOC contents of 50 and 100 grams per liter for flat and non-flat coatings, respectively. Accordingly, due to the project's consistency with zoning and land use designation of the site, as well as implementation of more stringent requirements associated with construction, the project would not result in a cumulatively considerable net increase of any criteria pollutant during construction.

Operations

As discussed above, the Project would include a Tentative Tract Map, Zone Change, and General Plan Amendment for land use re-designation to allow for the construction of four residential air-space condominiums and an office use. The Tentative Tract Map will consolidate two lots and subdivide the project site for residential air-space and commercial condominiums. To avoid a split zone development, the General Plan Amendment and Zone Change are proposed to change the land use designation to R—15/O and the zone to R-P-Q to allow both multi-family residential and office on one lot.. However, it is noted that the proposed uses are consistent with the intensity and density allowed under the existing zoning and land use designations of the Project site. Therefore, the operational emissions associated with project operation are addressed in the GP/CAP EIR. The project would result in 45 average daily trips (ADT), and the existing single-family homes generate 20 ADT, therefore, the proposed project would generate the addition of approximately 25 ADT (net) at the project site, which is considered to be a minimal amount and would not result in requirement of a TDM plan or measures as explained in Section 3.17, below. Furthermore, it is anticipated that vehicle emissions would decrease compared to emissions assumed in the GP/CAP FEIR due to increased vehicle emission control technologies, more stringent standards specifically for heavy-duty trucks, and fleet turnover replacing older vehicles. In addition, energy emissions associated with the project are anticipated to decrease compared to emissions associated with the older residential structures currently present at the project site, due to increased building efficiency, availability of technology, and more stringent building codes. Accordingly, due to reduced emissions associated with mobile sources (vehicle trips), area, and energy sources (building operation), the project would not generate additional pollutant emissions or create an additional impact not previously addressed in the GP/CAP FEIR. Impacts would be less than significant.

The GP/CAP FEIR concluded impacts to sensitive receptors from substantial pollutant concentrations would be less than significant because construction of projects pursuant to the General Plan would be short-term and diesel exhaust particulate matter emissions from off-road construction equipment and trucks would be controlled through compliance with airborne toxic control measures (ATCMs) adopted by CARB (City of Carlsbad 2015a). Sensitive receptors are those individuals more susceptible to the effects of air pollution than the population at large. People most likely to be affected by air pollution include children, older people, and people with cardiovascular and chronic respiratory diseases. Sensitive receptors include residences,

schools, playgrounds, childcare centers, athletic facilities, long-term healthcare facilities, rehabilitation centers, convalescent centers, and retirement homes.

Construction activities associated with the Project would result in temporary sources of on-site fugitive dust and construction equipment emissions. The nearest sensitive receptors are the multi-family and single-family residences located directly adjacent to the northern and southern boundaries of the Project site, respectively. Construction activities would be those typical of building construction, and would not require the extensive use of heavy-duty construction equipment, which is subject to a CARB Airborne Toxics Control Measure (ATCM) for in-use diesel construction equipment to reduce diesel particulate emissions. While the Project could expose these adjacent sensitive receptors to pollutant concentrations from construction activities, construction would be temporary and would be required to comply with CARB adopted ATCMs to reduce air emissions from mobile and stationary sources. Therefore, through compliance with existing regulations, the project would not expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant.

The GP/CAP FEIR concluded odor impacts would be less than significant. Odors would be potentially generated from vehicles and equipment exhaust emissions during construction of the Project. Potential odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment and asphalt pavement application. Such odors would disperse rapidly from the Project site and generally occur at magnitudes that would not affect substantial numbers of people. Therefore, impacts associated with odors during construction would be less than significant.

Land uses and industrial operations associated with odor complaints include agricultural uses, wastewater treatment plants, food-processing plants, chemical plants, composting operations, refineries, landfills, dairies, and fiberglass molding facilities (City of Carlsbad 2015a). The Project would include four condominiums and a professional office which would not create any new sources of odor during operation. Therefore, Project operations would result in an odor impact that would be less than significant.

3.4 Biological Resources

Since the previous EIR was certified, are there any changes in the project, changes in circumstances under which the project is undertaken and/or "new information of substantial importance" that cause one or more effects to biological resources including: adverse effects on any sensitive natural community (including riparian habitat) or species identified as a candidate, sensitive, or special status species in a local or regional plan, policy, or regulation, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service; adverse effects to federally protected wetlands as defined by Section 404 of the Clean Water Act; interference with the movement of any native resident or migratory fish or wildlife species or with wildlife corridors, or impeding the use of native wildlife nursery sites; and/or conflicts with the provisions of any adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional or state habitat conservation plan, policies or ordinances?

YES	NO
☐	☒

As discussed in the GP/CAP FEIR, direct impacts to special-status species could result from the conversion of habitat either temporarily, as a result of grading, excavation, and construction activities, or permanently

from the ongoing operation and/or maintenance of a project or plan. Indirect impacts could result from elevated dust or noise levels or increased sediment loads in runoff from construction activities. Indirect impacts could also result from permanent alterations to hydrology upstream of habitats supporting sensitive species, including increased runoff, sedimentation, or pollutant loads, and increased human activity. However, most new development expected to occur pursuant to the General Plan would be within existing developed areas.

Jurisdictional wetlands and waters occur within the city primarily in the vicinity of the Batiquitos, Agua Hedionda, and Buena Vista lagoons with other wetland habitats occurring along creeks and drainages. Vernal pools occur in several scattered locations throughout the city on marine terraces. As such, development on or adjacent to these areas could potentially affect these resources either directly through fill or indirectly through the alteration of the hydrologic regime. However, if jurisdictional resources are determined to be potentially impacted by a project, all such future development projects would require Clean Water Act Section 404/401 Permits from the U.S. Army Corps of Engineers (ACOE) and Regional Water Quality Control Board (RWQCB), respectively, and a 1600-Series Streambed Alteration Agreement with the California Department of Fish and Wildlife (CDFW). Future projects potentially affecting jurisdictional wetlands and waters would comply with the United States Fish and Wildlife Service (USFWS), CDFW, and ACOE "no net loss" policy and would require mitigation, including wetland creation and restoration/enhancement. Finally, the city's HMP is supplemented by the city's Guidelines for Riparian and Wetland Buffers, which provides buffer design recommendations and identifies allowable uses and land use restrictions for riparian/wetland buffer zones. The guidelines also include minimization and mitigation measures designed to protect riparian and wetland habitats from pre-construction and construction activities. Therefore, implementation of the General Plan Open Space, Conservation, and Recreation Element goals and policies, and compliance with the measures listed in the Guidelines for Wetland and Riparian Buffers, and with applicable federal, state, and local regulations was determined to reduce impacts to federally protected wetland to below a level of significance (City of Carlsbad 2015a).

Under existing conditions, the Project site is currently developed with two single-family residences and does not contain any candidate, sensitive, or special status species or habitat areas which would support such species. Further, the Project site is surrounded by existing development in all directions and no natural habitat areas exist in the Project vicinity. The Project site and surrounding area is also designated as Urban/Disturbed land within the HMP (City of Carlsbad 2004). As such, redevelopment of the Project site would result in less than significant impacts to candidate, sensitive, and special-status species.

The GP/CAP FEIR concluded impacts to conflicts with local policies and ordinances protecting biological resources would be less than significant. The city has developed a set of guidelines to aid in the implementation of the HMP. These include the Guidelines for Biological Studies, Guidelines for Preserve Management, Guidelines for Habitat Creation and Restoration, and Guidelines for Riparian and Wetland Buffers. The General Plan was developed to promote consistency with other city plans and ordinances that provide policy direction for the preservation of biological resources in the city. Therefore, implementation of the General Plan Open Space, Conservation, and Recreation Element goals and policies was determined to ensure consistency with the HMP guidelines, resulting in a less than significant impact (City of Carlsbad 2015a).

The Project site and surrounding area is designated as Urban/Disturbed land within the HMP (City of Carlsbad 2004). While the Project site contains some trees scattered around the property, which may be removed during construction of the Project, the city does not have a tree preservation policy for trees on

private property. Consistent with the GP/CAP FEIR, the Project would not conflict with local policies or ordinances related to biological resources. Therefore, impacts would be less than significant.

The GP/CAP FEIR concluded impacts due to conflicts with the provisions of an adopted Habitat Conservation Plan, NCCP or other approval habits conservation plan would be less than significant. The city implements the HMP, which serves as the city's subarea plan under the MHCP. All future development projects pursuant to the HMP are required to comply the conditions of the HMP. Therefore, implementation of the General Plan Open Space, Conservation, and Recreation Element goals and policies was determined to ensure that impacts related to conflicts with the adopted HMP would be less than significant (City of Carlsbad 2015a).

The Project site is developed with two single-family residences and is not identified as a conservation area within the HMP. Further, the Project site and surrounding area is designated as Urban/Disturbed land within the HMP (City of Carlsbad 2004). As such, redevelopment of the Project site would not result in conflicts with the provisions of the HMP and impacts would be less than significant.

3.5 Cultural Resources

Since the previous EIR was certified, are there any changes in the project, changes in circumstances under which the project is undertaken and/or "new information of substantial importance" that cause one or more effects to cultural resources including: causing a change in the significance of a historical or archaeological resource as defined in State CEQA Guidelines Section 15064.5; destroying a unique paleontological resource or site or unique geologic feature; and/or disturbing any human remains, including those interred outside of formal cemeteries?

YES	NO
☐	☒

The GP/CAP FEIR concluded a total of five properties within the city were potentially eligible for nomination to the National Register of Historic Places (NRHP) and seven properties were identified as potential California Historical Landmarks. The General Plan includes goals and policies to minimize or avoid impacts to historical resources by requiring the protection and preservation of such resources. Additionally, historic resources within the city are subject to the city's Historic Preservation Ordinance (Municipal Code Title 22), which includes criteria for including resources in the city's historic resources inventory, historic site and landmark designation procedures, and historic district designation procedures. The City of Carlsbad Tribal, Cultural, and Paleontological Resources Guidelines are also in place to help protect historic resources within the city (City of Carlsbad 2017). Therefore, any development pursuant to the General Plan would be required to comply with the city's Historic Preservation Ordinance, Tribal, Cultural, and Paleontological Resources Guidelines, and applicable General Plan goals and polices to ensure impacts would be less than significant (City of Carlsbad 2015a).

The Project site is currently developed with two single-family residences. Although implementation of the Project would result in demolition of the existing on-site residences. An assessment of these residences was performed to determine their eligibility for listing as historic resources. The historic architecture survey indicated that the two structures are standard 2-x-4-inch wood-frame houses set on reinforced concrete foundations. Background research and survey work indicate that neither property is eligible on local, state,

or federal registries. (Appendix A, Loveless Linton, Inc, April 2021) Therefore, the Project would not cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5 and no impact would occur.

The GP/CAP FEIR concluded impacts to archaeological resources would be less than significant Approximately 480 prehistoric sites were recorded in the city during the 1990 Cultural Resources Survey; therefore, there is potential for archaeological sites to be found within Carlsbad due to the existence of previously identified sites. More specifically, future development projects pursuant to the General Plan may involve grading, excavation, or other ground-disturbing activities, which could disturb or damage unknown archaeological resources. However, the General Plan includes goals and policies to minimize or avoid impacts to archaeological resources by requiring the protection and preservation of such resources. Additionally, the city's Tribal, Cultural, and Paleontological Resources Guidelines are also in place to help protect archeological resources within the city (City of Carlsbad 2017). Therefore, any development pursuant to the General Plan would be required to comply with the city's Tribal, Cultural, and Paleontological Resources Guidelines and applicable General Plan goals and polices to ensure impacts would be less than significant (City of Carlsbad 2015a).

Under existing conditions, the Project site is currently developed with two single-family residences. No areas on the Project site contain undisturbed land. A pedestrian survey of the project site did not reveal any cultural resources (Loveless Linton, Inc April 2021) Therefore, the likelihood that intact archeological resources exist on the Project site is low due to previous site disturbance. The city's Tribal, Cultural, and Paleontological Resources Guidelines also identify fully developed areas of the city as having low archeological resource sensitivity. Nonetheless, as recommended in Appendix A, due to the lack of subsurface testing, it is recommended to have a qualified Archaeological Principal managing the project and a qualified archaeological monitor present. Per the City of Carlsbad Tribal, Cultural and Paleontological Guidelines (Carlsbad, 2017), the project shall implement Standard Treatment 5 for construction monitoring, which requires the following:

Standard Treatment 5: Construction Monitoring

Monitoring by a qualified professional archaeologist, Native American monitor, and/or tribal representative shall only be used after reasonable and good-faith efforts, as determined by the City and through consultation, have been made to identify eligible cultural resources or significant tribal cultural resources prior to project approval. Monitoring can also be used to ensure avoidance of eligible cultural resources or significant tribal resources during ground-disturbing activities. Monitoring is appropriate in the following circumstances (and shall follow the requirements and provisions of Section 8.2.2.4 when tribal cultural resources are involved):

- when buried archaeological or known or potential tribal cultural resources are likely in the vicinity, but their specific location is unknown;
- when ground-disturbing activities will come within 100 feet of a recorded non-tribal eligible cultural resource;
- When within, or within close proximity to, a known or potential TCR;
- when installing or verifying the placement and integrity of temporary exclusionary (orange barrier or silk) fencing around resources that must be avoided; and/or

- when “pioneering” (breaking ground for) temporary/preliminary access roads for geotechnical trenching or boring.

Monitoring is considered a last resort to minimizing or mitigating adverse effects and is not the default treatment for all projects. Any monitoring required must be justified and balanced by a reporting schedule.

Should the City determine that monitoring is not an appropriate mitigation, then the City, with permission from the landowner, may extend an opportunity to members of the public or consulting parties to visit the project during construction on a volunteer basis, provided that the visitors receive safety training and sign liability release waivers. The City shall not have the authority to grant property access to private property over the objections of the landowner

This recommendation is consistent with General Plan Policy 7-P.8 and 7-p.9, which state:

7-P.8 During construction of specific development projects, require monitoring of grading, ground-disturbing, and other major earthmoving activities in previously undisturbed areas or in areas with known archaeological or paleontological resources by a qualified professional, as well as a tribal monitor during activities in areas with cultural resources of interest to local Native American tribes. Both the qualified professional and tribal monitor shall observe grading, ground-disturbing, and other earth-moving activities.

7-P.9 Ensure that treatment of any cultural resources discovered during site grading complies with the City of Carlsbad Cultural Resource Guidelines. Determination of the significance of the cultural resource(s) and development and implementation of any data recovery program shall be conducted in consultation with interested Native American tribes. All Native American human remains and associated grave goods shall be returned to their most likely descendent and repatriated. The final disposition of artifacts not directly associated with Native American graves shall be negotiated during consultation with interested tribes; if the artifact is not accepted by Native American tribes, it shall be offered to an institution staffed by qualified professionals, as may be determined by the City Planner. Artifacts include material recovered from all phases of work, including the initial survey, testing, indexing, data recovery, and monitoring

Therefore, with compliance with the General Plan, implementation of the Project would not cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5. Impacts would be less than significant.

Human remains, particularly those interred outside formal cemeteries, could be disturbed during grading, excavation, or other ground-disturbing activities associated with future development pursuant to the General Plan. However, Health and Safety Code Section 7050.5 includes specific provisions for the protection of human remains in the event of discovery.

Under existing conditions, the Project site is currently developed with two single-family residences. No areas on the Project site contain undisturbed land. Therefore, the likelihood that human remains exist on the Project site is low due to previous site disturbance. Moreover, the city’s Tribal, Cultural, and Paleontological Resources Guidelines also identify fully developed areas of the city as having low archeological resource

sensitivity. Therefore, implementation of the Project would not result in disturbance of any human remains, including those interred outside of dedicated cemeteries. Impacts would be less than significant.

Further, Health and Safety Code § 7050.5, CEQA Guidelines § 15064.5(e), and PRC § 5097.98 mandate the regulatory process to be followed in the unlikely event of an accidental discovery of any human remains in a location other than a dedicated cemetery. Specifically, the process is as follows:

> The San Diego County Coroner must be notified within 24 hours of the discovery of potentially human remains. The Coroner must then determine within two working days of being notified if the remains are subject to his or her authority. If the Coroner recognizes the remains to be Native American, he or she must contact the NAHC by phone within 24 hours. The NAHC then designates a Most Likely Descendant (MLD) with respect to the human remains within 48 hours of notification. The MLD will then have the opportunity to recommend to the Project proponent means for treating or disposing, with appropriate dignity, the human remains and associated grave goods within 24 hours of notification.

Although unlikely, there is the possibility of human remains being discovered during ground disturbing activities on the Project site. Project compliance with Health and Safety Code § 7050.5, CEQA Guidelines § 15064.5(e), and PRC § 5097.98 would ensure potential impacts to human remains would not result in any peculiar or site-specific impacts than were already identified in the GP/CAP FEIR.

3.6 Energy

Since the previous EIR was certified, are there any changes in the project, changes in circumstances under which the project is undertaken and/or "new information of substantial importance" that cause one or more effects to energy including: resulting in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation, and/or conflicts with or obstruct a state or local plan for renewable energy or energy efficiency?

YES	NO
☐	☒

The GP/CAP FEIR concluded impacts due to wasteful, inefficient, or unnecessary energy consumption would be less than significant. Development pursuant to the General Plan would increase future energy consumption within the city, resulting in additional demand for electricity and natural gas supply and services. The General Plan contains policies to ensure energy efficient designs in new development and encourage energy efficiency upgrades in existing development, both of which would minimize wasteful, inefficient energy consumption. Further, all projects are required to comply with existing California Building Code (CBC), include Title 24 which ensures new structures achieve ever-increasing energy efficiency standards. Therefore, required compliance with Title 24 energy performance standards and General Plan energy conservation policies was determined to ensure less than significant impacts in the GP/CAP FEIR (City of Carlsbad 2015a).

Construction

During construction, temporary electric power use would be required for as-necessary lighting and electronic equipment. Fuels for construction would primarily consist of diesel and gasoline, which would be consumed

throughout construction of the Project by construction equipment and vehicles traveling to and from the Project site. Due to the relatively small size of the Project and temporary nature of construction, energy used during construction would be minimal in comparison to regional energy consumption. Additionally, the Project would be required to CARB's ATCMs to reduce air emissions as discussed above in Section 3.3, Air Quality. Compliance with CARB's ATCMs would also reduce energy usage such as through limits on idling time. Finally, the construction of the project is considered previously accounted for in the GP/CAP FEIR because the uses are consistent with the underlying land use designation and zoning. Therefore, the Project would not result in the wasteful, inefficient, or unnecessary consumption of energy resources during construction. Impacts would be less than significant.

Operation

During operation, the Project would require electricity for multiple purposes including, but not limited to, building heating and cooling, lighting, appliances, refrigeration, electronics, and other uses associated with the Project's land uses. Natural gas would not be used. Petroleum used during Project operation would primarily consist of Project residents, employees, and customers traveling to and from the Project site. Although the Project would utilize energy during project operation, the project would be designed to maximize energy performance and would comply with Title 24 energy performance standards. More specifically, the proposed project would comply with efficiency standards regarding roofing, ceilings, and insulation; comply with wet appliance energy efficiency standards; utilize low-pollutant emitting exterior and interior finish materials, such as adhesives, sealants, caulks, paints and coatings, carpet systems, and composite wood products; and comply with energy efficiency requirements for dry appliances and lighting. Additionally, regarding petroleum, over the lifetime of the Project, the fuel efficiency of the vehicles being used by the residents, employees, and customers is expected to increase. As such, the amount of petroleum consumed as a result of vehicular trips to and from the Project site during operation would decrease over time. Finally, the Project site is currently developed with two single-family residences which utilize energy on the Project site. Therefore, redevelopment of the Project site would result in less net energy usage than development on a vacant lot. Implementation of the Project would not result in the wasteful, inefficient, or unnecessary consumption of energy resources during operation. Impacts would be less than significant.

The GP/CAP FEIR concluded impacts due to conflicts with state or local plans for renewable energy or energy efficiency would be less than significant. As discussed in the GP/CAP FEIR, all future development pursuant to the General Plan would be required to comply with the latest California Building Code (CBC) requirements, including CBC Energy Efficiency Standards, as well as all federal, state, and local rules and regulations pertaining to energy consumption and conservation. The General Plan also includes goals and policies which emphasize citywide energy reduction strategies. Therefore, through implementation of the city's General Plan policies, and concurrent implementation of the city's Climate Action Plan (CAP), the GP/CAP FEIR determined the General Plan would assist the city in meeting energy reduction goals and GHG emission reduction targets resulting in a less than significant impact related to conflicts with state or local plans for renewable energy or energy efficiency (City of Carlsbad 2015a).

The Project would comply with Title 24 of the California Code of Regulations, which contains energy efficiency standards for residential and non-residential buildings based on a state mandate to reduce California's energy demand. Specifically, Title 24 addresses a number of energy efficiency measures that impact energy used for lighting, water heating, heating, and air conditioning, including the energy impact of the building envelope such as windows, doors, skylights, wall/floor/ceiling assemblies, attics, and roofs. Part 6 of Title 24 specifically establishes energy efficiency standards for residential and non-residential

buildings constructed in the State of California in order to reduce energy demand and consumption. The Project would comply with Title 24, Part 6, per state regulations. In addition, Title 24, Part 11, contains mandatory energy measures that are applicable to the Project under the CALGreen Code.

The Project would result in an increased demand for electricity, and petroleum. In accordance with Title 24 mandatory compliance, the Project would comply with efficiency standards regarding roofing, ceilings, and insulation; comply with wet appliance energy efficiency standards; utilize low-pollutant emitting exterior and interior finish materials, such as adhesives, sealants, caulks, paints and coatings, carpet systems, and composite wood products; and comply with energy efficiency requirements for dry appliances and lighting. Compliance with all of these mandatory measures would decrease the consumption of electricity and petroleum. Because the Project would comply with Title 24, no conflict with existing energy standards and regulations would occur. Impacts would be less than significant.

3.7 Geology and Soils

Since the previous EIR was certified, are there any changes in the project, changes in circumstances under which the project is undertaken and/or "new information of substantial importance" that result in one or more effects from geology and soils including: exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, seismic-related ground failure, including liquefaction, strong seismic ground shaking, or landslides; result in substantial soil erosion or the loss of topsoil; produce unstable geological conditions that will result in adverse impacts resulting from landslides, lateral spreading, subsidence, liquefaction or collapse; being located on expansive soil creating substantial risks to life or property; and/or having 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.

YES	NO
☐	☒

A preliminary geotechnical investigation was prepared for the proposed project by GeoSoils Inc. in December 2020 and has been incorporated as Appendix B of this document. The results of the preliminary geotechnical investigation have been incorporated into the analysis below.

Seismic activity is to be expected in Southern California. However, the city is not listed as being affected by an Alquist-Priolo Earthquake Fault Zone (City of Carlsbad 2015a). As the Project site is located within the city, implementation of the Project would result in no impact related to rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map.

Although the Project site and city are not listed as being affected by an Alquist-Priolo Earthquake Fault Zone, the potential for seismic ground shaking still exists as the city is located within a seismically active region. The nearest known faults are the Rose Canyon and Newport-Inglewood faults, located approximately 3.8 miles west and approximately 4 miles northwest of the city's western boundary, respectively (City of Carlsbad 2015a). Per the preliminary geotechnical investigation, the project site is subject to moderate to strong ground shaking should an earthquake occur along any of a number of the regional, Holocene-active fault systems. However, future development pursuant to the General Plan would be required to comply with the city's Building Codes and Regulations (Municipal Code Title 18) and the most recent building design standards of the CBC, which require all structures to be designed and constructed to resist the effects of

earthquake motions. In addition, the project would be required to comply with the recommendations outlined in the preliminary geotechnical investigation, such as foundation design requirements and retaining wall design parameters, which would ensure impacts associated with seismic ground shaking would be less than significant.

The GP/CAP FEIR concluded impacts due to seismic related ground failure including liquefaction would be less than significant. As discussed therein, while some areas of the city have a higher risk of liquefaction due to the presence of hydric soils or soils that are often saturated or characteristic of wetlands, most of the city has a low liquefaction risk. For all future development pursuant to the General Plan, and particularly development in areas with higher liquefaction risk, new buildings would be constructed in compliance with the city's Building Codes and Regulations, the CBC, and the General Plan policies to reduce risk of seismic-related ground failure, including from liquefaction. According to the GP/CAP FEIR, the Project site is not located within a potential liquefaction hazard area (City of Carlsbad 2015a). The Project would also be required to comply with the city's Building Codes and Regulations, the CBC, General Plan policies, and the recommendations of the preliminary geotechnical investigation, to reduce risk of seismic related ground failure, including from liquefaction. Therefore, impacts would be less than significant.

The GP/CAP FEIR concluded impacts due to landslides would be less than significant. As discussed therein, landslide risk is determined by steep slopes that have 25 percent or greater incline, soil series data, and soil-slip susceptibility. The city does not include any areas identified as being susceptible to landslides and the overall risk of landslides is low. The Project site and surrounding area are relatively flat (i.e., slopes far below 25%) and not located near any hills, the susceptibility of the proposed project to significant landslide events is considered low. In addition, the Project would also be required to comply with the city's Building Codes and Regulations, the CBC, General Plan policies, and the recommendations of the preliminary geotechnical investigation, which would also reduce risks associated with landslides. Therefore, no impact due to landslides would occur.

The GP/CAP FEIR concluded impacts due to substantial soil erosion or the loss of topsoil would be less than significant. As discussed therein, the city has the potential for erosion from water, wind, and agricultural/development tillage, as well as coastal erosion from storms and rising sea-levels. However, future development pursuant to the General Plan would be required to comply with the city's Grading Ordinance (Municipal Code Chapter 15.16), which establishes minimum requirements for grading, including the requirement to obtain a grading permit. The grading permit requires a stormwater maintenance program, construction stormwater pollution prevention plan (SWPPP), and other such documentation and information as may be necessary to demonstrate that the grading work will be carried out in substantial compliance with all city codes and standards, and the requirements of the city's Landscape Manual. The city also has a designated Coastal Resource Protection Overlay Zone where additional protection efforts are necessary. Through compliance with city regulations, codes, and ordinances, impacts related to soil erosion or the loss of topsoil were determined to be less than significant (City of Carlsbad 2015a).

The Project site is located on disturbed land that is currently developed with two single-family residences and is not located within the city's Coastal Zone (City of Carlsbad 2019). Soil erosion and/or the loss of topsoil would be likely to occur when soil is exposed during construction activities. Wind and water are the two main methods of erosion, and human activities that remove vegetation or otherwise disturb soil are the biggest influence on erosion potential. Per the preliminary geotechnical investigation, soils present at the project site are considered erosive. However, the proposed project would be required to comply with

the recommendations outlined in the preliminary geotechnical investigation, which includes temporary erosion control measures and design of site drainage to eliminate the potential of concentrated flows along the ground surface (Appendix B). Further, the Project would be required to obtain a grading permit, and comply with subsequent grading requirements, which would reduce soil erosion during construction. The Project would require submittal of a SWPPP for review and approval by city staff. The SWPPP describes the erosion and sediment control Best Management Practices (BMPs) to be used during the construction phase. Thus, impacts would be less than significant.

The GP/CAP FEIR concluded impacts to geologic units being unstable would be less than significant. As discussed therein, the city does not include any areas identified as being susceptible to landslides, and the overall risk of landslides is low. Subsidence risk is also low in the County due to the prevalence of granitic soils. Although some areas of the city have higher risk of liquefaction, liquefaction risk is considered low in most of the city. Future development pursuant to the General Plan would be required to comply with the city's Grading Ordinance, which requires a geotechnical investigation as part of the grading permit application process that would identify potential hazards and provide recommendations consistent with city standards (City of Carlsbad 2015a).

The Project site and surrounding area are relatively flat and not located near any hills. Thus, per the preliminary geotechnical investigation, potential landslide impacts are considered low. Additionally, the Project site is not located in a potential liquefaction hazard area as identified by the GP/CAP FEIR (City of Carlsbad 2015a) and the preliminary geotechnical investigation indicated that potential for liquefaction on-site is relatively low. The Project site is also not located in an area of subsidence risk.

Consistent with the determination in the GP/CAP FEIR, the Project would be required to obtain a grading permit, which requires a geotechnical investigation as part of the grading permit application process that would identify potential hazards and provide recommendations consistent with city standards. Per the preliminary geotechnical investigation, undocumented artificial fill is present on-site. In addition, perched groundwater was encountered on-site, which could result in geotechnical hazards. However, the proposed project would be required to comply with the recommendations outlined in the preliminary geotechnical investigation to address potential soil hazards associated with artificial fill and perched groundwater on-site. More specifically, artificial fill would be removed to expose the underlying weathered old paralic deposits, and then be reused as compacted fills in accordance with the recommendations of the geotechnical investigation. To address potential issues associated with perched groundwater, recommendations in the geotechnical investigation include installation of concrete cut-off barriers or vertically installed impermeable membranes along the perimeter of the project's driveway; placement of a subgrade enhancement geotextile (SEG) atop the driveway subgrade; increased fill compaction to 95 percent of the laboratory standard (per ASTM D 1557); deepening footings to extend at least 1 foot below the pavement subgrade; and implementation of low permeability concrete is in the construction of the building foundations and slab-on-grade floor. Therefore, compliance with grading permit requirements and the recommendations outlined in the preliminary geotechnical investigation would ensure impacts would be less than significant.

The GP/CAP FEIR concluded impacts due to expansive soils would be less than significant. As discussed therein, most of the soils in the city have low shrink-swell potential. However, future projects pursuant to the General Plan may be located on expansive soils. Compliance with the city's Grading Ordinance, which requires a geotechnical investigation as part of the grading permit application process that would identify potential hazards and provide recommendations consistent with city standards, was determined to ensure

impacts associated with expansive soils would be less than significant (City of Carlsbad 2015a). Consistent with the determination of the GP/CAP FEIR, the Project would be required to comply with the city's Grading Ordinance, and subsequent grading permit requirements, which would reduce risks to life and property associated with expansive soils. Additionally, the Project would be required to comply with the CBC including Title 24. Therefore, impacts would be less than significant.

Finally, the Project would connect to the existing sewer system and does not propose use of septic tanks. Therefore, no impact due to the use of septic tanks or alternative wastewater disposal systems would occur.

The GP/CAP FEIR concluded impacts to paleontological resources would be less than significant. As discussed therein, geologic formations in the city are primarily the Lusardi Formation of the Cretaceous Age as well as the Santiago Formation and Del Mar Formation of the Tertiary Age that overlie the Lusardi Formation. These formations are known to produce significant fossils or have the potential to contain fossils. Therefore, future development pursuant to the General Plan could result in direct or indirect impacts to paleontological resources, and specifically during grading, excavation, and ground-disturbing activities. However, the majority of development anticipated pursuant to the General Plan, such as the proposed project, would involve redevelopment of or new development within existing developed areas. Compliance with the General Plan policies would minimize or avoid impacts to paleontological resources, in addition to subsequent measures to be implemented as applicable (City of Carlsbad 2015a).

Under existing conditions, the Project site is currently developed with two single-family residences. No areas on the Project site contain undisturbed land. Therefore, the likelihood that intact paleontological resources exist on the Project site is low due to previous site disturbance. Further, the project includes a total of approximately 200 cubic yards of cut, which is a small amount of excavation and not likely to encounter depths that were not disturbed by previous grading and development activity. Nonetheless, as recommended in Appendix A, due to the lack of paleontological evaluation within the high sensitivity area, it is recommended to consult with and conduct a record search with the San Diego Natural History Museum prior to all earth-moving activities within the project area. This recommendation is consistent with General Plan Policy 7-P.8, which states:

> **7-P.8** During construction of specific development projects, require monitoring of grading, ground-disturbing, and other major earthmoving activities in previously undisturbed areas or in areas with known archaeological or paleontological resources by a qualified professional, as well as a tribal monitor during activities in areas with cultural resources of interest to local Native American tribes. Both the qualified professional and tribal monitor shall observe grading, ground-disturbing, and other earth-moving activities.

Therefore, with compliance with the General Plan Policy 7-P.8, implementation of the Project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. Impacts would be less than significant.

3.8 Greenhouse Gas Emissions

Since the previous EIR was certified, are there any changes in the project, changes in circumstances under which the project is undertaken and/or "new information of substantial importance" that result in one or more new significant effects or a substantial increase in the severity of previously identified significant

effects associated with greenhouse gas emissions or compliance with applicable plans, policies or regulations adopted for the purpose of reducing greenhouse gas emissions?

YES	NO
☐	☒

The GP/CAP FEIR concluded impacts due to the generation of greenhouse gas emissions that may have a significant effect on the environment would be less than significant. The city prepared its CAP in September 2015, which was subsequently revised and updated in May 2020. city

A CAP Consistency Checklist was prepared for the proposed project by Rincon Consultants, Inc in January 2021 and incorporated as Appendix C of this document. Per the CAP Consistency Checklist, the proposed project would be consistent with the city's CAP, through implementation of features such as light emitting diode (LED) lighting in outdoor areas; not exceeding 90 percent of the energy budget per Title 24, Part 6, Energy Budget for the Standard Design Building; implementation of on-site photovoltaic systems; use of steel framing for the non-residential component of the project; installation of water heating systems that meet the criteria outlined in city Ordinances CS-348 and CS-347 and Sections 150.1(c)8A and 120.11 of the California Energy Code; installation of an electric vehicle charging system (Level II) in each residential garage and one electric vehicle charging system (Level II) for employee parking (Appendix C). Therefore, impacts would be less than significant.

The GP/CAP FEIR concluded impacts to conflicts with applicable plans, policies or regulations adopted for reducing GHG emissions would be less than significant. Through implementation of city policies as delineated in the proposed General Plan, and implementation of the CAP, the proposed General Plan would support the 2009 San Diego RES renewable energy goals and the CARB passenger vehicle GHG emissions reduction targets through measures that would reduce vehicle miles traveled (VMT) throughout the city. Additionally, CARB's LCFS, which aims to reduce the carbon intensity of the life-cycle of gasoline and diesel fuels by 10 percent by 2020, would further assist in meeting energy reduction goals and GHG emission reduction targets.

As discussed above, the proposed project would be consistent with the city's CAP. In addition, the project would be consistent with the zoning and land use designation of the project site. Therefore, GHG emissions associated with the project have been accounted for in existing documents, including the city's CAP. Lastly, the project would comply with all applicable regulations to the extent required by law and would implement General Plan policies aimed towards reducing GHG emission. Therefore, the project would not generate conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs. Impacts would be less than significant.

3.9 Hazards and Hazardous Materials

Since the previous EIR was certified, are there any changes in the project, changes in circumstances under which the project is undertaken and/or "new information of substantial importance" that result in one or more effects from hazards and hazardous materials including: creation of a significant hazard to the public or the environment through the routine transport, storage, use, or disposal of hazardous materials or wastes; creation of 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;

production of hazardous emissions or handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school; location on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 creating a hazard to the public or the environment; location 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; within the vicinity of a private airstrip resulting in a safety hazard for people residing or working in the project area; impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; and/or exposure of people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

YES	NO
☐	☒

The GP/CAP FEIR concluded impacts due to the routine transport, use, or disposal of hazardous materials would be less than significant. Future development pursuant to the General Plan would potentially include land uses that would require the routine use, transport, and disposal of hazardous materials and waste within the city. Future construction activities associated with development pursuant to the General Plan may also generate hazardous materials and waste, such as fuels and oils from construction equipment and vehicles. However, the transport, storage, use, and disposal of hazardous materials and wastes is extensively regulated by federal, state, and local policies, which provide a high level of protection to the public. Regulations associated with using, transporting, or disposing of hazardous materials include Resource Conversion and Recovery Act (RCRA), the Emergency Planning and Community Right-to-Know Act, the Hazardous Materials Transportation Act, California Health and Safety Code, CCR Title 22, CCR Title 27, SB 1889, and the Consolidated Fire Code. The city continues to maintain permitting requirements, as administered by the County of San Diego's DEH requirements, for all land uses that handle, store, or generate hazardous waste. Compliance with General Plan policies and federal and state regulations was determined to ensure impacts associated with the routine use, transport, and disposal of hazardous materials would be less than significant (City of Carlsbad 2015a).

The Project would involve demolition of the two existing single-family residences onsite and development of four condominiums, a professional office, and associated parking. Construction of the Project would involve the transport of commonly used hazardous substances, such as gasoline, diesel fuel, lubricating oil, grease, and solvents. However, as previously described, hazardous materials are highly regulated in California, including the methods by which they are transported, used, and stored. All such uses of these substances would be subject to applicable and required regulatory controls. Additionally, construction is temporary and use of these materials would cease upon completion. The use of these materials for their intended purpose would not pose a significant risk to the public or environment. Therefore, impacts would be less than significant during construction.

During Project operation, the transport, use, or disposal of hazardous materials would be limited to consumer products such as household cleaning products, landscaping chemicals and fertilizers, and other substances associated with household and office uses, similar to the existing land uses. However, as previously described, hazardous materials are highly regulated in California, including the methods by which they are transported, used, and stored. All such uses of these substances would be subject to applicable and required regulatory controls. Additionally, transport, use, and disposal of consumer product by future project occupants would not create a significant hazard to the public or the environment as these are regularly used and typically obtained in small quantities. Therefore, impacts would be less than significant.

The GP/CAP FEIR concluded impacts due to upset or accident conditions involving the release of hazardous materials into the environment would be less than significant. As discussed therein, future development pursuant to the General Plan could involve the use, transportation, disposal, and storage of hazardous materials in the city. Accordingly, accident conditions involving the release of hazardous materials into the environment could occur. However, the County DEH, Hazardous Material Division is the designated Certified Unified Program Agency (CUPA) for the County. With proper implementation of CUPA programs, in conjunction with other state and federal regulations, impacts of reasonably foreseeable accidents and/or upset conditions involving the release of hazardous materials were determined to be less than significant (City of Carlsbad 2015a).

Construction of the Project would result in the transport of commonly used hazardous substances, such as gasoline, diesel fuel, lubricating oil, grease, and solvents. However, hazardous materials are highly regulated in California, including the methods by which they are transported, used, and stored. Compliance with applicable regulations would reduce potential for reasonably foreseeable upset and accident of such hazardous substances during construction. Additionally, construction is temporary and use of these materials would cease upon completion.

Once Project construction is complete, the transport, use, or disposal of hazardous materials would be limited to consumer products such as household cleaning products, landscaping chemicals and fertilizers, and other substances associated with household and office uses. Furthermore, all hazardous materials would be transported and handled in accordance with all federal, state, and local laws regulating the management and use of hazardous materials, reducing the potential for reasonably foreseeable upset and accident of such hazardous substances during construction. Additionally, potential upset and accident conditions from consumer products used by future project occupants would not create a significant hazard to the public or the environment as these are regularly used products and typically obtained in small quantities. Therefore, impacts would be less than significant.

The GP/CAP FEIR concluded impacts due to emissions or handling of hazardous materials within one quarter mile of an existing or proposed school would be less than significant. As discussed therein, future development could result in the handling of hazardous materials or generation of hazardous emissions within one-quarter mile of an existing or proposed school. However, individual users of hazardous materials would continue to be regulated by local disclosure, permitting, and notification requirements of the "Disclosure of Hazardous Materials" program consistent with all federal, state, and local laws. Additionally, the General Plan encourages compatibility of adjacent land uses, which would limit the ability for users of substantial amounts of hazardous materials, such as industrial uses, from operating near a school (City of Carlsbad 2015a). The Project site is located approximately 0.45 miles southwest of the nearest school (Buena Vista Elementary School). Therefore, the Project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of a school. Impacts would be less than significant.

The GP/CAP FEIR concluded impacts due to projects included on the Cortese list that could create a significant hazards to the public or the environment would be less than significant. As discussed therein, there are a number of sites in the city that are included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 or that need further investigation. However, the General Plan contains policies designed to lessen the impact of sites contaminated with hazardous materials. Therefore, implementation of General Plan policies was determined to ensure the impact of posing a significant hazard to the public or environment through a project's location on a site included on a list of

hazardous material sites compiled pursuant to Government Code Section 65962.5 would be less than significant. The Project site is not contained on any lists compiled pursuant to Section 65962.5 or on the California DTSC (EnviroStor) and State Water Resources Control Board (SWRCB) (GeoTracker) databases for contaminated sites (DTSC 2021; SWRCB 2021). Therefore, no impact would occur.

The GP/CAP FEIR concluded impacts due to project located within an airport land use plan or within two miles of a public airport would be less than significant. As discussed in the GP/CAP FEIR, the General Plan guides future development to be consistent with the land use compatibility policies of the McClellan-Palomar Airport Land Use Compatibility Plan (ALUCP). The city also requires review of all proposed development projects within the Airport Influence Area (AIA) to ensure consistency with the ALUCP (City of Carlsbad 2015a). The Project site is located approximately 4.25 miles northwest of the McClellan-Palomar Airport and is not within the AIA. Therefore, the Project would not result in a safety hazard or excessive noise for people residing or working in the Project area and no impact would occur.

The GP/CAP FEIR concluded impacts to emergency response and evacuation plans would be less than significant. As discussed therein, the city has adopted the City of Carlsbad Emergency Operations Plan (EOP) prepared in conjunction with the Unified San Diego County Emergency Services Organization. Although future development pursuant to the General Plan could affect implementation of the city's EOP, implementation of General Plan policies and required compliance with the city's EOP was determined to ensure impacts would be less than significant (City of Carlsbad 2015a).

The Project would result in development of 4 condominiums, a professional office, and associated parking on an infill site. During Project construction, a temporary, slight increase in traffic on roadways surrounding the Project site may occur due to increased truck loads or the transport of construction equipment to and from the Project site during demolition of the existing single-family residences and construction of the Project. However, all construction activities including staging would occur in accordance with city requirements, which would ensure that adequate emergency access to the Project site in the event of an emergency or evacuation order would be provided during construction of the Project. Additionally, as discussed in Section 3.17, the Project would result in the net addition of 25 average daily trips (ADT) during Project operation, which is minimal and would not be expected to interfere with emergency response or evacuation. This anticipated increase is consistent with the General Plan. Therefore, the Project would not impair implementation of or physically interfere with an adopted emergency response or emergency evacuation plan, including the city's EOP. Impacts would be less than significant.

The GP/CAP FEIR concluded impacts due to exposure of people and structures to wildland fires would be less than significant. Due to natural vegetation areas located within and adjacent to the city, the city is a medium fire hazard area for wildland fires which threaten both developed and undeveloped property, primarily in the eastern portion of the city. However, much of the new development pursuant to the General Plan would replace existing structures built before modern building codes for fire safety and building systems were in place. Thus, projected buildout would replace older facilities with newer facilities that would comply with modern building code requirements, including Chapter 9 (Fire Protection Systems) of the California Building Code, which requires such improvements as fire sprinkler systems and fire alarms. In addition, urban wildland fire risk will be reduced through the adoption of the Uniform Fire Code implemented by the city, which states all portions of a building shall be within 150 feet of a serviceable fire access road. In addition, the Carlsbad Fire Department provides adequate service to city residents in the event of fire hazards in wildlands and urban areas. Lastly, General Plan Policies 6-P.33 and 6-P.35 would

reduce potential impacts associated with the risk of loss, injury, or death involving wildland fires (City of Carlsbad 2015).

The Project site is not located within a fire hazard severity zone. A “moderate” threat fire hazard severity zone is located approximately 700 feet north of the Project site (City of Carlsbad 2015a). Nonetheless, due to distance of this area and intervening development, the Project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. In addition, the Project would be required to comply with existing regulations, such as the Uniform Fire Code and the California Building Code, to prevent the spread of wildfire, and would implement General Plan Policies 6-P.33 and 6-P.35, directed to reduce impacts associated with wildfire. Therefore, the Project would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires. Impacts would be less than significant.

3.10 Hydrology and Water Quality

Since the previous EIR was certified, are there any changes in the project, changes in circumstances under which the project is undertaken and/or "new information of substantial importance" that cause one or more effects to hydrology and water quality including: violation of any waste discharge requirements; an increase in any listed pollutant to an impaired water body listed under section 303(d) of the Clean Water Act; cause or contribute to an exceedance of applicable surface or groundwater receiving water quality objectives or degradation of beneficial uses; substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level; substantially alter the existing drainage pattern of the site or area in a manner which would result in substantial erosion, siltation or flooding on- or off-site; create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems; provide substantial additional sources of polluted runoff; place housing or other structures which would impede or redirect flood flows within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map, including County Floodplain Maps; expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; and/or inundation by seiche, tsunami, or mudflow?

YES	NO
☐	☒

The GP/CAP FEIR concluded that impacts to surface or ground water quality would be less than significant. Water quality standards and waste discharge requirements set out in Municipal Permit Order No. Order R9-2015-0100 (MS4 Permit), National Pollutant Discharge Elimination System (NPDES) Permit No. CAS0109266, issued by the San Diego Regional Water Quality Control Board (RWQCB). As NPDES Permit CAS0100266 is based on the federal Clean Water Act, the Porter–Cologne Water Quality Control Act (Division 7 of the Water Code, commencing with Section 13000), applicable state and federal regulations, all applicable provisions of statewide water quality control plans and policies adopted by the State Water Resources Control Board (SWRCB), the Water Quality Control Plan for the San Diego Basin adopted by the RWQCB, the California Toxics Rule, the SIP , and NPDES compliance would ensure compliance with other applicable plans and regulations pertaining to water quality. The General Plan would allow for additional development within the city that would increase the amount of impervious surfaces and could therefore

increase the amount of runoff and associated pollutants during both construction and operation. However, the city's Stormwater Pollution Prevention Plan (SWPPP) Manual, included as Volume 4 of the city's Engineering Standards, requires every construction activity within the city that has the potential to negatively affect water quality to prepare a construction (SWPPP). The SWPPP requirements ensure compliance with the City of Carlsbad Stormwater Ordinance and the Municipal Permit. Projects that would result in the disturbance of one acre or more of land or would create more than 5,000 square feet of impervious surfaces are subject to the post-construction priority development project requirements in the city's SWPPP Manual and must prepare a storm water management plan in conformance with city standards. Projects that are limited to trenching and resurfacing associated with utility work that do not disturb more than one acre are subject to the post-construction standard storm water requirements. Standard storm water requirements are located in Volume 4 and Volume 5 of the city's Engineering Standards. The SWPPP accommodates the requirements of the city's NPDES Permit, thereby ensuring NPDES compliance.

In addition, the GP/CAP FEIR determined that the General Plan incorporates various goals and policies pertaining to water quality and promote the protection of the city's natural water bodies, prevent water pollution from agricultural run-off and other sources, ensure preparation and implementation of applicable water quality plans, require incorporation of BMPs, and otherwise ensure compliance with the city's NPDES Permit and other related regulations. These goals and policies include Goal 4-G-12, Policy 5-P.56, 4-P.57, 4-P.58, 4-P.59, 4-P.60, 4-P.61, 4-P.62, 4-P.63, 4-P.64. Overall, the GP/CAP FEIR concluded that the General Plan policies would promote improved water quality in the city and continued compliance with federal, state, and local water quality regulations, and would ensure that water quality is protected to the maximum extent practicable. Therefore, implementation of the General Plan and the city's SWPPP ensures that impacts to hydrology and water quality are less than significant (City of Carlsbad 2015).

The proposed project would result in disturbance of approximately 0.32 acres, including creating 0.16 acres of new impervious surface. The city's Engineering Standards requires every construction activity within the city that has the potential to negatively affect water quality to prepare a construction SWPPP. Therefore, the proposed project would be required to prepare a SWPPP prior to construction and comply with the SWPPP requirements to ensure construction runoff was property treated.

Projects that do not disturb more than one acre are subject to the post-construction standard storm water requirements. In addition, projects must meet, at a minimum, standard storm water requirements, including LID requirements. To address post-development pollutants that may be generated from the proposed projects, Form E-34, Stormwater Standards Questionnaire and E-36, Standard Project Requirement Checklist were prepared for the proposed, which incorporates Permanent Storm Water Best Management Practices (BMPs) into the project design per the City of Carlsbad BMP Design Manual. The E-34 Stormwater Standards Questionnaire and E-36 Standard Project Requirement Checklist have been incorporated as Appendix D.

Per the E-34 Stormwater Standards Questionnaire, the proposed project is a standard project and is subject to Standard Project subject to Trash Capture Requirements and must comply with Trash Capture Requirements of the Carlsbad BMP Design Manual, and would also be required to incorporate LID strategies. The project would implement the following LID strategies per Form E-36:

- Sidewalk and walkways would direct runoff to pervious areas

- Parking areas/lots, driveways and patios/decks/courtyards would be constructed of permeable materials,
- Rooftops would install BMPs to direct runoff to impervious areas
- Sustainable landscaping would be installed; and
- Trash and refuse storage would have overhead covering and wind protection

The proposed project would be required to comply with all existing regulations related to water quality, including NPDES Permit No. CAS0109266. Lastly, the proposed project would comply with existing General Plan policies, including Goal 4-G-12, Policy 5-P.56, 4-P.57, 4-P.58, 4-P.59, 4-P.60, 4-P.61, 4-P.62, 4-P.63, 4-P.64, implemented to promote water quality. 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.

The GP/CAP EIR concluded impacts to groundwater would be less than significant. The only groundwater basin located within the city is the Batiquitos Lagoon Valley Groundwater Basin. The groundwater in this basin is not considered a good source of irrigation or municipal use due to the high content of chloride, sulfate, and total dissolved solids. The primary purveyor of water for the city is the Carlsbad Municipal Water District (CMWD), which currently does not utilize any local groundwater or surface water supplies to serve the city.

The city's Storm Water Standards Manual contains numerous goals and policies to prevent stormwater pollution that could affect groundwater quality. In addition, various General Plan policies, including 9-P.5 and 9-P.6, would help to reduce water usage and future demands for groundwater. Overall, impacts on groundwater associated with the General Plan were determined to be less than significant (City of Carlsbad 2015).

The Project would not propose groundwater extraction during construction or operational activities. Because the proposed would be consistent with the zoning and General Plan land use designation of the project site, the project has been accounted for in the projected growth of the city and as such would not result in a significant increase of water of groundwater use in the city. In addition, the proposed project would result in redevelopment of the project site, and therefore would not introduce a substantial increase in impervious surfaces, that could result in significant impacts to groundwater recharge. Additionally, the project would adhere to General Plan goals and policies that are aligned with sustainable groundwater management, as well as existing regulations, such as the city's SWPPP, to prevent stormwater pollution that could affect groundwater quality. Therefore, the project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. Impacts would be less than significant.

The GP/CAP EIR concluded impacts due to the alteration of existing drainage patterns that would either result in substantial erosion or siltation, or a substantial increase in the rate or amount of runoff would be less than significant. Increases to impervious surfaces, such as roofs, patios, driveways, and parking areas would lead to increased stormwater flow. An increase in runoff volumes could result in hydromodification effects to the creek systems within the city, which occur when rainfall runoff is increased from impervious areas above the natural rainfall rate that would otherwise occur. However, any development that would occur under the General Plan would be subject to the erosion and runoff control provisions contained in the city's SWPPP, Jurisdictional Runoff Management Plan (JRMP) and the city's Grading and Drainage Ordinances. Specific development occurring during buildout of the General Plan would also comply with flood damage prevention measures

contained in Chapter 21.110 of the city's Municipal Code. These measures restrict development in areas of special flood hazards and control erosion, which would in turn limit and control the alteration of existing drainage patterns. Adherence to local regulations would ensure that, in the course of development under the General Plan, watercourses and drainage patterns would not be altered in a manner that would significantly increase the rate or amount of either runoff or erosion, thereby causing on- or off-site flooding. In addition, the General Plan goals and policies, including 4-P.56, 4-P.57, and 4-P.63, are intended to preserve natural watercourses or naturalized drainage channels, and to ensure future development incorporates BMPs to reduce runoff from a site. For these reasons, erosion and siltation impacts associated with the General Plan would be less than significant (City of Carlsbad 2015).

The proposed project would be subject to existing regulations, including the erosion and runoff control provisions contained in the city's SWPPP, JRMP, the city's Grading and Drainage Ordinances, and flood damage prevention measures contained in Chapter 21.110 of the city's Municipal Code. In addition, the project would include redevelopment of the project site, which is surrounded by development an all sides; as such, the development of the Project would not cause a significant change to surface bodies of water in a manner that could cause siltation or erosion, thereby causing on- or off-site flooding. Upon completion of construction, the project would result in a slight increase of impervious areas on-site; thus, the project would reduce potential erosion or siltation from occurring on the site. In addition, the proposed project would be required to comply with the recommendations outlined in the preliminary geotechnical investigation, which includes temporary erosion control measures and design of site drainage to eliminate the potential of concentrated flows along the ground surface (Appendix B). Lastly, the project would implement General Plan goals and policies, including 4-P.56, 4-P.57, and 4-P.63, which are intended to preserve natural watercourses or naturalized drainage channels, and to ensure future development incorporates BMPs to reduce runoff from a site. Therefore, the project would not 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 result in substantial erosion or siltation on or off site. Impacts would be less than significant.

The GP/CAP EIR concluded impacts due to runoff which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff would be less than significant. Future development/redevelopment allowed under the General Plan could impact the existing drainage system. Increases to impervious surfaces, such as roofs, patios, driveways, and parking areas would lead to increased stormwater flow. However, the City of Carlsbad's Grading and Drainage Ordinances and SWPPP Manual ensure compliance with NPDES permit requirements, as well as with applicable state and federal laws. Additionally, every construction activity within the city that has the potential to negatively affect water quality must prepare a construction SWPPP. The SWPPP requirements in the SWPPP Manual ensure compliance with the Carlsbad Grading and Drainage Ordinance. Projects that would result in the disturbance of one acre or more of land or would create more than 5,000 square feet of impervious surfaces are subject to the post-construction priority development project requirements in the city's SWPPP Manual and must prepare a SWPPP. Projects that are limited to trenching and resurfacing associated with utility work that do not disturb more than one acre are subject to the post-construction standard storm water requirements.

Furthermore, the proposed General Plan, which would guide development in the city over the next 20 years, contains goals and policies pertaining to water quality, including Goal 4-G.12 and Policies 4-P.48 and 4-P.56, through 4-P.63. The proposed goals and policies promote the protection of the city's natural water bodies, prevent water pollution from agricultural run-off and other sources, ensure preparation and implementation of applicable water quality plans, require incorporation of BMPs, and otherwise ensure compliance with the

city's NPDES Permit and other related regulations. Overall, the proposed General Plan goals and policies would promote improved water quality in the city and continued compliance with federal, state, and local water quality regulations, and would ensure that water quality is protected to the maximum extent practicable. Compliance with the city's current regulations and the General Plan policies such as Goal 4-G.12 and Policies 4-P.48 and 4-P.56, through 4-P.63 would ensure that the runoff as a result of future development under the General Plan would not exceed the capacity of existing or planned storm drain systems or generate substantial pollutant runoff. Therefore, impacts would be less than significant (City of Carlsbad 2015).

During construction, the proposed project would be required to prepare a SWPPP to ensure the project does not negatively affect water quality. In addition, the project would result in a slight increase of impervious areas on-site. However, the proposed project would be required to implement BMPs and LID requirements in order to reduce the volume of runoff from impervious surfaces and increase the amount of natural filtration of pollutants from storm water occurring on site. All runoff generated by the project would discharge into the city's storm drain system. Lastly, the project would implement General Plan goals and policies, to ensure the Project would not exceed the capacity of drainage systems or provide substantial additional sources of polluted runoff. Therefore, through compliance with existing regulations, the project would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts would be less than significant.

The GP/CAP EIR concluded impacts due to impeding or redirecting flood flows would be less than significant. The city requires a special use permit for any development proposed in areas of special flood hazards and areas of flood-related erosion hazards (Municipal Code Chapter 21.110). The Floodplain Management Regulations restrict or prohibit land uses considered unsafe in a floodplain. Developments that are not subject to the Floodplain Management Regulations are also reviewed by the City of Carlsbad Land Development Engineering Division for flooding potential. Proposed grading and drainage improvements are analyzed to ensure that drainage is not diverted from its natural drainage basin to another basin that was not designed to take that additional flow. In addition, General Plan goal and policies such as Goal 6-G.1 and Policies 6-P.4 through 6-P.11 would further reduce any potential impacts associated with structures located within flood hazard areas. Therefore, compliance with the city's regulations regarding building within flood hazard areas and General Plan policies, would ensure that flood impacts associated with the General Plan would be less than significant (City of Carlsbad 2015).

As shown in Figure 3.8-1 of the GP/CAP EIR, the proposed project would not be located within a 100-year floodway or floodplain of a 500-year floodplain (City of Carlsbad 2015). In addition, as discussed above, the project has been reviewed by the City of Carlsbad Land Development Engineering Division for flooding potential. Therefore, the project would not impede or redirect flood flows, and impacts would be less than significant.

The GP/CAP EIR concluded impacts due to the release of pollutants due to project inundation in flood hazard, tsunami and seiche zones would be less than significant. Figure 3.8-1 of the GP/CAP EIR, show Federal Emergency Management Agency (FEMA)-designated 100-year and 500-year flood hazard zones within the city (City of Carlsbad 2015). The city requires a special use permit for any development proposed in areas of special flood hazards and areas of flood-related erosion hazards (Municipal Code Chapter 21.110). Developments that are not subject to the Floodplain Management Regulations are also reviewed by the City of Carlsbad Land Development Engineering Division for flooding potential. As shown in Figure 3.8-3 or the GP/CAP EIR, the only areas identified within the city as having risk for tsunami run-up are the immediate vicinity of the Buena Vista, Agua Hedionda, and Batiquitos Lagoons. Seiches are defined as

wave-like oscillatory movements in enclosed or semi-enclosed bodies of water such as lakes of reservoirs. Potential effects from seiches include flooding damage and related hazards in surrounding areas from spilling or sloshing waves, as well as increased pressure on containment structures. The County of San Diego maps zones of high risk for dam inundation throughout the county. The high-risk areas are located east of the Agua Hedionda and Batiquitos Lagoons (City of Carlsbad 2015).

Per Figure 3.8-3 of the city's GP/CAP EIR, the project would not be located within a tsunami projected runup zone (City of Carlsbad 2015). In addition, the project is not located east of the Agua Hedionda and Batiquitos Lagoons and is not adjacent to the ocean. Therefore, potential for seiche is not considered high in the vicinity of the project site. Therefore, the project is not located in flood hazard, tsunami, or seiche zones, and would not the risk release of pollutants due to project inundation. Impacts would be less than significant.

Since the adoption of the GP/CAP FEIR in 2015, the CEQA Guidelines Appendix G Environment Checklist was updated to include conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan as an additional threshold to be analyzed. Therefore, this threshold was not previously explicitly analyzed in the GP/CAP FEIR. However, the GP/CAP EIR determined impacts associated with water quality and groundwater management be less than significant (see Thresholds a and b, above, respectively).

The proposed project would comply with all applicable provisions of statewide water quality control plans and policies adopted by the SWRCB, the Water Quality Control Plan for the San Diego Basin adopted by the RWQCB, the California Toxics Rule, the SIP, and NPDES compliance would ensure compliance with other applicable plans and regulations pertaining to water quality. In addition, the only groundwater basin within the city is the Batiquitos Lagoon Valley Groundwater Basin. The groundwater in this basin is not considered a good source of irrigation or municipal use due to the high content of chloride, sulfate, and total dissolved solids. The Batiquitos Lagoon Valley Groundwater Basin is considered a very low priority basin and therefore implementation of a or sustainable groundwater management plan is not required (Department of Water Resources 2019).

3.11 Land Use and Planning

Since the previous EIR was certified, are there any changes in the project, changes in circumstances under which the project is undertaken and/or "new information of substantial importance" that cause one or more effects to land use and planning including: physically dividing an established community; and/or conflicts with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect?

YES	NO
☐	☒

The GP/CAP FEIR concluded there to be no impact due to the physical division of an establish community. Implementation of the General Plan was determined to improve connectivity within and between existing neighborhoods and provide more linkages within the city and the region (City of Carlsbad 2015a).

The Project would result in development of 4 condominiums, a professional office, and associated parking on an infill site within an established community as contemplated by the General Plan. While the project

would include a General Plan Amendment and Zone Change, these actions would not result in development that would be inconsistent with the underlying planned and permitted uses, would not introduce different uses to an area, and would not divide the community. Impacts would be less than significant.

The GP/CAP FEIR determined no impact to result from the division of an established community. As the Project would have no impact for the reasons detailed above, the Project would be consistent with the analysis provided within the GP/CAP FEIR because it would not result in project-specific peculiar impacts not identified within the GP/CAP FEIR.

The GP/CAP FEIR concluded impacts due to conflicts with land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect would be less than significant. As discussed in the GP/CAP FEIR, the General Plan was determined not to conflict with any other agencies' applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect, and the preparation of amendments to other city policies and regulations where required was incorporated into the General Plan (City of Carlsbad 2015a).

The Project site is designated as R-15 (Residential) and R-15/O (Residential and Office) and zoned RD-M (Residential Density-Multiple Zone) and R-P-Q (Residential Professional – Qualified Development Overlay Zone). The proposed uses would comply with the existing zoning and land use designations on the Project site; however, the Project would include a Tentative Tract Map, Zone Change, and General Plan Amendment for land use re-designation to allow for the construction of four residential air-space condominiums and an office use. The Tentative Tract Map will consolidate two lots and subdivide the project site for residential air-space and commercial condominiums. To avoid a split zone development, the General Plan Amendment and Zone Change are proposed to change the land use designation to R—15/O and the zone to R-P-Q to allow both multi-family residential and office on one lot. However, it is noted that the proposed uses are consistent with the intensity and density allowed under the existing zoning and land use designations of the Project site. Upon approval, the Project would be consistent with the city's Zoning Ordinance and General Plan and would be compatible with surrounding development including the residential and office uses in the immediate vicinity. The Project would be constructed pursuant to development standards contained in the Zoning Ordinance, including building setbacks, building heights, lot coverage, land uses, grading, and parking. Finally, as discussed throughout this Checklist, the Project would not result in any significant and unavoidable environmental impacts. Thus, because the Project would not result in any 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, impacts would be less than significant.

3.12 Mineral Resources

Since the previous EIR was certified, are there any changes in the project, changes in circumstances under which the project is undertaken and/or "new information of substantial importance" that cause one or more effects to mineral resources including: the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; and/or loss of locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

YES	NO
☐	☒

The GP/CAP FEIR concluded there to be no impacts due to the loss of availability of a known mineral resource that would be of value to the region and residents of the state or 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. As discussed therein, no mineral resources of economic value to the region and the residents of the state have been identified in the city. Additionally, the city has not been delineated as a locally important mineral recovery site (City of Carlsbad 2015a). The Project would result in development of 4 condominiums, a professional office, and associated parking on an infill site within the city. No impact would occur.

3.13 Noise

Since the previous EIR was certified, are there any changes in the project, changes in circumstances under which the project is undertaken and/or "new information of substantial importance" that result in one or more effects from noise including: exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels; a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project; for projects 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, or for projects within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

YES	NO
☐	☒

The GP/CAP FEIR concluded impacts due substantial temporary or permanent increase in ambient noise levels would be less than significant. As discussed therein, noise sources associated with implementation of the General Plan include temporary construction noise mainly generated by on-site construction equipment and the transportation of equipment, materials, and workers to and from construction sites, and permanent noise associated with traffic from new development and increased land use intensity. Regarding temporary construction noise, the GP/CAP FEIR, concluded compliance with the city's Noise Ordinance and General Plan Noise Element goals and policies would reduce noise levels from construction traffic and activities to less than significant levels. Additionally, future development pursuant to the General Plan would undergo environmental review for individual projects, where additional mitigation would be implemented as required to maintain less than significant noise levels from construction (City of Carlsbad 2015a).

Construction

The city's Noise Ordinance exempts noise sources associated with construction activities from 7:00 a.m. to 6:00 p.m., Monday through Friday, and from 8:00 a.m. to 6:00 p.m. on Saturdays. Typical noise limitations apply on Sundays and federal holidays. In accordance with the city's Noise Ordinance, construction of the Project would occur during the permissible hours, and the amount and type of construction would be consistent with the amount of construction anticipated in the General Plan. Therefore, noise associated with construction of the Project would be less than significant.

Operation

Regarding permanent noise from traffic and increased land use intensity, additional traffic noise would vary depending on a combination of factors such as variations in daily traffic volumes, shielding provided by existing and proposed structures, intervening ground properties and meteorological conditions. However, similarly to temporary construction noise, noise associated with future traffic and development pursuant to the General Plan would also be required to comply with the city's Noise Ordinance and General Plan Noise Element goals and policies to maintain less than significant noise levels. Specifically, the Noise Element's Land Use and Noise Compatibility Policies encourage development of compatible land uses and requires the use of project design techniques such as increasing setbacks and using non-sensitive buildings to shield noise-sensitive outdoor spaces from noise (City of Carlsbad 2015a).

Outdoor Spaces

During Project operation, the Project would be required to comply with the city's noise regulations, which require exterior noise levels of 65 CNEL or less at outdoor use areas of mixed-use developments and interior noise levels of 45 CNEL or les in residential space. As determined in the Acoustical Analysis Report for Townhouse Duplexes and Professional Office Mixed Use, December 2020, prepared by Eilar Associates, Inc. (Appendix E), all private outdoor use areas would have noise impacts of 65 CNEL or less, in compliance with the city's noise standards. Additionally, worst-case traffic noise impacts were calculated at building facades and were found to range from 46 CNEL at the east facade of the commercial building to 65 CNEL at the west facade of Unit 1 (Appendix E). Therefore, noise levels at outdoor spaces would meet city noise standards and impacts would be less than significant.

Interior Residential Spaces

Within dwelling unit interiors, calculations show that worst-case traffic noise levels at the west and south facades of Unit 1 exceed 60 CNEL; therefore, interior noise levels may exceed 45 CNEL with windows open at Unit 1. Façade noise impacts at Units 2, 3, and 4 are not expected to exceed 60 CNEL however, and therefore they are expected to meet the 45 CNEL limit. Accordingly, only Unit 1 was further analyzed in Appendix E. The exterior wall is proposed to be constructed of stucco over plywood sheathing over 2x6 wood-studs, with a single layer of gypsum board on the interior. This assembly was evaluated for the interior noise analysis conducted in all rooms within Unit 1. With the proposed exterior wall and exterior windows and glass doors with a minimum STC rating of 25 in place, interior noise levels were determined to remain below 45 CNEL in all rooms within Unit 1 with windows and exterior doors closed. However, noise levels would exceed 45 CNEL with windows open. Accordingly, mechanical ventilation is proposed for all habitable spaces within Unit 1. In instances where interior habitable space is exposed to noise levels greater than 45 CNEL with all windows and patio doors in the open position, appropriate means of air circulation and provision of fresh air must be present to allow windows to remain closed for extended intervals of time so that acceptable levels of noise can be maintained on the interior. With the proposed exterior wall assembly, exterior glazing with an STC rating of 25, and mechanical ventilation in Unit 1, all interior residential space is expected to comply with City of Carlsbad and State of California noise requirements. Units 2, 3, and 4 are expected to meet interior noise limits with typical construction methods, and therefore, no specific project design features are required for interior noise control in these units (Appendix E). Impacts would be less than significant.

Interior Professional Office

CALGreen requires that nonresidential structures that are exposed to greater than 65 dBA during any hour of operation must control interior noise levels to be 50 dBA or less. Contemporary exterior building construction is expected to achieve at least 15 decibels of exterior-to-interior noise attenuation with windows open. As a result, exterior noise levels of more than 65 dBA can result in interior conditions that fail to meet the 50 dBA requirement for nonresidential space. As calculated in Appendix E, noise impacts at non-residential building facades are not anticipated to exceed 65 CNEL. Therefore, all non-residential spaces on-site are expected to comply with the state's interior noise regulations of 50 CNEL or less with typical building construction, and therefore, no special design features are required for non-residential spaces (Appendix E). Impacts would be less than significant.

The GP/CAP FEIR concluded impacts due to the generation of excessive groundborne vibration would be less than significant. As discussed therein, sources of groundborne vibration and noise associated with implementation of the General Plan include construction activities, heavy vehicles traveling on roadways and trains on nearby sensitive land uses, and operation of heavy equipment associated with certain industrial operations. However, construction of development pursuant to the General Plan would be required to comply with noise limitations specified in the city's Noise Ordinance. Additionally, sensitive land uses are not anticipated to be sited within distances susceptible to significant vibration from heavy vehicles traveling on roadways (i.e. primarily freeways) and railroads. The city's Municipal Code (Planned Industrial Zone, Chapter 21.34.090, Performance Standards) also contains requirements for limitations on the operation of heavy vibration-causing equipment. Accordingly, construction and operation of future development pursuant to the General Plan was determined to result in a less than significant impact upon compliance with the city's Municipal Code (City of Carlsbad 2015a).

The Project could result in temporary groundborne vibration and/or noise during construction activities. However, heavy machinery associated with more conventional construction activities (such as bulldozers, heavy trucks, etc) typically produces negligible levels of groundborne vibration beyond a distance of approximately 25 feet. Additionally, as described above, the city's Noise Ordinance exempts noise associated with construction activities from 7:00 a.m. to 6:00 p.m., Monday through Friday, and from 8:00 a.m. to 6:00 p.m. on Saturdays. In accordance with the city's Noise Ordinance, construction of the Project would occur during the permissible hours. Further, the project includes a limited amount of earthwork, and due to the smaller size of the project site (approximately 1/3 of an acre), smaller construction equipment would be anticipated to be employed. Therefore, groundborne vibration and noise associated with construction of the Project would be less than significant. Operation of the Project would not result in any ongoing activities that would induce groundborne vibration or noise. Therefore, no groundborne vibration or noise impacts would occur during operation.

The GP/CAP FEIR concluded impacts to projects located within the vicinity or a private airstrip or airport land use plan would be less than significant. McClellan-Palomar Airport ALUCP includes development policies regarding the compatibility of development areas and exposure to noise. Additionally, the General Plan Noise Element includes goals and policies to encourage development of compatible land uses within the AIA as depicted in the ALUCP. Therefore, compliance with the city's General Plan Noise Element and the ALUCP was determined to ensure less than significant impacts (City of Carlsbad 2015a).

The Project site is located approximately 4.25 miles northwest of the McClellan-Palomar Airport and is not within the AIA. Therefore, the Project would not expose people residing or working in the project area to excessive noise levels and no impact would occur.

3.14 Population and Housing

Since the previous EIR was certified, are there any changes in the project, changes in circumstances under which the project is undertaken and/or "new information of substantial importance" that result in one or more effects to population and housing including displacing substantial numbers of existing housing or people, necessitating the construction of replacement housing elsewhere?

YES	NO
☐	☒

The GP/CAP FEIR concluded impacts due to unplanned growth would be less than significant. As discussed therein, buildout of the General Plan would increase the city's buildout from the existing 46,382 dwelling units to approximately 54,599 dwelling units for a total buildout population of approximately 135,000. The city's share of the county population is expected to increase slightly, from 3.4 percent in 2013 to 3.6 percent in 2035. The estimated population growth resulting from the General Plan was determined to be consistent with or below the growth assumptions of the city's Growth Management Plan (City of Carlsbad 2015a).

Since adoption of the General Plan, the City Council adopted the Housing Element Update in May 2021. The Housing Element provides for opportunities for the city to provide more housing in compliance with the city's latest Regional Housing Needs Assessment (RHNA) allocation. The Housing Element Update also comports with recent revisions in state law providing for the production or more housing, including compliance with SB 330 which limits local agencies ability to restrict housing development.

The Project would result in the development of four condominiums and a professional office at intensities that are consistent with the plan intensities under the General Plan. Moreover, the Project site currently contains two single-family residences so the net increase of the project would amount to two condominium units or 5.2 persons (based on 2.61 persons per housing as identified in the May 2021 Housing Element Update). Therefore, the net housing and population inducement amount to less than on the Project site would be negligible. Impacts would be less than significant.

The GP/CAP FEIR concluded there to be no impact due to displacement of a substantial number of people or housing. As discussed therein, implementation of the General Plan would not directly displace any housing units, businesses, or people. Redevelopment of existing uses would likely occur; however, such development would take place over time and development pursuant to the General Plan would facilitate anticipated growth within the city (City of Carlsbad 2015a).

The Project would involve demolition of the two existing single-family residences on the Project site and development of four condominiums. Due to the relatively small scale of the proposed development, the Project would not result in the displacement of a substantial number of existing people or housing. Rather, the Project would redevelop the Project site to include more housing than existing conditions. Impacts would be less than significant.

3.15 Public Services

Since the previous EIR was certified, are there any changes in the project, changes in circumstances under which the project is undertaken and/or "new information of substantial importance" that result in one or more substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or the 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: fire protection, police protection, schools, parks, or other public facilities?

YES	NO
☐	☒

The GP/CAP FEIR concluded impact to fire service to be less than significant. Fire stations 1 and 2 were determined to need remodeling or reconstruction. Station 3 was already planned to be relocated to the Robertson Ranch Master Plan area. Although these stations were identified as needing upgrades, the GP/CAP FEIR determined that renovation or relocation of existing facilities would cause a minimal increase to the city's built footprint and would not result in significant effects on the environment. Additionally, policies contained in the General Plan serve to keep service demand increases to a minimum and new development would occur in areas already well-served by fire protection services. Accordingly, impacts were determined to be less than significant (City of Carlsbad 2015a). Since adoption of the 2015 General Plan, the planned relocation of Station 3 was completed.

The Project would result in development of four condominiums and a professional office, which would require fire protection services. However, the Fire Department already serves the Project site as two existing single-family residences exist on-site. The closest Fire Station is Station 1, located approximately 0.4 mile east of the Project site. Redevelopment of the project site would increase the land use intensity of the site, which may slightly increase demand for fire protection services. However, the Project site is already located in a well-served area and would not significantly increase demand for fire services to the extent that new facilities would be required to maintain acceptable service ratios, response times, or other performance objectives. Finally, the Project would be required to pay development impact fees in accordance with the city's most recently adopted Master Fee Schedule. Therefore, impacts would be less than significant.

The GP/CAP FEIR concluded impacts to police protection would be less than significant. As discussed therein, in order to accommodate increases in demand from population growth, the city's Police Department expects the need to grow. The Police Department has been considering relocating some or all of its services within the Public Safety and Service Center or to other facilities in order to meet the space needs of additional staff and equipment. Relocating services to and from this space or nearby facilities would not necessitate new construction, and therefore would have minimal effects on the environment. However, it was also considered to expand the Public Safety and Service Center, which would require new construction. The General Plan contains policies which serve to mitigate any increases in demand for police services and any physical alterations of the Public Safety and Service Center would have limited impact on the city's built environment. Ultimately, the GP/CAP FEIR concluded that compliance with existing building and construction codes, as well as General Plan policies, would ensure impacts are less than significant (City of Carlsbad 2015a).

The Project would result in development of four condominiums and a professional office, which would require police protection services. However, the Police Department already serves the Project site as two existing single-family residences exist on-site. Redevelopment of the project site would increase the land use intensity of the site, which may slightly increase demand for police protection services. However, the Project site is already located in a well-served area and would not significantly increase demand for police services to the extent that new facilities would be required to maintain acceptable service ratios, response times, or other performance objectives. Finally, the Project would be required to pay development impact fees in accordance with the city's most recently adopted Master Fee Schedule. Therefore, impacts would be less than significant.

The GPU EIR concluded impacts to schools would be less than significant. As discussed therein, the city's student population is expected to remain relatively stable or decline in three of the four school districts serving the city. Although development pursuant to the General Plan would result in additional students from new housing units, ongoing demographic trends are causing reductions in the population of school-aged children in the city. Projected changes in enrollment and capacity based on buildout of the General Plan were also determined to be adequately served by existing school capacity.

The Project would result in development of four condominiums and a professional office, which may induce new student populations within the city. However, due to the relatively small scale of the Project, in addition to the GP/CAP FEIR's determination that student populations in the city would be served by existing school capacity, any potential students generated by the Project would be minimal and would be served by existing schools within the Carlsbad Unified School District (CUSD). Additionally, the Project would be required to pay developer fees in accordance with the CUSD's most recently adopted fee rates. Therefore, impacts would be less than significant.

For the GP/CAP FEIR analysis on parks see Section 3.16(a) below. In summary, given the existing park facilities and planned parkland within the city, and General Plan policies that support the city's Growth Management Plan, a surplus of parkland was anticipated to accommodate the buildout population of the General Plan without any resulting deterioration of existing parks. Impacts to parks and recreation facilities were determined to be less than significant (City of Carlsbad 2015a).

The Project would generate population growth on the site as discussed in Section 3.14 above. However, the net population increase from demolition of the existing two single-family residences and construction of four condominiums and a professional office would be minimal. As determined in the GP/CAP FEIR, a surplus of parkland was also anticipated to accommodate development pursuant to the General Plan. Additionally, the Project would be required to pay development impact fees in accordance with the city's most recently adopted Master Fee Schedule. Therefore, impacts would be less than significant.

The GP/CAP FEIR concluded impacts to other public facilities would be less than significant. An increase in population from the new addition of two new condominium units will cause a nominal increase in demand for public services, including libraries. Buildout of the General Plan is anticipated by the GP/CAP FEIR to result in a deficit in library space, though the deficit is expected to occur gradually over the planning horizon. If new or expanded library facilities are planned and constructed in the future, such a project would have to demonstrate compliance with CEQA, and would be subject to building and construction codes that would ensure construction activities have minimal effects on the environment. Additionally, as discussed in the GP/CAP FEIR, the city would have a surplus of administrative space at buildout of the General Plan for other public facilities. Should additional space become necessary, these needs could be met through the leasing

or purchase of existing space rather than through new construction. Finally, the General Plan includes policies that promote ongoing development of library facilities and complement the Growth Management Plan in such a way that new residential development could not be permitted unless adequate services and facilities were guaranteed. Such policies include charging impact fees on new development to fund the future construction of public facilities. Accordingly, impacts were determined to be less than significant (City of Carlsbad 2015a).

The Project would generate population growth on the site as discussed in Section 3.14 above. However, the net population increase from demolition of the existing two single-family residences and construction of four condominiums and a professional office would be minimal. Therefore, population induced by the Project would not result in the need for new or physically altered governmental facilities, including library facilities and other public facilities. Impacts would be less than significant.

3.16 Recreation

Since the previous EIR was certified, are there any changes in the project, changes in circumstances under which the project is undertaken and/or "new information of substantial importance" that result in an 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; or that include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

YES	NO
☐	☒

The GP/CAP FEIR concluded impacts due to deterioration of recreational facilities due to increase use would be less than significant. Development associated with future land uses consistent with the General Plan would increase population in the form of new residents in the city. These new residents are expected to use park and recreational facilities, and this additional use may result in greater demands on parks and recreational facilities in the city such that deterioration of these facilities could occur or be accelerated. Applying the city's current park standard of 3.0 acres per 1,000 population in each city quadrant, projected demand for parkland at buildout would be an additional 393.5 acres citywide. Meanwhile, development of planned parks under the General Plan would increase the city's parkland by 443.9 acres, resulting in a surplus distributed among all four of the city's quadrants. Therefore, park provision under the General Plan would be more than sufficient to accommodate demand from future residents and impacts were determined to be less than significant (City of Carlsbad 2015a).

The Project would result in minor population growth on the site. The net population increase from demolition of the existing two single-family residences and construction of four condominiums and a professional office would be minimal. As determined in the GP/CAP FEIR, a surplus of parkland was also anticipated to accommodate development pursuant to the General Plan. Additionally, the Project would be required to pay development impact fees in accordance with the city's most recently adopted Master Fee Schedule, including park fees. Therefore, impacts would be less than significant.

The GP/CAP FEIR concluded impacts due to the construction or expansion of recreation facilities would be less than significant. At buildout of the General Plan, the city would have a surplus in parkland to

accommodate anticipated increased population. The General Plan also contains policies that complement the facilities performance standards established by the citywide Facilities and Improvements Plan and ensure the continued maintenance of park quality. General Plan policies directly reference the Growth Management Plan park standard, and describe specific implementation guidelines for achieving it. The policies also require that new and existing parks are assessed for their abilities to meet the recreational needs of nearby residents in terms of amenities and accessibility. They also seek to ensure that new parks are developed or existing parks are improved concurrently with any development that would generate an increase in park users in the vicinity (City of Carlsbad 2015a). Finally, future development of parks and recreation facilities in the city would be required to comply with building and construction codes, and undergo environmental review as required.

The Project would include development of four condominiums and a professional office and would not include any recreational facilities. Additionally, as previously described, the city would have a surplus of parkland at buildout of the General Plan. Therefore, the Project would not require the construction of new or expanded recreational facilities. Finally, the Project would be required to pay development impact fees in accordance with the city's most recently adopted Master Fee Schedule, including park fees. Therefore, impacts would be less than significant.

3.17 Transportation

Since the previous EIR was certified, are there any changes in the project, changes in circumstances under which the project is undertaken and/or "new information of substantial importance" that cause effects to transportation/traffic including whether the project would result in: conflicts with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities; conflicts or inconsistency with CEQA Guidelines section 15064.3, subdivision (b); substantial increase in hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); and/or inadequate emergency access?

YES	NO
☐	☒

The GP/CAP EIR concluded this impact to be significant and unavoidable. In summary, the General Plan would improve pedestrian, bicycle, and transit infrastructure and would implement goals and policies that would further reduce impacts to those facilities. The General Plan is not inconsistent with nor does it conflict with any policies, plans, or programs regarding public transit, roadway, bicycle, or pedestrian facilities or the performance or safety of those facilities (City of Carlsbad 2015).

The project site is currently developed with a single-family rental residence. The project involves the demolition of the existing two existing single-family rental units and development of four condominium units with a standalone professional office building. Therefore, the amount of vehicle trips generated as a result of the Project would be negligible and would not result in a significant increase of trips at the project site that would result in a conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. Additionally, the project would be consistent with the General Plan's adopted goals and policies. Consistent with development pursuant to the General Plan, the Project would not conflict with any policies, plans, or programs regarding public transit, roadway,

bicycle, golf cart network, or pedestrian facilities or the performance or safety of those facilities. Impacts would not occur.

Since the time of adoption of the GP/CAP EIR, state law has required that transportation impacts be based on vehicle miles traveled (VMT) instead of LOS. In 2013, the California Legislature adopted Senate Bill 743 (SB 743), which amended CEQA to require transportation impacts to be determined using a threshold that balances congestion management with greenhouse gas reductions by measuring vehicle miles traveled (VMT) and directed the Office of Planning and Research (OPR) to revise the CEQA Guidelines to reflect this change.[1]

The resulting CEQA Guideline section setting VMT as the transportation significance metric requires the change to be implemented by July 1, 2020.[2] In January 2019, California's Natural Resources Agency finalized updates to the CEQA Guidelines including the incorporation of the SB 743 modifications. The changes were approved by the Office of Administrative Law and are now in effect. As such, as of July 1, 2020, LOS can no longer be the basis for determining an environmental effect under CEQA, and the analysis of impacts to transportation is now based on VMTs.

Per the SANDAG Not So Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, condominium projects (or any multi-family project of 6 to 20 dwelling unit per acre) is anticipated to generate approximately 8 ADT per dwelling unit. Therefore, the four proposed units would generate 32 ADT.

Single-tenant office use is anticipated to generate approximately 14 ADT per 1,000 square feet of office use (SANDAG 2002). Using the 14 ADT per 1,000 square foot of office trip generation, a total of 13 ADT is expected from the office use.

Combined, the proposed project would generate approximately 45 ADT (32 ADT from the residential uses and 13 ADT from the office use). The two existing single-family homes would generate 20 ADT (10 trips per home); therefore, the net increase is 25 ADT.

TDM requirements for new developments vary by development type and the expected average daily employee trips (see Table 2-1 TDM Plan Applicability). All developments that meet the threshold of 110 employee ADT are required to submit a TDM plan using the TDM Plan template for the respective tier (TDM Plan Templates for Non-Residential Projects) and are subject to the same monitoring and reporting schedule described in section 2.7. The proposed project would generate a total of 45 ADT, which is below the Screening Criteria of 110 ADT. Therefore, the proposed project is screened out from additional VMT analysis under Section 3.2.1. Small Projects, under the City's VMT Guidelines. Therefore, the proposed project would be exempt from a TDM plan (City of Carlsbad 2019). As such, because vehicle trips generated by the Project would be negligible, the Project would not conflict with CEQA Guidelines section 15064.3, subdivision (b). Thus, impacts would be less than significant.

[1] Public Resources Code Section 21099(b)(2) provides that "automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment pursuant to this division."

[2] CEQA Guidelines section 15064.3(b)(1), (b)(4), and (c) provide that "Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. . . . A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or any other measure. A lead agency may use models to estimate a project's vehicle miles traveled. . . . Beginning on July 1, 2020, the provisions of this section shall apply statewide

As the Project would have less than significant impacts for the reasons detailed above, the Project would be consistent with the analysis provided within the GP/CAP EIR because it would not increase impacts identified within the GP/CAP EIR and would not result in project-specific peculiar impacts not identified in the GP/CAP EIR.

The GP/CAP EIR concluded this impact to be less than significant. Per the GP/CAP EIR, various policies, including policy 3-P.10, 3-P.12, 3-P.13, and 3-P.16, have been implemented into the proposed General Plan in order to ensure that design hazards would not occur and that impacts would be less than significant.

Policies identified in the GP that support the reduction of hazards or incompatible uses include, but are not limited to: design new streets, and explore funding opportunities for existing streets, to minimize traffic volumes and/or speed, as appropriate, within residential neighborhoods without compromising connectivity for emergency first responders, bicycles, and pedestrians consistent with the city's Carlsbad Active Transportation Strategies (Policy 3-P.12); consider innovative design and program solutions to improve the mobility, efficiency, connectivity, and safety of the transportation system. Innovative design solutions include, but are not limited to, traffic calming devices, roundabouts, traffic circles, curb extensions, separated bicycle infrastructure, pedestrian scramble intersections, high visibility pedestrian treatments and infrastructure, and traffic signal coordination (Policy 3-P.13); engage Caltrans, the Public Utilities Commission, transit agencies, the Coastal Commission, and railroad agency(s) regarding opportunities for improved connections within the city (Policy 3-P.16). Therefore, with compliance with existing laws, rules and regulations, the Project, pursuant to the GP, would not substantially increase hazards due to a geometric design feature or incompatible uses (City of Carlsbad 2015).

Access to the Project site would be provided via Jefferson Street. The Project does not include any substantial changes to the geometry of streets or intersections. Additionally, the Project would adhere to the aforementioned policies of the GP and would comply with existing laws, rules and regulations. Therefore, impacts associated with hazardous design features would be less than significant.

The GP/CAP EIR concluded this impact to emergency response be less than significant. Per the GP/CAP EIR, emergency accessibility typically is assessed at a project-level. Implementation of the following proposed Policies identified in the GP that support the reduction of potential impacts associated with emergency access include, but are not limited: design new streets, and explore funding opportunities for existing streets, to minimize traffic volumes and/or speed, as appropriate, within residential neighborhoods without compromising connectivity for emergency first responders, bicycles, and pedestrians consistent with the city's Carlsbad Active Transportation Strategies (Policy 3-P.12); encourage physical planning and community design practices that deter crime and promote safety (Policy 6-P.29); maintain close coordination between planned improvements to the circulation system within the city and the location of fire stations to assure adequate levels of service and response times to all areas of the community (6-P.30); and enforce the Uniform Building and Fire codes, adopted by the city, to provide fire protection standards for all existing and proposed structures (Policy 6-P.33) (City of Carlsbad 2015).

As discussed above, access to the Project site would be provided via Jefferson Street. The Project driveways would be designed and constructed according to city standards under the direction of a licensed and qualified engineer. The Project site would be accessible to emergency responders during construction and operation of the Project. Additionally, the Project would adhere to GP policies and implementation actions related to emergency access. Finally, the net increase of approximately 25 ADT would not result in traffic generation that may impede emergency access. Therefore, impacts would be less than significant.

3.18 Tribal Cultural Resources

Since the previous EIR was certified, are there any changes in the project, changes in circumstances under which the project is undertaken and/or "new information of substantial importance" that cause one or more effects to tribal cultural resources including: causing a change in the significance of a tribal cultural resource as defined in Public Resource Code §21074?

YES	NO
☐	☒

Since the adoption of the GP/CAP FEIR in 2015, the CEQA Guidelines Appendix G Environment Checklist was updated to include tribal cultural resources as an additional resource area to be analyzed. Therefore, tribal cultural resources were not previously explicitly analyzed in the GP/CAP FEIR. Cultural resources were already evaluated within the Cultural Resources section of the GP/CAP FEIR. The GP/CAP FEIR determined that development of the GP/CAP would result in less than significant impacts associated with the cultural resources (see Section 3.5, above).

Tribal cultural resources include “sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are eligible for inclusion in the California Register of Historical Resources or included in a local register of historical resources.” Lead agencies have discretion to determine, based on substantial evidence, whether a resource qualifies as a tribal cultural resource.

As described in Section 3.5, above, under existing conditions, the Project site is currently developed with two single-family residences. No areas on the Project site contain undisturbed land. Furthermore, the project only proposes a limited amount of cut, approximately 200 cubic yards. Therefore, the likelihood that intact archeological resources exist on the Project site is low due to previous site disturbance. Nonetheless, there is potential for other archaeological sites to be found within Carlsbad due to the existence of previously identified sites throughout the city.

Accordingly, a request was made to the Native American Heritage Committee (NAHC) on March 5, 2021, to conduct a search of the Sacred Lands File (SLF) to determine if any sacred sites or landforms were recorded within the vicinity of the parcel (Appendix A). The NAHC indicated that the SLF search was positive for the project area and recommended that the La Jolla Band of Luiseño Indians and the San Luis Rey Band of Mission Indians be contacted in addition to twenty eight recommended contacts (see Appendix A). Letters were drafted and emailed to the NAHC recommended Native American tribal representatives, hard-copy letters were mailed to each contact and follow-up emails and phone calls were made. The following information was collected regarding this project.

Viejas Band of Mission Indians stated that the project area may contain sacred sites to the Kumeyaay people and requested these sacred sites be avoided with adequate buffer zones. Additionally, Viejas requested, as appropriate, that all NEPA/CEQA/NAGPRA laws be followed, and that Viejas should be contacted immediately if there are any changes to the project description or inadvertent discoveries.

Rincon Band of Luiseno Indians stated that they have specific concerns that the project may impact tangible Tribal Cultural Resources (TCRs), Traditional Cultural Landscapes (TCLs), and potential Traditional Cultural Properties (TCPs). The Rincon Band recommended conducting an archaeological/cultural resources study,

to include an archeological record search and complete intensive survey of the property. Additionally, they ask for a professional Tribal monitor from the Rincon Band to accompany the archaeologist during the survey.

The city also reached out to the Tribes to conduct AB 52 consultation. The Rincon Band requested to consult directly with the lead agency regarding project impacts to cultural resources, and agreed with the proposed mitigation measures, and found that the mitigation measures satisfied Rincon Band's concerns. Further, the San Luis Rey Band also requested consultation with the city regarding the project and reviewed the proposed mitigation measures and found that mitigation measures satisfy the San Luis Rey Band's concerns.

As anticipated by the General Plan/CAP FEIR, future development projects pursuant to the General Plan may involve grading, excavation, or other ground-disturbing activities, which could disturb or damage unknown archaeological resources. However, the General Plan includes goals and policies to minimize or avoid impacts to archaeological resources by requiring the protection and preservation of such resources. Additionally, the city's Tribal, Cultural, and Paleontological Resources Guidelines are also in place to help protect archeological resources within the city (City of Carlsbad 2017). Therefore, any development pursuant to the General Plan would be required to comply with the city's Tribal, Cultural, and Paleontological Resources Guidelines and applicable General Plan goals and polices to ensure impacts would be less than significant (City of Carlsbad 2015a).

Accordingly, a project-specific Historical and Archaeological Inventory Report was prepared for the proposed project (Appendix A). The following measure was recommended regarding Tribal Cultural Resources:

Due to the interest and concerns form the local Native American community, it is recommended to further consult with interested tribal representatives, which should include, but is not limited to, sharing project construction plans and timelines, further consulting on specific concerns, and hiring a qualified local tribal representative for Native American Monitoring. The proposed project would implement Section 8.2.2.4, Tribal Monitoring, from the City's Tribal, Cultural and Paleontological Guidelines which provides for the following:

Prior to the commencement of any ground-disturbing activities, including but not limited to exploratory geotechnical investigations/borings for contractor bidding purposes, the project developer shall enter into a Pre-Excavation Agreement, otherwise known as a Tribal Cultural Resources Treatment and Tribal Monitoring Agreement, with the SLRBMI or other Luiseño tribe. This agreement will contain provisions to address the proper treatment of any tribal cultural resources and/or Luiseño Native American human remains inadvertently discovered during the course of the project. The agreement will outline the roles and powers of the Luiseño Native American monitors and the archaeologist, and may include the following provisions. In some cases, the language below may be modified in consultation with SLRBMI if special conditions warrant.

1. A Luiseño Native American monitor shall be present during all ground disturbing activities. Ground disturbing activities may include, but are not be limited to, archaeological studies, geotechnical investigations, clearing, grubbing, trenching, excavation, preparation for utilities and other infrastructure, and grading activities.
2. Any and all uncovered artifacts of Luiseño Native American cultural importance shall be returned to the San Luis Rey Band of Mission Indians, and/or the Most Likely Descendant, if applicable,

and not be curated, unless ordered to do so by a federal agency or a court of competent jurisdiction.

3. The Luiseño Native American monitor shall be present at the project's preconstruction meeting to consult with grading and excavation contractors concerning excavation schedules and safety issues, as well as to consult with the archaeologist PI concerning the proposed archaeologist techniques and/or strategies for the project.
4. Luiseño Native American monitors and archaeological monitors shall have joint authority to temporarily divert and/or halt construction activities. If tribal cultural resources are discovered during construction, all earth-moving activity within and around the immediate discovery area must be diverted until the Luiseño Native American monitor and the archaeologist can assess the nature and significance of the find.
5. If a significant tribal cultural resource(s) and/or unique archaeological resource(s) are discovered during ground-disturbing activities for this project, the San Luis Rey Band of Mission Indians shall be notified and consulted regarding the respectful and dignified treatment of those resources. Pursuant to California Public Resources Code Section 21083.2(b) avoidance is the preferred method of preservation for archaeological and tribal cultural resources. If, however, the Applicant is able to demonstrate that avoidance of a significant and/or unique cultural resource is infeasible and a data recovery plan is authorized by the City of Carlsbad as the lead agency, the San Luis Rey Band of Mission Indians shall be consulted regarding the drafting and finalization of any such recovery plan.
6. When tribal cultural resources are discovered during the project, if the archaeologist collects such resources, a Luiseño Native American monitor must be present during any testing or cataloging of those resources. If the archaeologist does not collect the tribal cultural resources that are unearthed during the ground disturbing activities, the Luiseño Native American monitor may, at their discretion, collect said resources and provide them to the San Luis Rey Band of Mission Indians for dignified and respectful treatment in accordance with their cultural and spiritual traditions.
7. If suspected Native American human remains are encountered, California Health and Safety Code Section 7050.5(b) states that no further disturbance shall occur until the San Diego County Medical Examiner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code Section 5097.98(b) remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. Suspected Native American remains shall be examined in the field and kept in a secure location at the site. A Luiseño Native American monitor shall be present during the examination of the remains. If the San Diego County Medical Examiner determines the remains to be Native American, the Native American Heritage Commission (NAHC) must be contacted by the Medical Examiner within 24 hours. The NAHC must then immediately notify the "Most Likely Descendant" about the discovery. The Most Likely Descendant shall then make recommendations within 48 hours, and engage in consultation concerning treatment of remains as provided in Public Resources Code 5097.98.
8. In the event that fill material is imported into the project area, the fill shall be clean of tribal cultural resources and documented as such. Commercial sources of fill material are already permitted as appropriate and will be culturally sterile. If fill material is to be utilized and/or exported from areas within the project site, then that fill material shall be analyzed and confirmed by an archeologist and Luiseño Native American monitor that such fill material does not contain tribal cultural resources.

9. No testing, invasive or non-invasive, shall be permitted on any recovered tribal cultural resources without the written permission of the SLRBMI.
10. Prior to the release of the grading bond, a monitoring report and/or evaluation report, if appropriate, which describes the results, analysis and conclusions of the monitoring program shall be submitted by the archaeologist, along with the Luiseño Native American monitor's notes and comments, to the City of Carlsbad for approval. Said report shall be subject to confidentiality as an exception to the Public Records Act and will not be available for public distribution.

Such measures are consistent with the following General Plan policies:

7-P.8 During construction of specific development projects, require monitoring of grading, ground-disturbing, and other major earthmoving activities in previously undisturbed areas or in areas with known archaeological or paleontological resources by a qualified professional, as well as a tribal monitor during activities in areas with cultural resources of interest to local Native American tribes. Both the qualified professional and tribal monitor shall observe grading, ground-disturbing, and other earth-moving activities.

7-P.9 Ensure that treatment of any cultural resources discovered during site grading complies with the City of Carlsbad Cultural Resource Guidelines. Determination of the significance of the cultural resource(s) and development and implementation of any data recovery program shall be conducted in consultation with interested Native American tribes. All Native American human remains and associated grave goods shall be returned to their most likely descendent and repatriated. The final disposition of artifacts not directly associated with Native American graves shall be negotiated during consultation with interested tribes; if the artifact is not accepted by Native American tribes, it shall be offered to an institution staffed by qualified professionals, as may be determined by the City Planner. Artifacts include material recovered from all phases of work, including the initial survey, testing, indexing, data recovery, and monitoring

7-P.10 Require consultation with the appropriate organizations and individuals (e.g., Information Centers of the California Historical Resources Information Systems [CHRIS], the Native American Heritage Commission [NAHC], and Native American groups and individuals) to minimize potential impacts to cultural resources that may occur as a result of a proposed project.

7-P.11 Prior to occupancy of any buildings, a cultural resource monitoring report identifying all materials recovered shall be submitted to the City Planner.

Therefore, with compliance with the General Plan, implementation of the Project would not cause a substantial adverse change in the significance of a Tribal Cultural Resource. Impacts would be less than significant.

3.19 Utilities and Service Systems

Since the previous EIR was certified, are there any changes in the project, changes in circumstances under which the project is undertaken and/or "new information of substantial importance" that cause effects to

utilities and service systems including: exceedance of wastewater treatment requirements of the applicable Regional Water Quality Control Board; require or result in the construction of new water or wastewater treatment facilities, new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; require new or expanded entitlements to water supplies or new water resources to serve the project; 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; be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs; and/or noncompliance with federal, state, and local statutes and regulations related to solid waste?

YES	NO
☐	☒

Wastewater Facilities

The GP/CAP EIR finds that future growth envisioned by the city would result in less than significant impacts to wastewater facilities. Three wastewater districts provide sewer services to the city's planning area: Carlsbad Wastewater Division (CWWD), Leucadia Wastewater District (LWWD), and Vallecitos Water District (VWD) (City of Carlsbad 2015). The proposed project site is located within CWWD's service area. Wastewater generated within the CWWD's sewer service area is treated at the EWPCF. Carlsbad's current ownership capacity for treatment at the Encina Water Pollution Control Facility (EWPCF) is 9.24 million gallons per day (mgd) (average flow). The 2012 Sewer Master Plan projected future 2035 wastewater flows to be approximately 10.0 mgd, based on growth estimates prior to the proposed General Plan. The city has requested an additional 1.02 mgd for a total of 10.26 mgd, which is currently pending. Buildout under the proposed General Plan would result in additional wastewater that would need to be treated at the EWPCF. The proposed General Plan would allow for additional growth beyond the CWWD growth projections. Current regulations require compliance with water quality standards and would not allow development without adequate utility capacity, including water or wastewater treatment capacity. Future development projects allowed under the proposed General Plan would be reviewed by the city and the applicable water and wastewater providers to determine that sufficient capacity exists to serve the development (City of Carlsbad 2015). In addition, the city's Sewer System Management Plan has been updated in 2019 updated to reflect the proposed General Plan growth projections (City of Carlsbad 2019). Lastly, the proposed General Plan contains goals and policies that promote sustainability and reduce impacts associated with construction of new facilities by limiting the need for additional water supplies. More specifically, Goals 2-G.22 and 2-G.23, and Policies 2-P.8, and 2-P.55 through 2-P.58, P-G.4, and 9-P.3 through 9-P.7, reduce impacts related to the construction of water and wastewater treatment facilities. As discussed in Section 1.1, above, the proposed project would include a Tentative Tract Map, Zone Change, and General Plan Amendment for land use re-designation to allow for the construction of four residential air-space condominiums and an office use. The Tentative Tract Map will consolidate two lots and subdivide the project site for residential air-space and commercial condominiums. To avoid a split zone development, the General Plan Amendment and Zone Change are proposed to change the land use designation to R—15/O and the zone to R-P-Q to allow both multi-family residential and office on one lot. Therefore, the proposed project has already been accounted for in future planning documents and the amount of wastewater required for both the construction phase and the operations phase would not require any expansion of existing wastewater facilities. Therefore, the proposed project would not result in additional adverse physical effects associated with wastewater facilities beyond those already identified in other sections of this environmental analysis.

Water Facilities

The GP/CAP EIR finds that future growth envisioned by the city would result in less than significant impacts to water facilities. Three water districts provide water service within Carlsbad: Carlsbad Municipal Water District (CMWD), Olivenhain Municipal Water District (OMWD), and Vallecitos Water District (VWD). The CMWD provides water service to the project site (CMWD 2021). The majority of the future growth generated by the proposed General Plan would be located within the CMWD service area. The city has identified efforts to conserve water, increase use of recycled water, and continue to consider new alternative sources of water. The proposed General Plan would require an update to the CMWD Water Master Plan (City of Carlsbad 2015). CMWD's Potable Water Master Plan was updated in 2019 to correspond with the new General Plan (CMWD 2019). As discussed above, the proposed project would include a Tentative Tract Map, Zone Change, and General Plan Amendment for land use re-designation to allow for the construction of four residential air-space condominiums and an office use. The Tentative Tract Map will consolidate two lots and subdivide the project site for residential air-space and commercial condominiums. To avoid a split zone development, the General Plan Amendment and Zone Change are proposed to change the land use designation to R—15/O and the zone to R-P-Q to allow both multi-family residential and office on one lot. Therefore, the proposed project has already been accounted for in future planning documents and the amount of wastewater required for both the construction phase and the operations phase would not require any expansion of existing wastewater facilities. In addition, as discussed above, the proposed General Plan contains goals and policies that promote sustainability and reduce impacts associated with construction of new facilities by limiting the need for additional water supplies. More specifically, Goals 2-G.22 and 2-G.23, and Policies 2-P.8, and 2-P.55 through 2-P.58, P-G.4, and 9-P.3 through 9-P.7, reduce impacts related to the construction of water and wastewater treatment facilities. Therefore, the proposed project would not result in additional adverse physical effects associated with water facilities beyond those already identified in other sections of this environmental analysis.

Electric Power Facilities

The GP/CAP EIR finds that, despite the overall increase in future energy use associated with the General plan, the state's current and future energy code and the proposed General Plan policies would ensure energy efficient designs in new development and encourage energy efficiency upgrades in existing development. The project site is already served by existing electric power and would not result in relocation or construction of new or expanded electric facilities. Therefore, the proposed project would not result in additional adverse physical effects associated with electric facilities beyond those already identified in other sections of this environmental analysis.

Natural Gas

The project site would not use natural gas and therefore, would not result in relocation or construction of new or expanded natural gas facilities. Therefore, the proposed project would not result in additional adverse physical effects associated with natural gas facilities beyond those already identified in other sections of this environmental analysis.

Telecommunication Facilities

Under existing conditions, the Project site is developed with two existing residences. Therefore, the project site is already served by existing telecommunication facilities and would not result in relocation or

construction of new or expanded telecommunication facilities. Therefore, the proposed project would not result in additional adverse physical effects associated with telecommunication facilities beyond those already identified in other sections of this environmental analysis.

Water Supply

The GP/CAP EIR concluded impacts to water supply would be less than significant. As described above, the proposed project is located within CMWD's service area. According to the 2010 WMP, CMWD expects to have adequate water supply available to meet the projected demand within their jurisdictions to 2035, due to future projects and/or meeting SB X7-7 water conservation goals. These improvements may include the need to utilize local groundwater and surface water supplies. CMWD updated their UWMP in June 2021. Per the 2021 UWMP, CMWD's projected supplies in normal, single-dry years, and multiple-dry years (CMWD 2021). In addition, the proposed General Plan goals and policies are intended to ensure that future development occurs according to the city's Growth Management Plan and is coordinated with availability of public facilities, including water supply.

As discussed above, the Project would include a Tentative Tract Map, Zone Change, and General Plan Amendment for land use re-designation to allow for the construction of four residential air-space condominiums and an office use. The Tentative Tract Map will consolidate two lots and subdivide the project site for residential air-space and commercial condominiums. To avoid a split zone development, the General Plan Amendment and Zone Change are proposed to change the land use designation to R—15/O and the zone to R-P-Q to allow both multi-family residential and office on one lot. Therefore, the proposed project has already been accounted for in future planning documents, as it relates to water supply. Therefore, impacts would be less than significant.

Wastewater

The GP/CAP EIR concluded impact related to wastewater treatment capacity would be less than significant. The city's current ownership capacity for treatment at the EWPCF is 9.24 mgd (average flow). The 2012 Sewer Master Plan projected future 2035 wastewater flows to be approximately 10.0 mgd, based on growth estimates prior to the proposed General Plan. The city has requested an additional 1.02 mgd for a total of 10.26 mgd, which is currently pending. The proposed General Plan includes goals and policies that would help reduce impacts, including Goals 2-G.22 and 2-G.23, and Policies 2-P.8, 2-P.56 through 2-P.59, 9-P.10, and 9-P.11. The proposed project would be consistent with the existing zoning and land use designations of the project site currently allow for residential and office uses, consistent with the uses proposed by the project. Therefore, the proposed project has already been accounted for in future planning documents and the amount of wastewater required for both the construction phase and the operations phase would not result in a significant increase in wastewater treatment beyond the provider's existing commitments. Under existing conditions, the Project site is developed with two existing residences. Therefore, the project site is already served by existing wastewater treatment facilities. Therefore, the Project would not result in significant increase of wastewater services at the site and would not impact any wastewater treatment provider.

Solid Waste

The GP/CAP EIR concluded impacts related to generating solid waste in excess of the capacity of local infrastructure would be less than significant. The city provides solid waste hauling services via a contract with Waste Management of North County. Solid waste is collected by Waste Management and transported

to the Sycamore Canyon and Otay landfills for disposal. Assembly Bill (AB) 939 requires local governments to divert 50 percent of their community's solid waste, and the recent goal that has been set by CalRecycle of 75 percent recycling, composting, or source reduction of solid waste by 2020.

The proposed project would be consistent with the existing zoning and land use designations of the project site currently allow for residential and office uses, consistent with the uses proposed by the project. Therefore, the proposed project has already been accounted for in future planning documents and the amount of solid waste generated by the proposed project. Additionally, with adherence to the appliable waste management plans and regulations set by the state and local jurisdiction, as well as compliance with General Plan goals and policies related to solid waste disposal, impacts to solid waste generated by the project would be less than significant.

The GP/CAP EIR concluded impacts to compliance with reduction strategies and regulations related to solid waste be less than significant. Development of future land uses, as designated in the proposed General Plan would be required to comply with federal, state, and local statutes and regulations related to solid waste. Furthermore, the policies provided in the proposed General Plan regarding solid waste disposal, recycling, etc., would further ensure compliance with applicable regulations (City of Carlsbad 2015). The Project would deposit all solid waste at a permitted solid waste facility. Additionally, the Project would adhere to the requirements of AB 939, as well as comply with GP/CAP goals, policies, and implementation actions related to solid waste disposal. Impacts would be less than significant.

3.20 Wildfire

Wildland fire hazards were previously evaluated within the Hazards and Hazardous Materials section of the GP/CAP FEIR. The GP/CAP FEIR determined that development of the GP/CAP would result in less than significant impacts associated with the risk of loss, injury, or death involving wildland fires (see Section 3.8, above).

Since the adoption of the GP/CAP FEIR in 2015, the CEQA Guidelines Appendix G Environment Checklist was updated to include wildfire as an additional resource area to be analyzed. Specifically, the significance thresholds were established relative to projects located in or near state responsibility areas or lands classified as very high fire hazard severity zones. Because the project site is neither located in or near a state responsibility area or lands classified as very high fire hazard severity zones, impacts from the proposed project would be less than significant. Nonetheless, the following analysis is provided for informational purposes.

Implementation of the General Plan would result in new development and population growth, resulting in an increase in demand for emergency services, which could affect the implementation of adopted emergency response and evacuation plans. However, the city has adopted the City of Carlsbad Emergency Operations Plan (EOP) prepared in conjunction with the Unified San Diego County Emergency Services Organization, which addresses the city's planned response to extraordinary emergency situations associated with any type of natural disaster, technological incident, or state of war emergency. The EOP includes the city as part of the Statewide Emergency Management System. With the compliance of the emergency EOP and proposed General Plan goal and policies, including Goal 6-G.3 and Policies 6-P.31, 6-P.34, 6-P.36, and 6-P.37, the potential to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan, associated with the GP/CAP, would be less than significant (City of Carlsbad 2015).

The proposed project would be developed on a site that is already developed with existing residences. As discussed in Section 3.17, the proposed project would result in the addition of 45 ADT "(or a net increase of 25 ADT), which is minimal and is not expected to impair emergency response. Therefore, the project would not substantially impair an adopted emergency response plan or emergency evacuation plan. Impacts would be less than significant.

The project site is not located within a fire hazard severity zone. A "moderate" threat fire hazard severity zone is located approximately 700 feet north of the project site (City of Carlsbad 2015). Nonetheless, due to distance of this area and the intervening developed nature of surrounding land uses, the proposed project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. In addition, the proposed project would be required to comply with existing regulations, such as the Uniform Fire Code and the California Building Code, to prevent the spread of wildfire, and would implement General Plan Policies 6-P.33 and 6-P.35, directed to reduce impacts associated with wildfire. Therefore, the proposed project would not exacerbate wildfire risks and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Therefore, impacts would be less than significant.

As discussed above, the project site is not located within a fire hazard severity zone. The project would not introduce additional infrastructure which may exacerbate wildfire risk as no off-site or on-site infrastructure improvements are proposed or required. In addition, the proposed project would be required to comply with existing regulations, such as the Uniform Fire Code and the California Building Code, to prevent the spread of wildfire, and would implement General Plan Policies 6-P.33 and 6-P.35, directed to reduce impacts associated with wildfire. Accordingly, it is not anticipated that the Project would exacerbate fire risk through the installation or maintenance of associated infrastructure. Impacts would be less than significant.

As previously discussed, the Project site is not located in a fire hazard severity zone, nor is it adjacent to steep hillsides or drainages which may experience flooding or landslides post-wildfire. Rather, the project site and surrounding area is generally flat and development of the project site would not result in changes to the existing topographical or drainage conditions of the project area. Thus, the Project would not expose people or structures to a significant risk, including downslopes or downstream flooding or landslides, as a result of runoff, post-fire instability, or drainage changes. Therefore, impacts would be less than significant.

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4 References and Preparers

4.1 References Cited

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Hannah Wertheimer, Editor
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Figure 1 Project Location

SOURCE: SANGIS 2021; Bing Maps

DUDEK

0 1,000 2,000 Feet

FIGURE 1

Project Location

Carlsbad Seaside Village Condos Project

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Figure 2 Project Site

SOURCE: SANGIS 2020, 2021

DUDEK

0 100 200 Feet

FIGURE 2

Project Site

Carlsbad Seaside Village Condos Project

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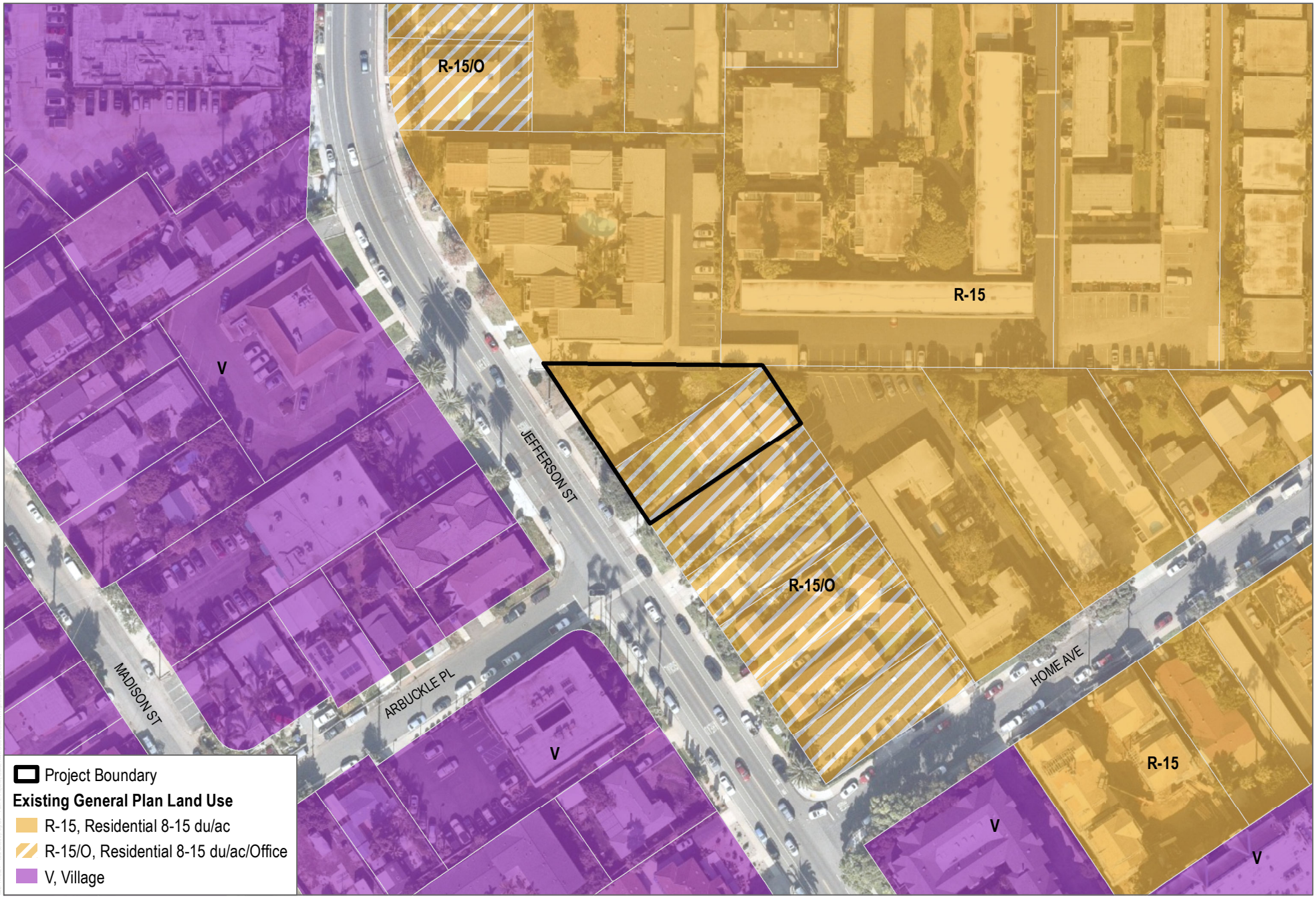
Figure 3a Existing General Plan Land Use Designation



SOURCE: City Carlsbad 2021; SANGIS 2020, 2021

DUDEK

0 50 100 Feet

FIGURE 3a

Existing General Plan Land Use Designations

Carlsbad Seaside Village Condos Project

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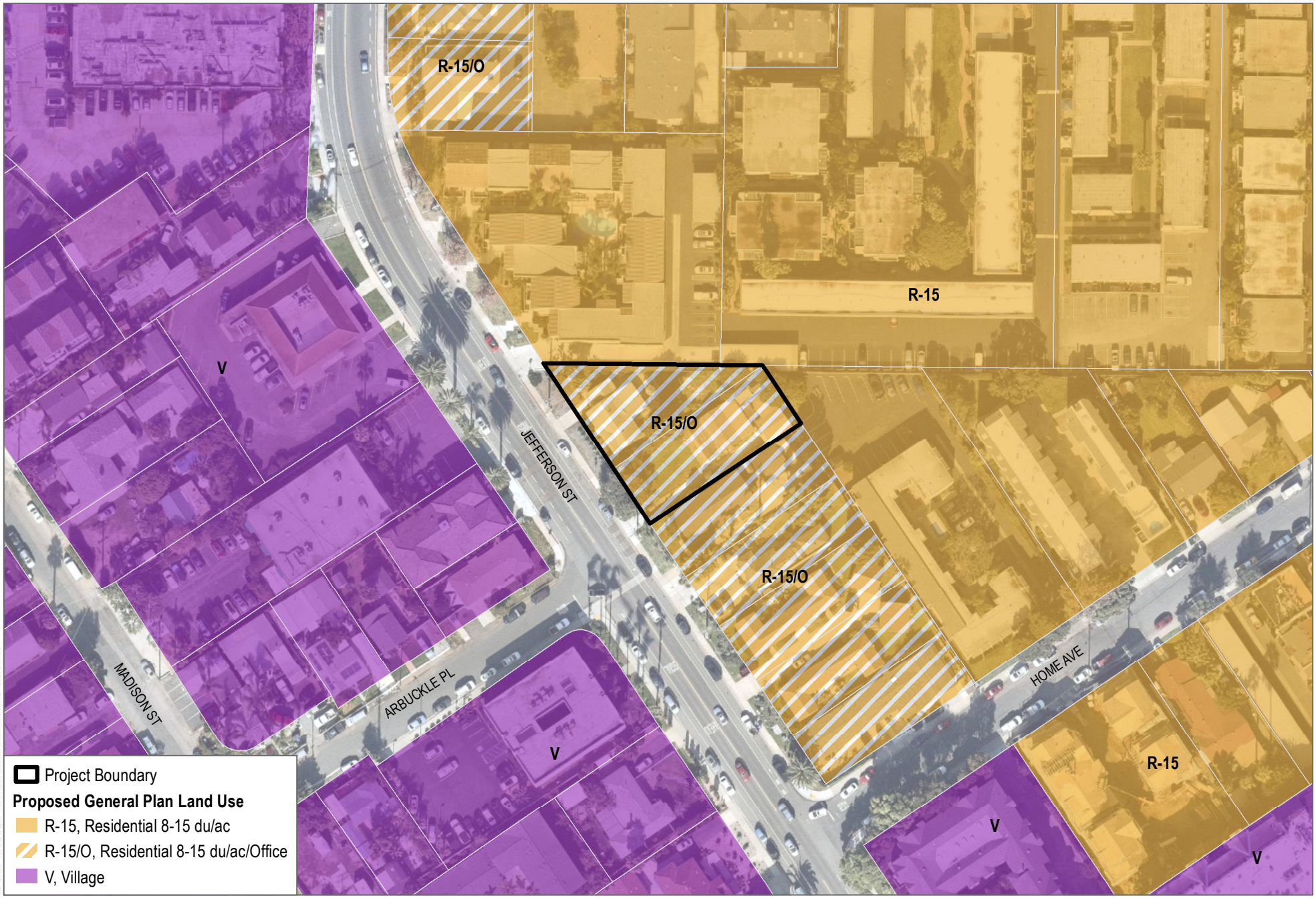
Figure 3b Proposed General Plan Land Use Designation



SOURCE: City Carlsbad 2021; SANGIS 2020, 2021

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FIGURE 3b

Proposed General Plan Land Use Designations

Carlsbad Seaside Village Condos Project

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Figure 4a Existing Zoning

SOURCE: City Carlsbad 2021; SANGIS 2020, 2021

DUDEK

0 50 100 Feet

FIGURE 4a

Existing Zoning

Carlsbad Seaside Village Condos Project

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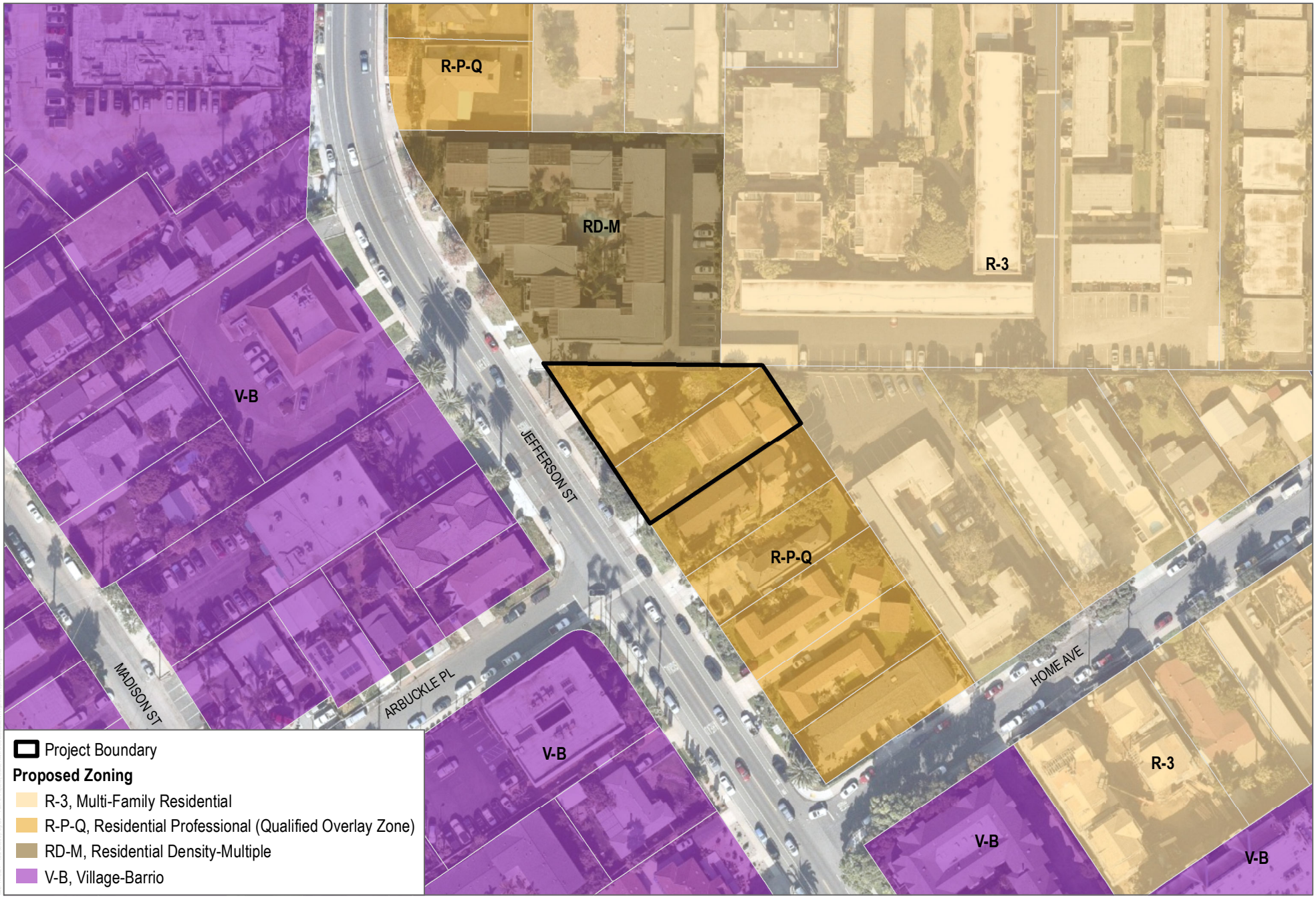
Figure 4b Proposed Zoning



SOURCE: City Carlsbad 2021; SANGIS 2020, 2021

DUDEK

0 50 100 Feet

FIGURE 4b

Proposed Zoning

Carlsbad Seaside Village Condos Project

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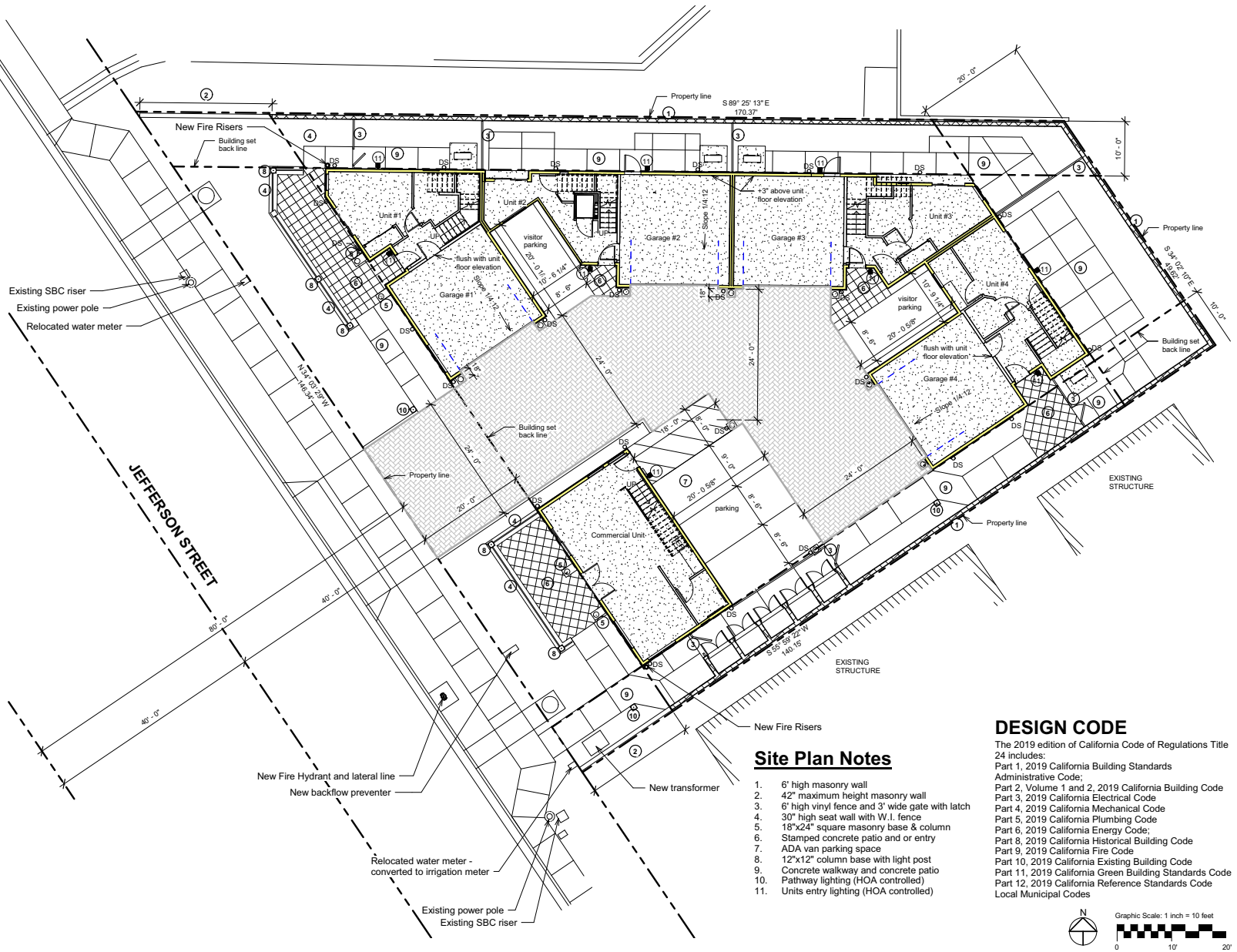
Figure 5 Preliminary Site Plan



Site Plan Notes

1. 6' high masonry wall
2. 42" maximum height masonry wall
3. 6' high vinyl fence and 3' wide gate with latch
4. 30" high seat wall with W.I. fence
5. 18"x24" square masonry base & column
6. Stamped concrete patio and or entry
7. ADA van parking space
8. 12"x12" column base with light post
9. Concrete walkway and concrete patio
10. Pathway lighting (HOA controlled)
11. Units entry lighting (HOA controlled)

DESIGN CODE

The 2019 edition of California Code of Regulations Title 24 includes:
Part 1, 2019 California Building Standards Administrative Code;
Part 2, Volume 1 and 2, 2019 California Building Code
Part 3, 2019 California Electrical Code
Part 4, 2019 California Mechanical Code
Part 5, 2019 California Plumbing Code
Part 6, 2019 California Energy Code;
Part 8, 2019 California Historical Building Code
Part 9, 2019 California Fire Code
Part 10, 2019 California Existing Building Code
Part 11, 2019 California Green Building Standards Code
Part 12, 2019 California Reference Standards Code
Local Municipal Codes

N

Graphic Scale: 1 inch = 10 feet

0 10' 20'

SOURCE: Karnak Planning & Design, 2022

DUDEK

FIGURE 5

Preliminary Site Plan

Carlsbad Seaside Village Condos Project

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Appendix A

Historical and Archaeological Inventory Report
Scarpelli Property Redevelopment Project
Carlsbad, San Diego County, California 92008

HISTORICAL AND ARCHAEOLOGICAL INVENTORY REPORT
FOR THE
SCARPELLI PROPERTY REDEVELOPMENT PROJECT
CARLSBAD, SAN DIEGO COUNTY, CALIFONRIA 92008

Accessor Parcel Numbers (APNs):
203-201-01 and 203-201-02

Lead Agency:
Jessica Evans
City of Carlsbad
1635 Faraday Avenue
Carlsbad, California 92008-7314

Preparer:
Rebekah Loveless
Juliette Meling
Elizabeth Davidson
Loveless Linton, Inc.
1421 West Lewis St.
San Diego, CA 92103
619-922-0718

Signature

Project Proponent:
Scarpelli Family Trust 02/25/04

April 2021

Loveless Linton, Inc.
Cultural Preservation & Archaeology

National Archaeological Data Base Information

Authors: Rebekah Loveless, Juliette Meling, and Elizabeth Davidson

Firm: Loveless Linton, Inc.

Client/Project Proponent: Scarpelli Family Trust 02/25/04

Report Date: April 2021

Report Title: Historic and Archaeological Inventory Report for the Scarpelli Property Redevelopment Project, Carlsbad, San Diego County, California 92008.

Type of Study: Historic Architecture and Cultural Resource Inventory

New Sites: Pending

Updated Sites: None

USGS Quadrangle: San Luis Rey 7.5'

Acreage: 0.32-Acres

Key Words: Built Environment Survey, Archaeological Survey, Tribal Cultural Resource, Jefferson Street, Carlsbad, Negative Findings

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LIST OF ACRONYMS AND ABBREVIATIONS

APE (Area of Potential Effects)
ARMR (Archaeological Resource Management Report)
BP (Before Present)
CA (California)
California Register (California Register of Historical Resources)
CEQA (California Environmental Quality Act)
CHRIS (California Historic Resource Information System)
CM (Centimeter)
CRM (Cultural Resource Management)
Ft (Feet)
M (Meter)
MLD (Most Likely Descendant)
MYA (Million Years Ago)
NAHC (Native American Heritage Committee)
NEPA (National Environmental Policy Act)
NHPA (National Historic Preservation Act)
NRHP (National Register of Historic Places)
OHP (Office of Historic Places)
SCIC (South Coastal Information Center)
SDSU (San Diego State University)
SLF (Sacred Lands File)
TCL (Tribal Cultural Landscape)
TCP (Tribal Cultural Property)
TCR (Tribal Cultural Resource)
TUA (Traditional Use Area)

1.0 MANAGEMENT SUMMARY/ABSTRACT

Loveless and Linton, Inc. conducted an historic architectural and cultural resource inventory of an approximately 0.32-acre project area. The project is limited to the 0.32-acre proposed project area and no off-site improvements are proposed. Archaeological and architectural/built environment research included a records search, literature review, examination of historic maps, and an archaeological field survey of the property.

Cultural and historic resource inventory work was conducted pursuant to the California Environmental Quality Act (CEQA), Archaeological Resource Management Reports: Recommended Contents and Format (February 1990), published by the California OHP, State Senate Bill No. 18, Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 CFR Part 800, and County of San Diego guidelines. The City of Carlsbad served as the lead agency for CEQA compliance.

The record search indicated that two previous archaeological investigations have taken place within the project area and that there are no known cultural resources. Nine archaeological investigations and two known archaeological sites have been recorded within the ¼-mile area surrounding the project area, known as the Area of Potential Effect (APE). Research indicates that the two structures in the project area, 2754 and 2700 Jefferson Street, were constructed circa 1946. There are no previously recorded historic addresses within the APE.

The historic architecture survey was conducted on March 9, 2021 by Elizabeth Davidson, RPA. The historic architecture survey indicated that the two structures are standard 2-x-4-inch wood-frame houses set on reinforced concrete foundations. Background research and survey work indicate that neither property is eligible on local, state, or federal registries.

The cultural resource survey was conducted on March 25, 2021 by Liz Davidson, RPA, Jason Peralta (Luiseño Tribal member), and Eddie Carrera (Kumeyaay Tribal member). There were no constraints to the survey. The survey area consisted of residential development and some native and non-native grasses and vegetation. The cultural resource survey identified no cultural resources on the surface of the project area.

Photographs and project records for this inventory will be curated at Loveless Linton, Inc. office in San Diego, and will be provided in an appendix with this report. The current project design proposes no impacts to significant or registry eligible historic architectural resources nor to known cultural resources. However due to the lack of subsurface testing, it is recommended that a County qualified archaeologist be on-site during all earth-moving activities order to identify any unknown resources that may be present. Due to the interest and concerns form the local Native American community, it is recommended to further consult with interested tribal representatives, which should include, but is not limited to, sharing project construction plans and timelines, further consulting on specific concerns, and hiring a qualified local tribal representative for Native American Monitoring. Furthermore, due to the lack of subsurface testing and paleontological review of the project, it is recommended to conduct a background search and consult with San Diego's Natural History Museum prior to any earth-moving activities.

2.0 UNDERTAKING/INTRODUCTION

2.1 REPORT STRUCTURE

The purpose of this study is to evaluate the project area, known as the Scarpelli Property Redevelopment Project. The project proposes to demolish two existing residential developments. As part of the environmental review for the project, the City of Carlsbad required an evaluation of the existing structures in addition to archaeological research and survey, to determine if any of the resources, known and unknown, are historically important and to determine whether they should or should not be listed as a historic resource on a local, state, or national register. Loveless Linton, Inc. were contracted to conduct the historic architecture and cultural resource research, investigations, and evaluations.

This report presents the existing setting of the project, over-arching research themes and questions withing the region of the project, the methods of investigations, and the findings and recommendations.

2.2 PROJECT DESCRIPTION

The project is located along Jefferson Avenue between Laguna Drive and Home Avenue in the City of Carlsbad, San Diego County, California. The approximately 0.32-acre project area located at 2754 and 2770 Jefferson Street on Assessor's Parcel Numbers (APNs) 203-201-01 and 203-201-02. The project is in the northwestern quarter of Section 5 in Township 12 South, Range 4 West and is shown on the San Luis Rey USGS 7.5' Quadrangle (Figure 1). The surrounding area consists of residential development. The project APE is bounded by a hotel to the west and residential development to the north, east and south (Figure 2).

The proposed project includes demolition of existing structure and landscape and development of a two-story commercial/office building and two-story, four-unit multi-family residential building. Other site improvements include underground utilities and pedestrian and vehicular pavements. Below grade floor levels are not proposed (Figures 3).

2.3 REGULATORY SETTING

The proposed project is subject to the California Environmental Quality Act (CEQA), the National Environmental Protection Act (NEPA), the City of Carlsbad General Plan, Senate Bill No. 18 (SB-18), and other applicable local regulations. This report has been prepared for approval by the City of Carlsbad. The historic architecture and cultural resources survey referenced in this report was conducted in accordance with the City of Carlsbad. The City of Carlsbad will serve as the Lead Agency under the CEQA guidelines. The findings and conclusions presented in this report represent the professional opinion of Loveless and Linton Inc.

2.4 CITY OF CARLSBAD SENSITIVITY MODEL

The City of Carlsbad employs a Sensitivity Model to guide long-range planning efforts. This model was created using records search and literature review, a review of geological maps and soils data, aerial photograph review, and from professional expertise in cultural resources management efforts throughout the City. The Sensitivity Model is a series of map which provide information on proposed low, moderate, and high sensitivity areas for architectural/built environment, archaeological, and paleontological resources throughout the City. Tribal cultural resources are not addressed with this model. The Sensitivity Model is not a predictive map, does not predict an inventory of said resources, nor does it substitute studies according to applicable state and federal laws.

According to the Sensitivity Model, this project is within the following sensitivity levels for the following resource categories:

- Architectural Historic – **high sensitivity**. High sensitivity areas are within the vicinity to known historic districts and/or features.
- Archaeological – **low sensitivity**. Low sensitivity areas reflect areas that have been previously surveyed and/or have a lower frequency of recorded sites according to the California Historic Research Information System (CHRIS), or have been fully developed, or have no visible indication of cultural resources.
- Paleontological – **high sensitivity**. High sensitivity areas are within geological formations known to contain paleontological localities with fossils.

2.5 PROJECT PERSONNEL

The cultural resource inventory and survey program have been conducted by Loveless Linton, Inc., whose cultural resources staff meet state and local requirements. Rebekah Loveless and Liz Davidson served as Principal Investigators for the project. Ms. Loveless is a member of the Register of Professional Archaeologists (RPA) and has a MA in Anthropology from San Diego State University. She has more than ten years of archaeological field experience in the Southern California region and meet the Secretary of Interiors (SOI) standards for qualified archaeologists. Ms. Elizabeth Davidson is also a member of the Register of Professional Archaeologists (RPA), has an MA in Archaeology from the University of Leicester, and has more than 13 years of experience in the Southern California region. Ms. Davidson meets the SOI's standards for qualified archaeologists.

Brandon Linton, enrolled member of the Kumeyaay Nation, served as Cultural Principal. He has over ten years of experience with the field of archaeology in the Southern California region. Mr. Linton oversaw all activities. Jason Peralta (Luiseño Tribal member), and Eddie Carrera (Kumeyaay Tribal member) served as Native American monitors during the cultural resource survey.

The resumes of the Principal Investigators are included in Appendix A.

Figure 1: Regional Location Map

Figure 2: Project Location Map

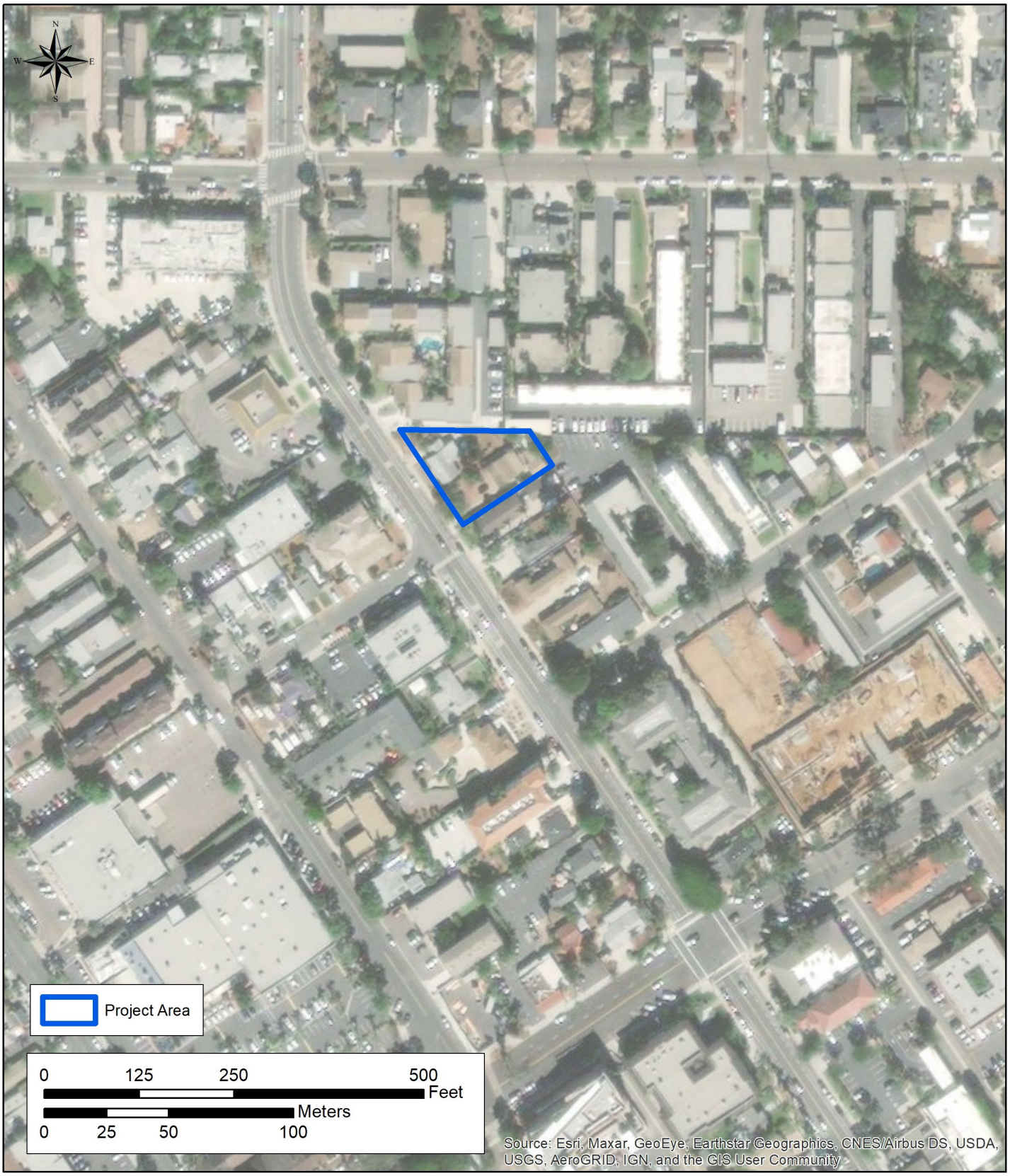
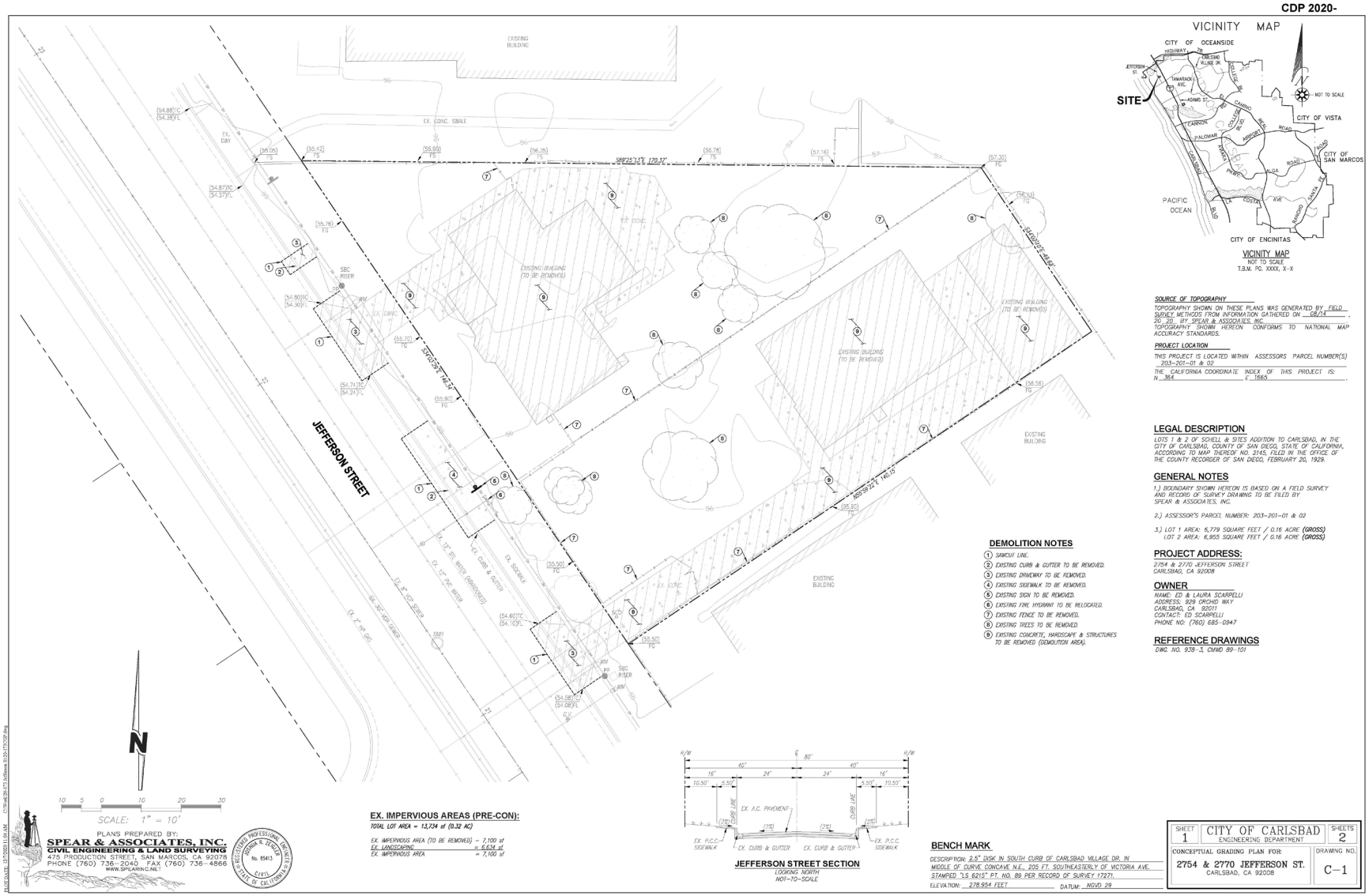


Figure 3: Proposed Project Demolition Plans
(provided by Spears & Associates, Inc.)



3.0 SETTING

3.1 EXISTING CONDITIONS

3.1.1 Environmental Setting

The project site is located at 2754 & 2770 Jefferson Street in Carlsbad, San Diego County, California 92008 (see Figure 1). The site is in the coastal plain section of the Peninsular Ranges Province of San Diego County. The study area is bounded by Jefferson Street to the southwest and by existing residential development to the remaining quadrants. The Pacific Ocean is located approximately ½-mile to the southwest and the Buena Vista Lagoon is approximately 470 meters northwest. The project lies between 50 and 60 feet above mean sea level and is generally flat lying with a gently sloping. The site is within a climate classified as semiarid cool steppe climate having average January low temperatures around 40◦ F (Pryde 2014: Table 3.1), and average July high temperatures below 75◦F (Pryde 2014: Figure 3.1).

Today the project area lies amongst disturbed habitat but would have likely been similar to neighboring vegetal communities which include marsh communities along the lagoon, and coastal sage scrub and woodland communities further inland. In general, scrub and chaparral habitats are comprised of California sagebrush, California buckwheat, Island snapdragon, Purple top vervain, Island mallow, Common deerweed, Chaparral bush mallow, Laurel sumac, Lemonade berry, White sage, Black sage, Foothill needle grass.

The climate and the vegetal communities of the project area provided home to many animal, bird, reptile, and marine species. Some of these include cottontails, jackrabbits, gophers, skunks, a variety of rodents, opossums, racoons, bats, foxes, fence lizards, alligator lizards, skinks, sparrows, hawks, a variety of songbirds, abalone, clam, oyster, muscle, and scallop. Altogether, the various plant and creature species would have provided the Native American communities of San Diego with ample resources; some of which are known today to have been used as edible and/or material resources (Kroeber 1976 & Pryde 2014: Appendix 4.1).

3.1.2 Paleontological Setting

Based on the Carlsbad Sensitivity Model, the project area lies within a high sensitivity area. High sensitivity for paleontological resources is defined as an area that lays upon a geologic formation known to contain a high potential yield of unique vertebrate and/or invertebrate fossils. Throughout the City of Carlsbad, these high sensitivity geological formations include the Point Loma Formation (76-72 million years ago [Mya]), the Santiago Formation (49-45 Mya), and some of the old paralic deposits which are equivalent to the Bay Point Formation (130,000 – 80,000 years ago).

Geological mapping of the area indicates that the site is underlain by late to middle Pleistocene-age old paralic deposits (Qop 6-7). The old paralic deposits consist of marine and non-marine sediments deposited on a wave cut abrasion platform that emerged from the sea approximately 80,000 to 120,000 years before present (BP) (California 2019). Atop of the old paralic deposits lie artificial fill and Marina loamy coarse sand topsoil (Franklin et al. 2020). The Marina topsoil is

commonly found in association with Coastal Sage Scrub habitats.

3.1.3 Cultural Setting

3.1.3.1 Prehistoric Overview

Local traditional knowledge suggests occupation of the San Diego region since time immemorial. Some archaeologists advocate for an occupation of Southern California of more than 100,000 years ago (Carter 1957, 1980; Minshall 1976). Some of these noted local "Early Man Period" sites include Texas Street, Buchanan Canyon, Mission Valley (San Diego River Valley), Del Mar, and La Jolla (Bada et al. 1974; Carter 1957, 1980; Minshall 1976, 1983, 1989; Moriarty and Minshall 1972; Reeves 1985; Reeves 1986). However, most scholars have been unwilling to definitively advocate for occupation of the San Diego region prior to 9,000 years ago, thus, typical conversations about the prehistoric past of this region covers three cultures; the San Dieguito culture dating from approximately 20,000 to 8,000 years ago, the La Jolla-Pauma Pattern of the Encinitas Tradition dating from approximately 8,000 to 3,000 years ago, and the Kumeyaay/Diegueno (Yuman Tradition) and Luiseno cultures dating from approximately 2,500 years ago to European contact. Some Archaeologists and local tribal peoples have notably replaced this concept of separate distinctive cultures with one that encompasses a more fluid description of San Diego's prehistory, advocating for continuous occupation of the ancestral groups of San Diego's Native American population and arguing that the differences found in the archaeological record indicate regional and seasonal adaptations of a single culture (Carbone 1991, Gallegos 1991, Sasson 2014).

Largely, however, it is agreed upon that the San Dieguito culture predates the La Jolla-Pauma Pattern, but the period of transition between the two cannot be agreed upon amongst archaeologists (Gallegos 1991). Typically, the San Dieguito culture dates to the early Holocene and is generally characterized as an early hunting culture marked by abundant scrapers and large percussion-flaked bifaces, flaked crescentic stones, and projectile points. Grinding tools (manos and metates) are rare indicating a hunting and gathering/collecting subsistence pattern that likely relied on a variety of resources including birds, mollusks, and large and small mammals rather than on wild seeds and plant foods (Warren 1968). During this period along the coast, archaeological evidence suggests a culture more closely characterized by the Encinitas Tradition (further discussed below) which includes manos, metates, cobble-flaked tools, ceramics, and exploitation of marine resources as well as systemic use of resources in a more sedentary setting (Carbone 1991, Erlandson and Roger 1991, Gallegos 1992).

Beginning about 8,000 BP (years before present), the climate of Southern California shifted, changing the environment from one that supported a variety of flora and fauna across abundant marshlands, estuaries, and lakeshores, to one that was warmer and drier with rocky shorelines and bays. It is around this time that there is a shift in material culture which is known as the Encinitas Tradition. Within San Diego, inland sites of this era are technologically dominated with grinding implements such as manos and metates, representing an increased subsistence on terrestrial resources and are referred to as the Pauma Pattern. Alternately, the coastal sites during time exhibit a culture that subsisted largely on marine resource and shellfish, in addition to the plant foods of the area, referred to as the La Jolla Pattern. Differences in subsistence patterns between the inland sites and coastal sites are believed to resemble a regional emphasis on available resources

(Cardenas 1986; Cline 1984).

Overall, the La Jolla Pattern is best known for flexed burials, metates and manos (and eventually pestles and mortars), shell midden, and a pattern of relatively sophisticated cobble-based flake technology and hammering tools, along with fire-affected rock features, indicating a source of flaked tools, and baking and/or roasting of food resources (Moriarty 1985; Shumway et al. 1981; Erlandson and Colten 1991; Glassow et al. 2007).

Around 3,500 BP, the environment is marked by climactic fluctuations with notable ecological changes along the coast: rocky shores declined, sandy beach established, and lagoons filled with sediment, which meant siltation and the loss of shellfish beds. There is a paucity in archaeological sites along the coast currently, which some archaeologists attribute to the decline in lagoon resources, forcing populations to move inland for reliable subsistence (Meighan 1954, Warren et al. 1961, Gallegos 1985, Cardenas 1986, Warren 2008). It is around this same time that the La Jolla Pattern transitions into the Yuman Tradition in the southern San Diego area and is replaced by the movement of the Takic (Shoshonean) people into the coastal areas and thus transitions into the San Luis Rey Complex in the northern San Diego area (Moratto 1984, Sutton 2009).

In general, the Yuman Tradition and San Luis Rey Complex are characterized by the appearance of small pressure flaked projectile points (Cottonwood Triangular and Desert Side-notched) which is indicative of bow and arrow technology, the appearance of ceramics, the replacement of flexed inhumations with cremations, and an emphasis is inland plant food collecting and processing (Meighan 1954; Rogers 1945; True 1966; Warren 1964, 1968). The San Luis Rey Complex and the Yuman Tradition share many cultural similarities despite the linguistically unrelated Luiseño and Kumeyaay neighbors. One documented difference between the two is the roughly equal frequencies of Desert Side-notched and Cottonwood Triangular points in the Yuman Tradition and the scarcity of Desert Side-notched points in the San Luis Rey Complex (True 1966).

3.1.3.2 Ethnohistory

The Ethnohistoric period occurred shortly before Europeans colonized Southern California. Documentation by the Spanish and the material culture left by the native people indicate that at the time of contact there were four distinct native groups, Luiseño, Diegueno, Cupeno, and the Cahuilla (Kroeber 1925) in the project area. During this period, the Native American populations dramatically decreased and were quickly assimilated into the mission system. The project area is located on the border of the Luiseño (derived from the San Luis Rey Mission) and Kumeyaay/Diegueno (derived from the San Diego Mission) territory. The following information details some of the ethnography of the Luiseño and Diegueno people.

Luiseño

The Luiseño were Takic-speaking (Shoshonean) populations that were found in northern San Diego County, southern Orange County, and southeastern Riverside County from the onset of ethnohistoric times through the present day. The Luiseño are linguistically and culturally related to the Gabrielino and Cahuilla. The San Luis Rey Complex is thought to be related to the historical and contemporary Luiseño people. The San Luis Rey Complex is distinguished from the preceding San Dieguito Complex and Encinitas Tradition through the presence of small projectile points (indicative of bow and arrow), pottery, and the practice of cremation (Meighan 1954, True 1966).

Other defining characteristics of San Luis Rey Complex sites are the presence of both mortars and metates, pestles and manos, scrapers, knives, hammerstones, drills, pendants, beads, and ornaments of shell and bone. Red and black geometric pictographs are characteristic of the San Luis Rey Complex as well. Except for the presence of midden and the relatively high frequency of cobble tools at the coastal sites, the inland site shared many similarities with the coastal sites of this period (Bean and Shipek 1978).

The Luiseño are known for a complex social structure and relatively high population size at Spanish contact; Population estimates range from 5,000 to 10,000 individuals and anywhere from 50 to 60 villages (Kroeber 1925, White 1963, Oxendine 1983). Along the coast, villages were typically in valley bottoms, along streams, or along coastal strands near mountain ranges where water was available. The Luiseño were hunter-gatherers, individually and in groups, exploiting local terrestrial flora and fauna as well as marine resources (Bean and Shipek 1978). Small game was hunted using curved throwing sticks, nets, slings, or traps, while bow and arrows were used for hunting larger game. Coiled and twined baskets and ceramic bowls and jars were made for food gathering, preparation, storage, and serving. Manos and metates were used for grinding seeds. Dugout canoes, basketry fish traps, and shell hooks were used for near-shore fishing (Bean and Shipek 1978). In addition to hunting, Luiseño used fire systematically to increase yields of key plants and animal species (Bean and Lawton 1976, Blackburn and Anderson 1993).

Luiseño were exogamous and organized based on patrilineal and patrilocal lineages. Women moved to their husband/s village but maintained their identity as a member of their natal lineage. The Luiseño lineages were composed of a ceremonial leader, a ceremonial bundle, and a ceremonial house. The ceremonial leader would organize religious, economic, and military activities. Resources within the party, were owned by the party and the party territory was marked by boundary markers and defended against (Waugh 1986).

Houses were dispersed throughout the villages and were circular with conical roofs made of logs covered with bundles tule, sedge, or bark, and a layer of earth. Round earth-covered sweathouses were primarily used by men, though a rigid gender division did not exist. Other known structures include flat-roofed open ramada-like structures, likely for providing shaded work areas. Earth ovens consisted of a pit with a ring of rocks. Granaries for storing food were constructed on the tops of houses or on boulders. Rock shelters, typically outside of the villages, were also common with the Luiseno, used for temporary camps and for ceremonies (Bean and Shipek 1978). Ceremony was important to the Luiseno, of which the most important have been noted as initiation ceremonies for boys and girls and mourning ceremonies for all those who had passed during the year. During liminal ceremonies, red designs were painted on the faces of Luiseño girls, while the woman who danced and sang around them, had faces painted with black. In the conclusion of liminal ceremonies of both girls and boys, the initiates raced to a rock and painted it red (Applegate 1979).

Kumeyaay (Diegueno)

Though Kumeyaay is definitive in some literatures, it is a modern term used to collectively refer to all the San Diego Native American tribes and is controversial among some groups of local Native Americans. This collective term, however, will be used for purposes of this report but shall remain noted of its generality in intent.

Due to the unfortunate history of diminishing populations of the local Native Americans during the Historical period of San Diego, there is little ethnographic information about the coastal Kumeyaay. Due to the lesser amount of early extraneous invasion of the mountain and desert regions, the Kumeyaay people of these two regions were better able to preserve their cultural traditions and therefore much more ethnographic information is available to this day. Consequently, this report best represents the ethnohistory of the preserved mountain and desert Kumeyaay, with little specific ethnography of the coastal communities.

According to the local traditional knowledge of the indigenous people of the San Diego region, they are descendants of the first people and have lived in their ancestral lands since time immemorial (Cline 1979; Gifford and Block 1990:102-112).

The Yuman Tradition is thought to be related to the historical and contemporary Native Americans presently referred to as Kumeyaay, as traditional knowledge and oral history of the local Native American people speak both presently and ethnographically to tribal continuity in the region since the beginning of human occupation (Sutton 2006). Although several archaeologists consider the Kumeyaay tribes to be latecomers, traditional knowledge and oral history of the local Native American people speak both presently and ethnographically to tribal continuity in the region since the beginning of human occupation.

Recent reevaluation of previous archaeological discoveries indicates there may have been a cultural blend between the La Jolla Pattern and the Yuman Tradition. It has also been suggested that the Yuman Tradition may have developed from the preceding La Jolla Pattern (Sutton and Gardner 2006). It is evident in the archaeological record that sometime around 1,300 years before present, there was a change in human activity patterns along the southern coast of San Diego, however, reasons and cultural relations have yet to be scientifically documented.

The Kumeyaay territory is unlike most Native American groups in that they have their regional and historical habitation split by the present-day international border of Mexico and the United States and are largely divided by reservations yet continue to identify with their indigenous heritage. In the literature, most Native Americans are identified as being part of a large regional group associated with a mission during the Spanish occupation, such as Diegueno (San Diego Mission), Gabrielino (Mission San Gabriel), etc. In addition to these mission derived names, many still identify with their tribal names which usually translates to some vernacular form of “the people.”

Characterized by sustainable practices, the Kumeyaay people were conscientious hunter-gatherers who understood the landscape and resources and who utilized food and materials accordingly. Pottery was made of clay mixed with finely crushed rock, coiled, shaped with a stone or paddle, and then fired; some pottery exhibited ornamental inscriptions. Basketry, unmatched in California, was created from string like materials and formed into vessels, close-twined sacks, and wallets. A variety of native cordage was used to create such items as nets. Pipes were created of either clay or stone, and the *Olivella* shell were used to create necklaces (Kroeber 1976).

In some literary sources, it is believed that the Kumeyaay material culture came to emphasize an increased importance on the acquisition and processing of the acorn due to the eventual depletion of alternative accustomed resources (Moratto 1984). However, it is believed by the authors of this report that the emphasis in acorn production prevalent in the literature is due to the referenced lack

of costal ethnographic material and a general misunderstanding of Kumeyaay food production culture. Recent studies of faunal remains at known Kumeyaay sites suggest semi-sedentism occurred throughout the San Diego region for an extended period (Sasson 2014)

What we know of Kumeyaay houses is that they reflected the resources available and the local climates and therefore they varied greatly. Summer shelters typically only provided windbreak and shelter from the sun, while winter homes were much more formal and required more construction. Kumeyaay winter homes were small, sunken, elliptical huts with small entrance doors just big enough to crawl through. These homes were constructed of poles covered with brush or bark and could be covered with earth for further insulation (Cline 1984; Miskwish 2007; Spier 1928). The Kumeyaay also created a variety of structures for their daily activities; cooking and eating took place outside of their homes, in specific locations and sometimes within specific structures. Sweathouses were also constructed of a dug-out floor and a roof structure, typically located near a river or stream. These sweathouses were used regularly by Kumeyaay men as well as a place of healing (Kroeber 1976 & Spier 1928).

Kumeyaay social organization was formed in kinships and organized as band units. They customarily married outside of their band and resided with or near the family. The Kumeyaay band is often considered synonymous with a village or territory. Several villages were part of a larger kin group, often sharing resources. Familial practices and sourcing of materials were generally unique to a family tradition and respected throughout the larger population. Divisions between bands were normally settled by the course of moves that bands made between villages and resources (Luomala 1963).

The Kumeyaay practiced many forms of spiritualism. It has been documented that their spiritual leaders achieved their status by way of knowledge of song indicating that these individuals were in touch with the supernatural and spiritual world (Cuerco & Shipek 1991). The Kumeyaay had many important ceremonies, some of which included male and female puberty rites, the fire ceremony, the eagle dance, the cremation ceremony, and the mourning ceremony (Cline 1984; Kroeber 1976; Spier 1928).

3.1.3.3 Historic Overview

The following section provides a historic overview of the City of Carlsbad, some of which pertains to the historic overview of San Diego County as a whole.

Spanish Colonial Period (1769-1821)

Cabrillo made landfall in San Diego in 1542, however, it was not until 1769 that actual colonization of the area began. Prior to settlement, there were multiple exploration parties and mariner voyages during the 1500 and 1600s. Expeditions traveled northwest to meet the Colorado River from Mexico and ships that made landfall produced maps, but never established settlements (Pourade 1971). Russian and English interests in California, prompted the Spanish Crown to send a party comprised of soldiers, missionaries, and settlers to occupy and secure the area (Engelhardt 1920). In early 1769 the first Spanish exploring party, led by Gaspar de Portolá, arrived in San Diego.

The establishment of a joint relationship between Missions, Presidios, and Pueblos was necessary for successful Spanish occupation. The Missions were an extension of Spain and each placed in its specific location allowing for military and religious considerations. Though Spanish Pueblos

never developed during the Spanish rule, the Missions were constructed from San Diego all the way up to San Francisco. The Missions were the pushing force converting the local Native American population to the Franciscan Order and upon success, to subsequently convert the Missions into Spanish Pueblos. It was during this period that the El Camino Real was constructed, believed to be the most direct route between Missions which served to transport goods and military activities between the Spanish colonies (Smythe 1908).

Mexican Period (1821-1846)

Mexico won independence from Spain in 1821 and immediately went to work dismantling the Mission system. San Diego became part of the Mexican Republic. Once California became independent from Spain, the Mexican Government opened the ports of San Diego to international trade and created a booming trade industry (Killea 1966; Pourade 1973; Robinson 1948). San Diego had little support from Mexico, and quickly became victim to further foreign encroachment (Miskwish 2007). By the early 1820's the Mexican Government began to issue private land and garden lot grants to soldiers and their families, and to those in favor with the Mexican Government. The Mexican Government overlooked the local Native American tribes in this process (Richman 1911).

By 1834, secularization had removed all the Missions from Franciscan Order. The lands surrounding the San Diego and San Luis Rey missions were parceled into ranchos and the residing Native Americans were removed from the once mission lands.

History of the City of Carlsbad

During the Mexican period, the Carlsbad area was part of the 13,311 Rancho Agua Hedionda land tract run by Don Juan María Marrón. In 1842 the land was granted to him and then passed to his wife and children upon his death in 1853. That same year the Marrón family leased the land to Francis Hinton who eventually took ownership in 1865. Hinton died five years later in 1870 and willed the rancho to Robert Kelly. The Kelly family owned the Rancho until the late 1950s. (Moyer and Pourade 1976).

Throughout the year's numerous adobe homes were constructed on the rancho property by members of the Marrón and Kelly family. During this period, the land was primarily used for ranching and agricultural purposes. Many of these structures are gone, but several have been restored to incorporated into modern residences (Moyer and Pourade 1976).

Railroad Period

In 1880, Robert Kelly grants a right of way to the Sothern California Railroad along the coastal section of Rancho Agua Hedionda (2002 Gutierrez). The Sothern California Railroad was an Atchison, Topeka and Santa Fe Railway subsidiary chartered in 1880, to build a railway connection between San Diego and Barstow. In 1881 the California Southern Railway began constructing a track beginning in National City continuing north connecting it to the cities of San Diego, Fallbrook, Temecula, Lake Elsinore, Perris, Riverside, San Bernardino, Colton, Cajon, Victorville and Barstow. The Railway was completed in 1885 (Furzer 2021).

During the construction of the Southern California Railway, Santa Fe officials decided to

consolidate all the subsidiary railroads in Southern California in order to reduce costs. and the California Central Railway was formed. In 1887 the railway-built the Carlsbad Santa Fe station, which was used by the Atchison, Topeka and Santa Fe Railway until 1960 (Furzer 2021). The original train station is still located at its original trackside location on Elm Avenue and State Street and serves as the City's Chamber of Commerce.

Carlsbad Artesian and Mineral Water

With the establishment of the railroad in the 1880s also came a land boom and the Carlsbad area began to grow. In 1881 John Frazier came to the Carlsbad region and settled on some recently subdivided land north of Rancho Agua Hedionda. In 1883 Frazier discovers an artesian and mineral water on his property. Within a few years of his discovery, the Southern Railroad Company built as a whistle stop station not far from the newly discovered mineral springs. Frazier begins bottling and selling his mineral water to the tourists who stop at the Carlsbad Santa Fe train station, introducing Carlsbad as a tourist attraction. Three years later, in 1886, taking advantage of Frazier's discovery, the real estate development company "Carlsbad Land and Water Company" is formed.

The Carlsbad Land and Water Company bought Frazier's property and purchased additional acreage north of Rancho Agua Hedionda and established the town of Carlsbad. The town formation sparks a building boom, and the land was subdivided into smaller parcels for residential, commercial and agricultural use. However, by 1900 the boom is followed by a land bust and the town of Carlsbad is almost abandoned, and the Carlsbad Land and Water Company shuts down (Sprague-Bentley 2009).

Agriculture Floriculture and Barrio Carlos

In 1914 the South Coast Land Company purchases the remaining land from defunct Carlsbad Land and Water Company and in 1922 begins to pipe water in from the San Luis Rey River facilitating the development of the flower and avocado industry. One of the first growers, Sam Thompson, began Carlsbad's avocado industry. New growers soon followed with fruits, beans and flowers. The growth in the agricultural business also spurred a migration of immigrant farm workers from Mexico who provided labor for the industry.

In 1916, the Mexican Revolution caused a large exodus of people from Mexico, in search of employment in the agricultural fields and groves. Most of the immigrants settled in the south end of Carlsbad which was located close to the agricultural center of town. Some of the first families to settle in the area were the Acuňa, Aguilar, Gastelum, Martinez, Mata, Ramirez, Soto and Trejo families; Most of these families still have many members living in the area. These families where among the first people to build businesses and establish a close-knit community which they called Barrio Carlos. Barrio Carlos continues to be a thriving community (Carlsbad Historical Society 2021a).

By 1930, the Highway 101 diversion through Carlsbad was completed and the Carlsbad Mineral Springs Hotel opened ushering in the tourism industry (Harmon 1961). However, even with all the new businesses in town, Carlsbad was not able to completely escape the effects of the national depression. The city entered a slow growth period until 1939, when ranunculi, narcissus and anemone grower W. C. Garrett drew so much attention that the Santa Fe train passengers passing

through the town, he sold his entire bulb crop of 20 million flowers before the crop was even harvested (Carlsbad Historical Society 2021b).

In 1942 The United States Marine Corps moved to Rancho Santa Margarita and established Camp Pendleton. Arrival of the military in the area provided a wealth of opportunity for Carlsbad residents and helped turn the local economy around. Additionally, civilian workers were needed on base to fill a variety of jobs. Work on base provided income for Carlsbad residents, money that was spent in town bolstering the local economy. The need for civilian workers on base and for housing and recreational facilities for military families off base, all created new employment opportunities for Carlsbad residents.

The arrival of military personnel and their families at Camp Pendleton and Camp Elliott in La Jolla precipitated a housing shortage. So severe was the shortage that local newspapers ran editorials declaring that it was everyone's patriotic duty to rent space in their homes for the incoming military personnel and their families. Lack of sufficient housing prompted many military families to purchase homes. Additionally, residents began buying vacant lots and constructing low-cost rental cottages. This influx of people caused a surge in Carlsbad real estate activity.

1950s to Present The many wartime changes that occurred in Carlsbad created a series of events that eventually had a major impact on Carlsbad's view of itself. By war's end, Carlsbad was thriving economically. The influx of military families had revived the real estate market and the business community (Carlsbad Historical Society 2021b).

Historic Architectural Styes in Carlsbad

There are five primary architectural styles spanning a period of approximately 170 years represented within the Carlsbad area. These architectural styles include the Mission Style, Victorian "Queen Anne" Style, Mediterranean Revival, Craftsman "Bungalow" Style, and Modern Style. The earliest architectural styles began in the Mission Period and included small adobe and Mission Style houses. One of the most notable Mission Style houses built in the Carlsbad area is Rancho Agua Hedionda, built in the mid-1800s by Juan Maria and Felipe Marron. By the late 1800s, construction boomed in order to accommodate the influx of people that came with the completion of the new railroad. During this period, Victorian Style or Queen Anne style architecture was popular. Some of the most notable buildings within the City's historic district were built during this period including the Santa Fe Depot, the Schutte House, and the Wadsworth House (Jones 2005).

With the growth in the farming, agriculture and floriculture industry in the early 1900s another shift in the architecture took place to accommodate the working class. A simpler form of architecture including the Mediterranean Revival and American Craftsman "Bungalow" Style was introduced. Both properties discussed in this report are Craftsman "Bungalow" Style houses which were adapted from earlier homes first built by British colonists in India.

The most significant and distinguishing element of the Craftsman home was the philosophical foundation on which it was built. The foundation was based on the Arts and Crafts movement, which valued a more functional aesthetic using natural materials, and a greater degree of craftsmanship because it represented a return to a simpler, healthier and more productive life.

The architectural style is defined by several architectural elements including the low-pitched gabled roofs, broad eaves, and large front porches with exposed wooden structural elements. Houses were typically 1-1½ stories and of wood construction. The Craftsman style house proved to be incredibly popular on the west coast, particularly as building plan books and pre-cut home kits became available (Lancaster 1985).

Mediterranean Revival style homes are based off Mediterranean Revival architecture, which is based on the European Spanish and Italian Renaissance, Spanish Colonial, and Gothic architecture styles. Notable examples of the Mediterranean Revival buildings in the City include, the Carlsbad Community Church, The Cohn Home, the Shaw-Schindler House, and the Carlsbad Bank Building (Jones 2005).

From the 1950's on architecture in the City has followed both function and form with an emphasis on re-use and restoration of historic buildings, mainly for commercial use and the building of modern structures to accommodate the City's need for both commercial, agricultural and residential spaces.

3.1.4 Record Search Results

Historic Architecture Background Research

Historic built environment research included archival studies for the two properties within the project area, 2754 and 2770 Jefferson Street. Background research was conducted at the San Diego County Records Office and within the CHRIS at the South Coastal Information Center (SCIC) located at San Diego State University. The research included researching historical aerials, historical USGS topographic maps, General Land Office (GLO) maps, a title search, and assessor property records to gather historical property and building information. Sanborn Fire Insurance maps were accessed online at the San Diego Public Library. Title records for the property were obtained, including a City of San Diego 800' Scale Engineering Map, historic 1901, 1938 and 1947 USGS maps, a current USGS map, the original subdivision map, the current Assessor's parcel map, and Sanborn Fire Insurance maps from 1925.

2754 Jefferson Street

Based upon the building records and historic aerial photos of the property, the 2754 Jefferson Street residence was constructed circa 1946. The property is a craftsman 945-sq-ft. single-family residence with 2 bedrooms, 1 bath, and a detached garage. The single-family residence resides on 0.16 acres of land in the community of Carlsbad.

2770 Jefferson Street

Based upon the building records and historic aerial photos of the property, the 2770 Jefferson Street residence was constructed circa 1946. The property is a Craftsman 1,601-sq-ft. single-family residence with 4 bedrooms, 3 baths, and a detached garage. The single-family residence resides on a 6,790-sq-ft. lot of land in the community of Carlsbad.

Cultural Resource Background Research

The archaeological inventory includes archival and other background studies in addition to the Loveless Linton, Inc. field survey of the project area. The archival research consisted of literature

and record searches at local archaeological repositories, in addition to an examination of historic maps, and historic site inventories. This information was used to identify previously recorded resources and determine the types of resources that might occur in the survey area.

The records and literature search for the project was conducted within the CHRIS at the SCIC (see Appendix B for SCIC proof of receipt). The records search included a ¼-mile radius of the project area to provide background on the types of sites that would be expected in the region.

The record search indicated that two archaeological investigations have taken place within the project area and that there are no known cultural resources. Nine archaeological investigations and two known archaeological sites have been recorded within the ¼-mile area surrounding the project area, known as the Area of Potential Effect (APE). There are no historical addresses within the APE. Table 1 summarizes the previous investigations and Table 2 summarized the known archaeological resources within the APE.

Table 1. Archaeological Investigations within the 1/4-Mile Area of Potential Effect

Author	Report Title	Date
Seeman	Draft Environmental Impact Report Revised Parks and Recreation Element, Carlsbad, California	1982
Byrd and O'Neill	Archaeological Survey Report for Phase I Archaeological Survey along Interstate 5 San Diego County, CA	2002
Dominici	Historic Property Survey Report, I-5 North Coast Widening Project	2007
Caltrans	Interstate 5 North Coast Corridor Project Supplement Draft Environmental Impact Report/Environmental Impact Statement	2012
Caltrans	Interstate 5 North Coast Corridor Project Final Environmental Impact Report/Environmental Impact Statement and Section 4(F) Evaluation	2013
Caltrans	I-5 North Corridor Project Supplements	2013
Dominici and Laylander	2007 Cultural Resources Treatment Plan North Coast Interstate 5 Corridor	
Blake	Sixth Supplemental Historic Property Survey Report (HPSR) Revised Area of Potential Effects (APE) I-5 North Coast Corridor	2013
Castells, Shelby, Gunderman	Cultural Resources Study for the Carlsbad Village Drive Mixed Use Development Project, Carlsbad, San Diego County, California	2015

(continued next page)

Author	Report Title	Date
Castells, Shelby, Gunderman, Davis, Stringer-Bowsher, Krintz, Ghabhlain	Cultural and Historical Resources Existing Conditions and Evaluation Report the Pacific Surfliner Carlsbad Village Doubletrack Project, San Diego County, California	2013
Smith and Stropes	Historic Structure Assessment for the Carlsbad Station Project, Carlsbad, California	2019

Table 2. Known Archaeological Resources within the 1/4-Mile Area of Potential Effect

Primary No.	Description
P-37-000627	This archaeological resource is a prehistoric "campsite" that was recorded by M. Rogers. There is relatively no information about this site other than that it was mostly destroyed and contained remains of a campsite.
P-37-038297	This archaeological resource consists of a light scatter of historic artifacts. The artifacts consisted *Chione spp.*, *Argopecten spp.*, *Ostrea spp.*, *Mytilus spp.*, and *Donnax spp.* shell fragments, as well as trace amounts of historic bottle glass, and small amounts of unidentified bone fragments that were documented as non-human faunal bone. This site was located during an archaeological survey of a residential lot. The site appeared to be relatively disturbed.

4.0 RESEARCH DESIGN

4.1 SURVEY RESEARCH DESIGN

4.1.1 Historic Architecture Survey Design

The goal of the survey was to identify if the two residential properties, 2754 and 2770 Jefferson Street were of historic architectural importance, thus eligible for registry at a local, state, or national level. To accomplish the goal, background research was conducted to identify and assess construction dates and any relevant historic title/ownership information, and a field survey was conducted to observe and record the properties.

4.1.2 Cultural Resource Survey Design

The goal of the survey was to identify any cultural resources located within the project area so that the effects of the proposed project could be assessed. To accomplish this goal, background information was examined and assessed, and a field survey was conducted to identify cultural remains. Based on the records search both precontact and historic archaeological resources could be within the project area. Most of the nearby cultural resources are likely related to prehistoric use and occupation along the lagoon and/or historic domestic refuse. Prehistoric cultural resources could include campsites (which can typically include the presence of various artifact types which are defined in general by presumed use, such as lithics, ceramics, and grinding implements), artifact concentrations (typically defined a concentration of less than two types of artifact types as defined above), or isolated artifacts (less than three artifacts). Historic archaeological resources could include domestic refuse associated with early residential occupation and development of this coastal neighborhood.

4.2 NATIVE AMERICAN HERITAGE CONCERNS

Native American heritage concerns need to be included in significance evaluations as part of State and County policy. Native American concerns particularly focus on religious sites, sites that contain human remains, and sites with items used for religious purposes. Kumeyaay and Luiseno tribal representatives were present during survey and Brandon Linton, Cultural Principal for Loveless Linton, Inc. and enrolled member of the Kumeyaay Nation, oversaw all project activity.

A request was made by Loveless Linton, Inc. to the Native American Heritage Committee (NAHC) on March 5, 2021, to conduct a search of the Sacred Lands File (SLF) search to determine if any sacred sites or landforms were recorded within the vicinity of the parcel. The NAHC indicated that the SLF search was positive for the project area and recommended that the La Jolla Band of Luiseño Indians and the San Luis Rey Band of Mission Indians be contacted in addition to twenty-eight recommended contacts (see Appendix C). Letters were drafted and emailed by Loveless Linton, Inc. to the NAHC recommended Native American tribal representatives on March 26, 2021. Follow up hard-copy letters were mailed to each contact on April 2, 2021. Follow-up emails were also sent out on April 2, 2021. Follow up phone calls were made to the contacts that did not

have a posted email on April 12, 2021. All responses to and from the NAHC and to and from the Native American tribal representatives is attached in Appendix D. The following information was collected from the NAHC suggested tribal representatives regarding this project:

- Viejas Band of Mission Indians stated that the project area may contain sacred sites to the Kumeyaay people and are requesting that these sacred sites by avoided with adequate buffer zones. Additionally, Viejas requests, as appropriate, that all NEPA/CEQA/NAGPRA laws be followed, and that Viejas should be contacted immediately if there are any changes to the project description or inadvertent discoveries.
- Inaja-Cosmit Band of Indians stated via phone call that they have no questions, comments, nor concerns about the project due to the vicinity of the project being far away from their traditional tribal lands.
- Rincon Band of Luiseno Indians stated that they have specific concerns that that the project may impact tangible Tribal Cultural Resources (TCRs), Traditional Cultural Landscapes (TCLs), and potential Traditional Cultural Properties (TCPs). The Rincon Band recommends conducting an archaeological/cultural resources study, to include an archeological record search and complete intensive survey of the property. Additionally, they ask for a professional Tribal monitor from the Rincon Band to accompany the archaeologist during the survey. The Rincon Band further requests to consult directly with the lead agency regarding project impacts to cultural resources.
- San Pasqual Band of Mission Indians stated that the project is within their Traditional Use Area (TUA) and would like to engage in consultation about the project so that they have a voice in developing the measures that will be taken to protect sites and mitigate any adverse impacts. They would also like to be given any cultural resource reports that are in result of this project.

4.3 RESEARCH TOPICS, IMPLICATIONS, AND DATA REQUIREMENTS

4.3.1 Prehistoric Subsistence

Reconstructing the subsistence economy of prehistoric hunter-gatherers is a key question for cultural ecology. Historic period hunter-gatherers typically occupied extreme environments and/or had been heavily impacted by European colonial expansion. Consequently, understanding the cultural adaptations of hunter-gatherers in more productive environments is heavily reliant on archaeological data.

For the most part, subsistence during the Late Prehistoric in San Diego County is well understood through the ethnographic record. Ethnographic information has provided a level of detail beyond the archaeological record, but certain aspects are poorly known.

How does site subsistence pattern relate to resource availability?

Hypothesis: The general pattern is one of using available resources: Marine resources and small mammal procurement should dominate the assemblage. Large terrestrial fauna, if present, will represent a minimal component of the assemblage.

Data Needs:

- Stratigraphic contexts that indicate the sites contain interpretable cultural strata that can be taken to represent the results of relatively short-term occupations or a single occupation that can be compared to other single occupation sites.
- Material suitable for establishing chronology from these contexts.
- Vertebrate and invertebrate faunal material, along with tools that reflect subsistence focus and activities such as projectile points, bifaces, and milling tools.
- Enough ecofactual material to allow patterns to be defined. To obtain a statistically valid sample, quantities of 50 items per m^3 are required.

4.3.2 Prehistoric Chronology

Chronology and aspects of culture history have long been the subjects of archaeological research in the San Diego region. Throughout most of the coastal area of San Diego County research indicates that artifacts and subsistence remains up to 10,000 BP are typically characterized by shell midden dominated by rocky shore shellfish such as *Mytilus* sp. (mussels), and bay/estuary shellfish, such as *Argopecten spp*. (scallops), *Chione spp.* (cockles), and *Ostrea lurida* (oyster). Sites also include evidence of manos, metates, and core-cobble tools. Around 3,000 BP, fewer sites appear in the archaeological record in this region. This lack of prevalence is often attributed to an increase in sediment deposition around the mouths of the lagoons along the northern and central San Diego coast.

Are there any shell midden sites at the project area that date after 3,000 BP?

Hypothesis: Due to the location of the project area, it is unlikely that a site would represent late period site. If present, evidence would be represented by a site with minimal rocky-shore shellfish such as *Mytilus spp.*

Data Needs:

- Stratigraphic contexts that indicate the sites contain interpretable cultural strata that can be taken to represent the results of relatively short-term occupations or a single occupation that can be compared to other single occupation sites.
- Material suitable for radiocarbon dating from these contexts.

4.3.3 Historic Resource Eligibility

Historic research evolves around eligibility of a listing in a Register at the local, state, or national level. Eligibility is determined on the significance of a resource under the following four established criteria:

A. Associated with events that have made a significant contribution to the broad patterns of our history; or
B. Associated with the lives of persons significant in our past; or
C. Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction;

or

D. Yield, or may be likely to yield, information important in prehistory or history.

Are there any potentially eligible resources within the project area?

Hypothesis: Based on background research, it is unlikely that there will be eligible and/or significant historic resources observed.

Data Needs:

- Information on significant events in the general project area and/or the City of Carlsbad.
- Research identifying any important persons that may have been significant to the project area.
- Research identifying distinctive characteristics of the type, period, or method of construction, master or craftsman, or the high artistic value of the architecture in the City of Carlsbad.
- Understanding of the overall cultural landscape of the project area.

4.3.4 Historic Architectural Integrity

Integrity is the authenticity of a resource's physical identity clearly indicated by the retention of characteristics that existed during its period of significance and is related to the absence or presence of historic materials and character-defining features. It is important to note that integrity is not the same as condition. Integrity, in most cases, is more relevant in defining the significance of a resource than condition. The California Office of Historic Preservation (OHP) and the City of Carlsbad evaluates properties is based on the *National Register Bulletin: How to Apply the National Register Criteria for Evaluation* (Andrus and Shrimpton 2002) for the National Register of Historic Places (NRHP). The seven aspects of integrity follow:

1. **Location** is the place where the historic property was constructed or the place where the historic event occurred.
2. **Design** is the combination of elements that create the form, plan, space, structure, and style of a property.
3. **Setting** is the physical environment of a historic property.
4. **Materials** are the physical elements that were combined or deposited during a particular period and in a particular pattern or configuration to form a historic property.
5. **Workmanship** is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.
6. **Feeling** is a property's expression of the aesthetic or historic sense of a particular period.
7. **Association** is the direct link between an important historic event or person and a historic property.

Do the properties of 2754 and/or 2770 Jefferson Street possess any of the seven aspects of integrity?

Hypothesis: Based on background research, it is unlikely that the properties in question possess historic integrity.

Data Needs:

- Historical records and aerial photography
- Inspection of spatial arrangement of the existing structures and any unique architectural features, elements, material, and/or quality individually and in combination with the setting

5.0 METHODS

5.1 SURVEY METHODS

5.1.1 Historic Architecture Survey Methods

A pedestrian survey of the project APE was conducted on March 9, 2021 by Ms. Elizabeth E. Davidson, RPA. The project APE area was surveyed on foot in 5 to 10-meter parallel transect intervals. The project APE was primarily developed and occupied and covered with native and non-native grasses and vegetation; however, both structures were highly visible. The two structures were documented with digital photography.

As appropriate, a California State Department of Park and Recreation (DPR) 523 site form will be completed for each structure for submittal to the SCIC for assignment of site trinomials and inclusion into the archaeological record.

5.1.2 Cultural Resource Survey Methods

The cultural resource survey of the project area was conducted on March 25, 2021 by Elizabeth Davidson, RPA. Luiseno tribal representative, Jason Peralta, and Kumeyaay tribal representative, Eddie Carrera, served as Native American Monitors. The project area was surveyed using 10 to 15-meter (m) interval transects. There were no constraints during the survey. Upon discovery of a cultural resource, a hand-held GPS device would be used to document the location. For this study, the methods of recordation are described by type of resource below:

1) Isolates are characterized as a solitude cultural resource. These findings represent single diagnostic artifacts. These resources will be given a GPS point and a written description is logged for the record.

2) Sites are characterized by three or more cultural artifacts within a 10-meter radius. Generally, the artifacts should be of different material or typology as to not misrepresent an isolated activity as site. The site boundaries are established by finding the limits of where the resources are located; these boundaries are given GPS coordinates, GPS points of all individual resources within the site are taken, photographs are taken, a written description is logged for the record, and illustration of location and relative vicinity of artifacts are noted when possible.

3) Features are humanmade structures, such as a wall or a fire pit, or a grouping of items that represent a single action that contributes to the larger understanding of cultural activity, such as a pot drop or a cairn. These are recorded in the same manner as a site described above.

4) Traditional Cultural Properties and/or Resources (TCPs and TCRs) are generally part of the natural landscape but are culturally relevant and important. These would be recorded with GPS, photos and a written description of meaning and/or additional resources near the TCP/TCR.

5) Non-culturally altered resources are resources that are not archaeological but may lend information as to the history of the area and/or help assess the area for buried resources. These may include, but are not limited to shell, ecofacts, different types of lithic material, etc. Upon discovery, the steps outlined above would be followed. Diagnostic artifacts would be collected in the field and placed into Ziploc-like bags with their provenience noted as well as quantified when possible.

Upon the collection of artifacts, collected items will be taken back to the lab at the Loveless Linton, Inc. office, upon which they will be carefully washed and laid out to dry. After cleaning, each artifact will be categorized, and catalogued into an Excel spreadsheet. Artifacts will be categorized by function and material type. After cataloguing, the artifacts will be bagged into archival Ziploc-like by material and type. Labels will be created based on the information inputted into the Excel spreadsheet catalog and will be affixed to the inside of each archival bag. Each label contains the site number, object identification number, object name, material type, quantity, weight in grams, and any applicable comments. The artifacts will then be prepared for storage and curation according to San Diego Archaeological Center standards. The resources will be stored and curated at the San Diego Archaeological Center located at 16666 San Pasqual Valley Road, Escondido, California 92027.

As appropriate, post-field analysis would also include geospatial analysis as well as completion of a California State Department of Park and Recreation (DPR) 523 site form for submittal to the SCIC for assignment of primary number/s and/or site trinomial/s and inclusion into the archaeological record.

6.0 REPORT OF FINDINGS

6.1 FIELD OBSERVATIONS

Photographs and project records for historic architecture survey will be on file at the Loveless Linton, Inc. office in San Diego as well as attached in Appendix E of this report.

6.1.1 Historic Architecture Survey Results

2754 Jefferson Street

The residence is a standard 2-x-4-inch wood-frame house and is set on a reinforced concrete foundation. The roof is moderately pitched and hipped with a box eave overhang, composition singles and no chimney. The exterior is composed of ½-x -6-inch horizontal wood siding. with wood shingle siding, double hung windows. The entryway consists of a small porch area which measures approximately 5-x-7-feet. This area features the main entry with what appears to be the original solid wood door with window and two medium size wood porch columns. Recent upgrades include new windows on the west and south side of the structure and new composite roof shingles. The structure overall is in good condition.

2770 Jefferson Street

The residence is a standard 2-x-4-inch wood-frame house and is set on a reinforced concrete foundation. The southwest part of the structure has an interlocking low 2-foot brick wall in addition to the concrete foundation. The east side of the structure has a roof that is moderately pitched and hipped with a box eave overhang, composition singles and no chimney. The rest of the structure has a flat roof with composition shingles and an eave overhang in the front. The exterior is composed of ½-x-3-inch horizontal wood siding. with wood shingle siding, and double hung windows. The entryway does not a porch area. Recent upgrades include all new windows, wood composite siding, a front door, and new composite roof shingles. The structure overall is in good condition.

6.1.2 Cultural Resource Survey Results

Two previous archaeological investigations have been conducted within the project area. No known cultural resources were previously recorded within the project area. The project area appeared complete disturbed from residential development.

6.2 FINDINGS

6.2.1 Historic Architecture Findings

Both residential structures are over 45 years of age and therefore are considered historic resources requiring significance evaluation under CEQA guidelines. DPR523 series site records have been prepared for both residences due to their age. The records have been submitted to the SCIC for inclusion into the archaeological record (Appendix F – CONFIDENTIAL). At the time of

reporting, trinomials for the records are still pending.

Based on CEQA guidelines, it has been determined that the structures do not meet the Secretary of the Interior Standards to be considered a significant resource for listing in the NRHP. This determination is discussed in detail below in order of significance criteria.

Associated with events that have made a significant contribution to the broad patterns of our history.

The 2754 and 2770 Jefferson Street buildings do not possess special elements associated with events that have made a significant contribution to the broader history on a national, state or local level which are distinct among others of its kind or that surpasses the usual in significance. The structures were originally constructed as Craftsman style homes. Over the years, the structures have been modified and altered by the replacement of some of the original wood windows, doors, siding and roofing.

Associated with the lives of persons significant in our past.

No historical evidence was found which would suggest that the 2754 or 2770 Jefferson Street buildings were ever associated with any persons or events significant in local, state, or national history. None of the persons identified with the properties performed any activities, achievements or contributions which were demonstrably important within the City, state, or nation.

Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

The Jefferson Street buildings do not possess features sufficient to exemplify or reflect special elements of subdivision development. No historical evidence was identified which would support that the 2754 or 2770 Jefferson Street buildings exemplify or reflect development associated engineering, including professional engineering standards, engineering design ingenuity, or engineering disciplines. The buildings, therefore, are not significant with respect to any form of engineering development.

No historical evidence was identified which would support that the 2754 or 2770 Jefferson Street buildings exemplify or reflect development associated with the City's built environment, including architecture designed and constructed by non-architects, real estate developers, contractors, speculators, homeowners, and others associated with the buildings industry. The buildings, therefore, are not significant with respect to any form of architectural development.

Yield, or may be likely to yield, information important in prehistory or history.

No historical evidence was identified which would support that the 2754 or 2770 Jefferson Street buildings are likely to yield additional information important in history.

The research indicated that no historical evidence was identified which would support that the structures exemplify or reflect any special elements of Carlsbad's historical, archaeological, cultural, social, economic, political, aesthetic, engineering, landscaping or architectural development. The structures do not exemplify or reflect "special elements" of the City, community,

or neighborhood development any more than other existing structures (new or old) along Jefferson Street.

6.2.2 Cultural Resource Survey Findings

No cultural resources were identified during the cultural resource inventory survey. Based on the disturbed topography and field survey observations, there is a low potential for the presence of buried deposits.

6.2.3 Paleontological Findings

No formal paleontological investigation was conducted for this report. However, based on the high potential of unique invertebrate and/or vertebrate fossils (according to City of Carlsbad Sensitivity Model), it is recommended to consult with and conduct a record search with the San Diego Natural History Museum prior to all earth-moving activities within the project area.

7.0 DISCUSSION/INTERPRETATIONS

There is no indication that the existing properties within the project area possess significant architectural historic elements or features to them, thus project work, including demolition, would not dimmish the historic integrity of the building. Additionally, there were no known cultural resources present on the surface of the project area. Though the Sensitivity Model indicates that there is low probability of cultural resources within the project area, and no cultural resources were observed at the surface during the archaeological survey, excavation and grading activities may disturb buried subsurface archaeological or historic artifacts or features.

Furthermore, due to the high sensitivity level for paleontological resources, it is recommended to contact and confer with the San Diego Natural History Museum's paleontological staff to ensure that potentially surfaced paleontological resources be properly protected and/or collected.

If human remains are encountered at any time during construction or routine maintenance in the project APE, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has decided of origin and disposition pursuant to Public Resources Code Section 5097.98, so the County Coroner must be notified of the find immediately. If the remains are determined to be Native American, the County Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendant (MLD). The MLD may inspect the site of the discovery and shall complete the inspection within 24 hours of notification by the NAHC. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

8.0 MANAGEMENT CONSIDERATIONS

Based on the findings of this report, Loveless Linton, Inc. recommend the following actions for all future ground disturbing activities including, but not limited to, clearing, grubbing, grading, and utility trenching that will take place within the project area. See text below and reference TABLE 3.

1) Due to the lack of subsurface testing, it is recommended to have a qualified Archaeological Principal managing the project and a qualified archaeological monitor present.
2) Due to the interest and concerns form the local Native American community, it is recommended to further consult with interested tribal representatives, which should include, but is not limited to, sharing project construction plans and timelines, further consulting on specific concerns, and hiring a qualified local tribal representative for Native American Monitoring. We recommend, at a minimum, to reach out to the tribal representatives that have expressed interest as listed in Section 4.2 of this report.
3) Due to the lack of paleontological evaluation within the high sensitivity area, it is recommended to consult with and conduct a record search with the San Diego Natural History Museum prior to all earth-moving activities within the project area.

TABLE 3. Management and Mitigation Recommendations

2754 & 2770 Jefferson Street
Carlsbad, CA 92008
CEQA Findings and Recommended Management and Mitigation Table

Mitigation Measure	Evaluated Resources	Mitigation Measure Recommendations	Level of Significance with mitigation
H1	2754 Jefferson Street Structure	**None.**	Structure was found to be less than significant and therefore no mitigation is necessary. See Report for findings
	2770 Jefferson Street Structure	**None.**	Structure was found to be less than significant and therefore no mitigation is necessary. See Report for findings
CU1	Archaeological Cultural Resources	**Retain qualified Archaeologist** Due to location, age of the existing development, and the limit of the investigation being a survey that evaluated only the surface content it is recommended that a qualified archaeologists that meets the Secretary of the Interior standards be retained as Principal Investigator to manage the archaeological monitoring and mitigation	Less than Significant with Archaeological Management
CU2	Archaeological Cultural Resources	**Archaeological Monitoring** Due to location, age of the existing development, and the limit of the investigation being a survey that evaluated only the surface content it is recommended that a qualified archaeologists that meets the Secretary of the Interior standards be retained to manage the archaeological monitoring and mitigation	Less than Significant with Qualified Archaeological Monitoring
CU3	Tribal Cultural Resources	**Native American Monitoring** Due to location, the response to SB 18 notification letters, and the limit of the investigation being a survey that evaluated only the surface content it is recommended that the lead agency continue with the appropriate meaningful consultation with regionally appropriate tribal entities and have qualified regionally appropriate Native American monitors present during any and all ground disturbance	Less than Significant with Regionally Appropriate and Qualified Native American Monitoring
CU4	Discovery of Archaeological Recourses	**Ancestral (Human) Remains** If human remains are encountered at any time during construction or routine maintenance in the project APE, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has decided of origin and disposition pursuant to Public Resources Code Section 5097.98, so the County Coroner must be notified of the find immediately. If the remains are determined to be Native American, the County Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendant (MLD). The MLD may inspect the site of the discovery and shall complete the inspection within 24 hours of notification by the NAHC. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials. Project shall work with MLD to satisfy MLD requests and desired action to the best of their ability	Avoidance is always preferred, but if avoidance is not feasible the impacts will likely be Less than Significant when recommendations are followed.
PALEO1	Paleontological Resources	**Investigation and Monitoring** A record search and recommendations provided by qualified paleontologists is recommended prior to any ground disturbance.	Less Than Significant

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Appendix A

Principal Investigator Resumes

Loveless Linton, Inc.
Cultural Preservation & Archaeology

REBEKAH LOVELESS

M.A., RPA – ARCHAEOLOGIST PRINCIPAL INVESTIGATOR

EXPERTISE

- San Diego Archaeology
- Archaeological Methods
- Human Osteology (Bone ID)
- Project Management
- Regulatory Compliance
- Mitigation Development

EDUCATION

San Diego State University
San Diego, CA – 2013
M.A. – Anthropology / Human Osteology

California State University
San Diego, CA – 2006
B.A. – Anthropology / Human Osteology

PROFESSIONAL EXPERIENCE

Principal Investigator / Archaeologist / Osteologist
Loveless Linton, Inc.
San Diego, CA
2013 – Present

Supervising Archaeologist
K.P. Environmental
Cardiff, CA
2013

Archaeologist / Osteologist
HDR, EOC
San Diego, CA
2012

Supervising Archaeologist
ASM, Affiliates
Carlsbad, CA
2010 – 2012

Archaeologist / Osteologist
Laguna Mt., Environmental
San Diego, CA
2010 – 2012

Human Osteologist / Archaeologist / Lab Director
Golden State Environmental
San Diego, CA
2008 - 2010

BACKGROUND

Ms. Loveless has over 15 years of field and lab experience in Cultural Resources Management in addition to over 15 years of human osteology experience in San Diego and Imperial Counties. She is a Registered Professional Archaeologist (RPA) with an expertise in regulatory compliance, archaeological field work, cultural sensitivity, and human osteology. She exceeds the Secretary of the Interior's standards for archaeology. Her diverse roles in many archaeologist projects has led her to be well trained in many aspects of the profession. Performance duties include project management, surveys, monitoring, artifact identification and analysis, cataloguing, site assessment, testing, excavation, program development, evaluation for the National and State register, Native American consultation and coordination, mitigation development, peer review, and authorizing compliance documents. Ms. Loveless is also responsible for writing documents compliant under the California Environmental Quality Act (CEQA) and the National Historic Preservation Act (NHPA). She has worked on both private and public agency projects, including BLM, City of San Diego, San Diego Medical Examiner, San Diego Gas & Electric, local Tribal Governments and regularly communicates with the Native American Heritage Committee (NAHC). She continues to work closely with clients and Native American representatives to develop mitigation measures that are agreeable to all parties and conducive to project development while upholding the utmost respect and sensitivity for the resources and the people involved. With a strong understanding of environmental regulations and a passion for cultural concerns and project success, Ms. Loveless has developed relationships with all involved parties to cohesively and successfully complete projects of varied sizes and at all stages of developments.

PROJECT EXPERIENCE

CITY OF SAN DIEGO CAPITAL IMPROVEMENT PROJECTS

Ms. Loveless serves as the Principal Investigator for multiple City of San Diego Capital Improvement projects. Duties include project management, archival research, archaeological monitoring, recommendations, construction monitoring, osteological recommendations, construction monitoring, osteological identification/pre-sort and multi-party coordination. Various examples are provided in the Project Example document.

REBEKAH LOVELESS

M.A., RPA – ARCHAEOLOGIST
PRINCIPAL INVESTIGATOR

CERTIFICATIONS

Registered Professional Archaeologist (RPA)

San Diego City Approved Archaeological Monitor

RECOGNITIONS

Uniquely recognized by Kumeyaay Cultural Repatriation Committee (KCRC) as able to pre-sort, coordinate, and handle identification process of human remains.

Recognized by San Diego Medical Examiner's Office, Imperial Valley Coroner and contracted Forensic Anthropologist for ability to aid in the identification and coordination of identification of archaeological human remains.

PROFESSIONAL TRAINING

Association of Environmental Professionals (AEP): CEQA/NEPA and NAGPRA compliance training

Museum of Man Personnel, San Diego: Archaeological Human Bone Identification

San Diego Mesa College, San Diego: American Board of Forensic Anthropology Bone Identification

Arizona State University: Identification of Archaeological Human Remains

California Fish and Wildlife: Flat Tail Horned Lizard handling

PUBLICATIONS & RESEARCH

"Protocol for Repatriation of Deceased Migrants in San Diego County" – An archaeological, cultural, historical, and procedural review of San Diego's border and human movement, 2013.

"City of Imperial Regional Park and Equestrian Center Phase I Cultural Resources Study," 2014.

TORREY PINES NORTH GOLF COURSE IMPROVEMENTS

SAN DIEGO, CA

As Archaeological Principal Investigator, responsibilities included environmental team management, archaeological monitoring, scheduling, making recommendations for discoveries and communication with project management and Native American interests.

MORENA BLVD STATION PLANNING AREA

SAN DIEGO, CA

As Principal Investigator for the cultural section of City sponsored programmatic Environmental Impact Report (EIR) for urban development, Ms. Loveless oversaw design and directed the study and report under CEQA and local guidelines.

PRIVATE RESIDENT CONSTRUCTION

LA JOLLA, CA

As Project Osteologist, Ms. Loveless excavated osteological material and identified remains as potentially human, coordinated legal identification, and repatriation.

ROSELAND PIPELINE REPLACEMENT PROJECT

LA JOLLA, CA

As Lead Archaeologist and city approved monitor, Ms. Loveless supervised the monitoring of a gas pipeline replacement in an area that is known to be highly culturally sensitive. Ms. Loveless was responsible for knowing, understanding, and operating under CEQA, and local regulations and communicating any finds to the appropriate parties for compliance management.

SUNRISE POWERLINK PROJECT

SAN DIEGO & IMPERIAL COUNTIES

As Lead Archaeologist for a large 500kv transmission line construction project, Ms. Loveless was responsible for monitor coordination, artifact identification, construction monitoring and reporting.

COMPLIANCE MONITORING FOR VARIOUS SOLAR PROJECTS

IMPERIAL COUNTY

As part of the environmental compliance team for multiple alternative energy projects, Ms. Loveless supervised construction activities, monitored construction, and ensured the projects are compliant with state, local, and project specific regulations.

BORDER FIELD STATE PARK EXCAVATION

SAN DIEGO, CA

As part of a large-scale excavation for California State Parks, Ms. Loveless was tasked with archaeological excavation, identification of potential human remains, and lab operations.

* Additional Project Experience and References are available upon request.

Loveless Linton, Inc.
Cultural Preservation & Archaeology

BRANDON LINTON

CULTURAL PRINCIPAL INVESTIGATOR
TRIBAL MEMBER

EXPERTISE

- Cultural Landscape Analysis
- Artifact Analysis
- Project Design
- San Diego Native American History
- Human Osteology (Bone ID)
- Tribal Lands
- Native American / Archaeological Regulatory Compliance
- Mitigation Support

EDUCATION

San Diego Mesa College
San Diego, CA
Archaeological Faunal Analysis

San Diego State University
San Diego, CA
Human Osteology
2006

Pechanga Indian Reservation
Cultural Monitoring Program: Artifact identification, analysis, & archaeological methods
Temecula, CA
2004

PROFESSIONAL EXPERIENCE

Loveless Linton, Inc.
Cultural Principal Investigator / Tribal Liaison San Diego, CA
2013 – Present

Red Tail Monitoring and Research
Lead Native American Monitor / Archaeologist / Project Development
Santa Ysabel, CA
2004 – 2009

Pechanga Indian Reservation
Project Manager / Lead Tribal Monitor
Temecula, CA
2000 - 2004

BACKGROUND

Mr. Linton has over 17 years of experience in the field of cultural resources management working as both a Native American monitor and an archaeologist. He is also an active Tribal Member of the Mesa Grande Band of Mission Indians of San Diego, CA. His specializations include Native American cultural resources and concerns, Human Osteology, Cultural Compliance, and Native American lands.
As Cultural Principal Investigator at Loveless Linton, Inc., he has been responsible for an array of tasks that include project development, project management, cultural coordination and consultation, field work, artifact analysis, and repatriation. He developed his archaeological skills by working with knowledgeable archaeologists and participating in all stages of archaeological field work including planning, surveying, excavation, recordation, and analysis.
Mr. Linton is familiar with all governing compliance regulations including California Environmental Quality Act (CEQA), National Historic Preservation Act (NHPA), Native American Graves and Repatriation Act (NAGPRA), Section 106, Senate Bill 18 (SB18), Assembly Bill 52 (AB52), Health and Safety Code (HSC) 7050.5 and relating regulatory codes.

Currently, Mr. Linton focuses on cultural resources management in San Diego, CA, and continues to manage project design, mitigation and mediation including tribal consultation, archaeological field work, and monitoring relative to construction activities in both the public and private sectors.

PROJECT EXPERIENCE

CITY OF SAN DIEGO CAPITAL IMPROVEMENT PROJECTS

Mr. Linton currently serves as Cultural Principal Investigator, Tribal Liaison, and Project Manager for multiple City of San Diego Capital Improvement projects. Duties include project management, tribal coordination, ethnographic research, artifact identification, cultural landscape analysis, Native American monitoring, recommendations, and construction monitoring. Current, upcoming, and past projects include, but are not limited to the following:

- Torrey Pines North Golf Course Improvements
- Sewer and Water Group Job(GJ) 809, La Jolla, CA
- Sewer and Water GJ695, Golden Hill, CA
- Sewer and Water GJ 940, College Area, CA
- Sewer and Water Design Build AC 1016, Point Loma, CA
- Sewer and Water Design Build AC 816, Pacific Beach, CA
- Alta La Jolla Drainage/Culvert Replacement, La Jolla, CA
- Water Replacement AC 840, Encanto, CA
- Sewer GJ 721, Ocean Beach, CA
- Sewer and Water GJ 778, San Diego, CA
- Pacific Beach Pipeline, Point Loma, CA

BRANDON LINTON

CULTURAL PRINCIPAL INVESTIGATOR
TRIBAL MEMBER

RECOGNITIONS

San Diego City Approved Archaeological and Native American Monitor

Kumeyaay Cultural Repatriation Committee Delegate

PROFESSIONAL TRAINING

Museum of Man Personnel, San Diego: Archaeological Human Bone Identification

Pechanga Indian Reservation

Cultural Resources and Native American Monitoring: Archaeological methods, artifact analysis, project compliance, and mitigation.

- Upas Pipeline Replacement sections 01, 06 and 07, San Diego, CA
- Johnson Avenue Sewer Replacement Project, El Cajon, CA
- Sewer and Water GJ 835, San Diego, CA

TORREY PINES NORTH GOLF COURSE IMPROVEMENTS
As Cultural Principal Investigator, responsibilities included tribal communication, coordination and supervising Native American monitoring. Additionally, Mr. Linton regularly attended weekly meetings and worked closely with management to avoid conflicts.

COUNTY OF IMPERIAL EQUESTRIAN CENTER
As Cultural Principal Investigator, responsibilities included Native American monitoring, NAHC communication, tribal communication efforts, and conducting a cultural resources survey with Archaeological P.I. Rebekah Loveless. They worked together post-survey to provide a report and a recommended mitigation program for the survey area.

MORENA BLVD STATION PLANNING AREA SAN DIEGO, CA
As Lead Tribal Liaison for the cultural section of City sponsored programmatic Environmental Impact Report (EIR) for urban development, Mr. Linton coordinates design input, cultural landscape analysis, and the Native American participation program.

PARDEE HOMES HORSE RANCH PROJECT SAN DIEGO, CA
As a Project Archaeologist and Native American Monitor, Mr. Linton was responsible for supervising the archaeologists during the process of identifying potential human remains. He assisted in designing a protocol that ensured quick, respectful identification results. He also handled the communication with Native American parties, archaeologists, and developers.

SUNRISE POWERLINK – SAN DIEGO & IMPERIAL COUNTIES
As Lead Native American Monitor for the rout survey of a large 500kv transmission line project, Mr. Linton was responsible for monitor coordination, artifact identification, proposal analysis, and recommendations.

BORDER FIELD STATE PARK EXCAVATION SAN DIEGO, CA
As part of a large-scale excavation for California State Parks, Mr. Linton was tasked with managing the Native American monitoring portion of the project, identification of potential human remains, project mitigation, and reporting.

PECHANGA CULTURAL MONITORING
SAN DIEGO & RIVERSIDE COUNTIES
As Lead Cultural Monitor, Mr. Linton was responsible for additional monitors, site monitoring, artifact identification, coordination between archaeologists and Native American monitors, developing and teaching archaeological methodology course to Native American monitors, excavation and recordation of sites, etc.

* Additional Project Experience and References are available upon request.

Appendix B
SCIC Receipt

South Coastal Information Center
San Diego State University
5500 Campanile Drive
San Diego, CA 92182-5320
Office: (619) 594-5682
www.scic.org
scic@mail.sdsu.edu

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM
CLIENT IN-HOUSE RECORDS SEARCH

Company: Loveless Linton Consulting

Company Representative: Juliette Meling

Date: 3/5/2021

Project Identification: Carlsbad Scarpelli Project

Search Radius: 1/4 mile

Historical Resources: SELF

Trinomial and Primary site maps have been reviewed. All sites within the project boundaries and the specified radius of the project area have been plotted. Copies of the site record forms have been included for all recorded sites.

Previous Survey Report Boundaries: SELF

Project boundary maps have been reviewed. National Archaeological Database (NADB) citations for reports within the project boundaries and within the specified radius of the project area have been included.

Historic Addresses: SELF

A map and database of historic properties (formerly Geofinder) has been included.

Historic Maps: N/A

The historic maps on file at the South Coastal Information Center have been reviewed, and copies have been included.

Copies: 13

Hours: 1 - JL

This is not an invoice. Please pay from the monthly billing statement

Appendix C
NAHC Correspondence

Sacred Lands File & Native American Contacts List Request

Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
916-373-3710
916-373-5471 – Fax
nahc@nahc.ca.gov
Information Below is Required for a Sacred Lands File Search

Project: Carlsbad Scarpelli

County: San Diego

USGS Quadrangle Name: San Luis Rey

Township: 12S **Range:** 4W **Section(s):** 5

Company/Firm/Agency: Loveless Linton, Inc.

Street Address: 1421 W. Lewis Street

City: San Diego **Zip:** 92103

Phone: 619-922-0718

Fax: n/a

Email: Rebekah@loveless-linton.com

Project Description: The proposed development consists of razing the two existing structures and preparing the site to receive a two- (2-)story commercial/office building and a two- (2-)story, four- (4-) unit multi-family residential building. Below-grade floor levels are not proposed. Ancillary site improvements such as underground utilities and pedestrian, and vehicular pavements will also be included in the proposed development. GSI anticipates that the proposed structures will consist of wood frames with concrete slab-on-grade floors.

Scarpelli Project Area

1:24,000

Loveless Linton, Inc.
Cultural Preservation and Archaeology

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

March 16, 2021

Juliette Meling
Loveless Linton, Inc.

Via Email to: Rebekah@loveless-linton.com

Re: Carlsbad Scarpelli Project, San Diego County

Dear Ms. Meling:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were positive. Please contact the La Jolla Band of Luiseno Indians and the San Luis Rey Band of Mission Indians on the attached list for more information. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
San Diego County
3/16/2021

Barona Group of the Capitan Grande
Edwin Romero, Chairperson
1095 Barona Road — Diegueno
Lakeside, CA, 92040
Phone: (619) 443 - 6612
Fax: (619) 443-0681
cloyd@barona-nsn.gov

Campo Band of Diegueno Mission Indians
Ralph Goff, Chairperson
36190 Church Road, Suite 1 — Diegueno
Campo, CA, 91906
Phone: (619) 478 - 9046
Fax: (619) 478-5818
rgoff@campo-nsn.gov

Ewiiaapaayp Band of Kumeyaay Indians
Robert Pinto, Chairperson
4054 Willows Road — Diegueno
Alpine, CA, 91901
Phone: (619) 445 - 6315
Fax: (619) 445-9126
wmicklin@leaningrock.net

Ewiiaapaayp Band of Kumeyaay Indians
Michael Garcia, Vice Chairperson
4054 Willows Road — Diegueno
Alpine, CA, 91901
Phone: (619) 445 - 6315
Fax: (619) 445-9126
michaelg@leaningrock.net

Iipay Nation of Santa Ysabel
Clint Linton, Director of Cultural Resources
P.O. Box 507 — Diegueno
Santa Ysabel, CA, 92070
Phone: (760) 803 - 5694
cjlinton73@aol.com

Iipay Nation of Santa Ysabel
Virgil Perez, Chairperson
P.O. Box 130 — Diegueno
Santa Ysabel, CA, 92070
Phone: (760) 765 - 0845
Fax: (760) 765-0320

Inaja-Cosmit Band of Indians
Rebecca Osuna, Chairperson
2005 S. Escondido Blvd. — Diegueno
Escondido, CA, 92025
Phone: (760) 737 - 7628
Fax: (760) 747-8568

Jamul Indian Village
Erica Pinto, Chairperson
P.O. Box 612 — Diegueno
Jamul, CA, 91935
Phone: (619) 669 - 4785
Fax: (619) 669-4817
epinto@jiv-nsn.gov

Jamul Indian Village
Lisa Cumper, Tribal Historic Preservation Officer
P.O. Box 612 — Diegueno
Jamul, CA, 91935
Phone: (619) 669 - 4855
lcumper@jiv-nsn.gov

Kwaaymii Laguna Band of Mission Indians
Carmen Lucas,
P.O. Box 775 — Kwaaymii
Pine Valley, CA, 91962 — Diegueno
Phone: (619) 709 - 4207

La Jolla Band of Luiseno Indians
Norma Contreras, Chairperson
22000 Highway 76 — Luiseno
Pauma Valley, CA, 92061
Phone: (760) 742 - 3771

La Posta Band of Diegueno Mission Indians
Javaughn Miller, Tribal Administrator
8 Crestwood Road — Diegueno
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
jmiller@LPtribe.net

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Carlsbad Scarpelli Project, San Diego County.

La Posta Band of Diegueno Mission Indians
Gwendolyn Parada, Chairperson
8 Crestwood Road — Diegueno
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
LP13boots@aol.com

Manzanita Band of Kumeyaay Nation
Angela Elliott Santos, Chairperson
P.O. Box 1302 — Diegueno
Boulevard, CA, 91905
Phone: (619) 766 - 4930
Fax: (619) 766-4957

Mesa Grande Band of Diegueno Mission Indians
Michael Linton, Chairperson
P.O Box 270 — Diegueno
Santa Ysabel, CA, 92070
Phone: (760) 782 - 3818
Fax: (760) 782-9092
mesagrandeband@msn.com

Pala Band of Mission Indians
Shasta Gaughen, Tribal Historic Preservation Officer
PMB 50, 35008 Pala Temecula Rd. — Cupeno, Luiseno
Pala, CA, 92059
Phone: (760) 891 - 3515
Fax: (760) 742-3189
sgaughen@palatribe.com

Pauma Band of Luiseno Indians
Temet Aguilar, Chairperson
P.O. Box 369 — Luiseno
Pauma Valley, CA, 92061
Phone: (760) 742 - 1289
Fax: (760) 742-3422
bennaecalac@aol.com

Pechanga Band of Luiseno Indians
Mark Macarro, Chairperson
P.O. Box 1477 — Luiseno
Temecula, CA, 92593
Phone: (951) 770 - 6000
Fax: (951) 695-1778
epreston@pechanga-nsn.gov

Pechanga Band of Luiseno Indians
Paul Macarro, Cultural Resources Coordinator
P.O. Box 1477 — Luiseno
Temecula, CA, 92593
Phone: (951) 770 - 6306
Fax: (951) 506-9491
pmacarro@pechanga-nsn.gov

Rincon Band of Luiseno Indians
Cheryl Madrigal, Tribal Historic Preservation Officer
One Government Center Lane — Luiseno
Valley Center, CA, 92082
Phone: (760) 297 - 2635
crd@rincon-nsn.gov

Rincon Band of Luiseno Indians
Bo Mazzetti, Chairperson
One Government Center Lane — Luiseno
Valley Center, CA, 92082
Phone: (760) 749 - 1051
Fax: (760) 749-5144
bomazzetti@aol.com

San Luis Rey Band of Mission Indians
San Luis Rey, Tribal Council
1889 Sunset Drive — Luiseno
Vista, CA, 92081
Phone: (760) 724 - 8505
Fax: (760) 724-2172
cjmojado@slrmissionindians.org

San Luis Rey Band of Mission Indians
1889 Sunset Drive — Luiseno
Vista, CA, 92081
Phone: (760) 724 - 8505
Fax: (760) 724-2172
cjmojado@slrmissionindians.org

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Carlsbad Scarpelli Project, San Diego County.

Native American Heritage Commission
Native American Contact List
San Diego County
3/16/2021

San Pasqual Band of Diegueno Mission Indians
John Flores, Environmental Coordinator
P. O. Box 365 — Diegueno
Valley Center, CA, 92082
Phone: (760) 749 - 3200
Fax: (760) 749-3876
johnf@sanpasqualtribe.org

San Pasqual Band of Diegueno Mission Indians
Allen Lawson, Chairperson
P.O. Box 365 — Diegueno
Valley Center, CA, 92082
Phone: (760) 749 - 3200
Fax: (760) 749-3876
allenl@sanpasqualtribe.org

Soboba Band of Luiseno Indians
Isaiah Vivanco, Chairperson
P. O. Box 487 — Cahuilla
San Jacinto, CA, 92581 — Luiseno
Phone: (951) 654 - 5544
Fax: (951) 654-4198
ivivanco@soboba-nsn.gov

Soboba Band of Luiseno Indians
Joseph Ontiveros, Cultural Resource Department
P.O. BOX 487 — Cahuilla
San Jacinto, CA, 92581 — Luiseno
Phone: (951) 663 - 5279
Fax: (951) 654-4198
jontiveros@soboba-nsn.gov

Sycuan Band of the Kumeyaay Nation
Kristie Orosco, Kumeyaay Resource Specialist
1 Kwaaypaay Court — Kumeyaay
El Cajon, CA, 92019
Phone: (619) 445 - 6917

Sycuan Band of the Kumeyaay Nation
Cody Martinez, Chairperson
1 Kwaaypaay Court — Kumeyaay
El Cajon, CA, 92019
Phone: (619) 445 - 2613
Fax: (619) 445-1927
ssilva@sycuan-nsn.gov

Viejas Band of Kumeyaay Indians
John Christman, Chairperson
1 Viejas Grade Road — Diegueno
Alpine, CA, 91901
Phone: (619) 445 - 3810
Fax: (619) 445-5337

Viejas Band of Kumeyaay Indians
Ernest Pingleton, Tribal Historic Officer, Resource Management
1 Viejas Grade Road — Diegueno
Alpine, CA, 91901
Phone: (619) 659 - 2314
epingleton@viejas-nsn.gov

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Carlsbad Scarpelli Project, San Diego County.

Appendix D

Correspondence with Native American Community

Loveless Linton, Inc.
Cultural Preservation and Archaeology

3/26/2021

To:
Barona Group of the Capitan Grande
Edwin Romero, Chairperson
1095 Barona Road
Lakeside, CA, 92040
Phone: (619) 443 - 6612
Fax: (619) 443-0681
cloyd@barona-nsn.gov

From:
Loveless Linton, Inc.
1421 W. Lewis Street
San Diego, CA 92103

Re: Scarpelli Project – City of Carlsbad, San Diego County, California

Loveless Linton, Inc. wishes to inform the Barona Group of the Capitan Grande regarding the Scarpelli Project located at 2754 & 2770 Jefferson Street, City of Carlsbad, California (see attached map). This notification is in accordance with Public Resources Code Section 21080.3.1 and 21080.3.2 which requires a formal notification be provided to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice. Your contact information was provided by the Native American Heritage Commission (NAHC) as a tribe that has requested notice. The Sacred Lands File search conducted by the NAHC was positive for the area surrounding the project.

The proposed project includes demolition of existing structure and landscape and development of a two-story commercial/office building and two-story, four-unit multi-family residential building. Other site improvements include underground utilities and pedestrian and vehicular pavements. Below grade floor levels are not proposed.

A records search was completed by Loveless Linton, Inc. for the property on March 5, 2021. The record search indicated there are no known cultural resources in the project area. However, there are two known archaeological sites (P-37-000627 and P-37-038297) within a ¼-mile of the project area.

P-37-000627 is a prehistoric camp site that was recorded by Malcolm Rogers. There is relatively no information about the site other than that it was mostly destroyed. The site has not been updated since.

P-37-038297 is a light scatter of historic artifacts. Observed artifacts include trace amounts of historic bottle glass, shell fragments including *Chione spp.*, *Argopecten spp.*, *Ostrea spp.*, *Mytilus spp.*, and *Donnax spp.,* and small amounts of unidentified bone fragments that were

documented as non-human faunal bone. This site was located during an archaeological survey of a residential lot. The site appeared to be relatively disturbed.

If the Barona Group of Capitan Grande has any additional information regarding the property and whether there are any traditional cultural properties present, or questions or comments, Loveless Linton, Inc. request to be contacted within 30 days of receipt of this letter. Please feel free to contact either myself, Rebekah Loveless or Brandon Linton at rebekah@loveless-linton.com for any additional information about this project.

Respectfully,

Rebekah Loveless, M.A., RPA,
Principal Investigator

Brandon Linton,
Cultural Principal Investigator

Loveless Linton, Inc.
Cultural Preservation and Archaeology

Scarpelli Project Area

Rincon Band of Luiseño Indians
CULTURAL RESOURCES DEPARTMENT

One Government Center Lane | Valley Center | CA 92082
(760) 749-1051 | Fax: (760) 749-8901 | rincon-nsn.gov

April 23, 2021

Sent via email to: rebekah@loveless-linton.com

Re: Scarpelli Project – City of Carlsbad

Dear Ms. Loveless,

This letter is written on behalf of the Rincon Band of Luiseño Indians ("Rincon Band" or "Band"), a federally recognized Indian Tribe and sovereign government. We have received your notification regarding the above referenced project and we thank you for the opportunity to provide information pertaining to cultural resources. The identified location is within the Traditional Use Area of the Luiseño people, and is also within Rincon's specific Area of Historic Interest (AHI).

After review of the provided documents and our internal information, the Band has specific concerns that that the project may impact tangible Tribal Cultural Resources (TCRs), Traditional Cultural Landscapes (TCLs), and potential Traditional Cultural Properties (TCPs). Embedded in these resources and within the AHI are Rincon's history, culture, and continuing traditional identity.

Based on the information provided above, the Rincon Band recommends conducting an archaeological/cultural resources study, to include an archeological record search and complete intensive survey of the property. Additionally, we ask that a professional Tribal monitor from the Rincon Band to accompany the archaeologist during the survey.

The Rincon Band further requests to consult directly with the lead agency regarding project impacts to cultural resources. While it is not the responsibility of the consultant to facilitate State-mandated consultation, the request is included in this letter so the lead agency is aware of the Band's concerns about the project. If you have additional questions or concerns, please do not hesitate to contact our office at your convenience at (760) 297-2635 or via electronic mail at cmadrigal@rincon-nsn.gov. We look forward to working together to protect and preserve our cultural assets.

Sincerely,

Cheryl Madrigal
Tribal Historic Preservation Officer
Cultural Resources Manager

FW: Scarpelli Project, Carlsbad - Notification

Ray Teran <rteran@viejas-nsn.gov>

Fri 3/26/2021 1:13 PM

To: juliette loveless-linton.com <juliette@loveless-linton.com>
Cc: Ernest Pingleton <epingleton@viejas-nsn.gov>

1 attachments (555 KB)

Viejas Band of Kumeyaay Indians B.pdf;

In reviewing the above referenced project the Viejas Band of Kumeyaay Indians ("Viejas") would like to comment at this time.

The project area may contain many sacred sites to the Kumeyaay people. We request that these sacred sites be avoided with adequate buffer zones.

Additionally, Viejas is requesting, as appropriate, the following:

- All NEPA/CEQA/NAGPRA laws be followed
- Immediately contact Viejas on any changes or inadvertent discoveries.

Please call Ernest Pingleton at 619-659-2314 or email, epingleton@viejas-nsn.gov, for additional information. Thank you.

From: Ernest Pingleton
Sent: Friday, March 26, 2021 1:08 PM
To: Ray Teran <rteran@viejas-nsn.gov>
Subject: Fwd: Scarpelli Project, Carlsbad - Notification

Sent from my iPhone

Begin forwarded message:

> **From:** "juliette loveless-linton.com" <juliette@loveless-linton.com>
> **Date:** March 26, 2021 at 12:01:12 PM PDT
> **To:** Ernest Pingleton <epingleton@viejas-nsn.gov>
> **Subject: Scarpelli Project, Carlsbad - Notification**
>
> Good Afternoon Tribal Historic Officer Ernest Pingleton,
>
> On behalf of Loveless Linton, Inc., please see the attached letter notifying you of a proposed project in the City of Carlsbad.
>
> Thank you for your time,
> Juliette Meling
> Loveless Linton, Inc.
> juliette@loveless-linton.com

SAN PASQUAL BAND OF MISSION INDIANS

SAN PASQUAL RESRVATION

April 24, 2021

Loveless Linton Inc.
1421 W Lewis Street
San Diego CA. 92103

RE: Scarpelli Project City of Carlsbad

Dear Loveless Linton,

The San Pasqual Band of Mission Indians Tribal Historic Preservation Office has received your notification of the project referenced above. This letter constitutes our response on behalf of Desiree Morales Whitman THPO Officer.

We have consulted our maps and determined that the project as described is not within the boundaries of the recognize San Pasqual Indian Reservation. The project is within the boundaries of the territory that the tribe considers its Traditional Use Area (TUA). Furthermore, we would like to engage consultation so that San Pasqual can have a voice in the developing the measures that will be taken to protect these sites and mitigate any adverse impacts. We would appreciate being given access to any cultural resource reports that have been or will be generated during the environmental review process so we can contribute most effectively to the consultation process.

We appreciate involvement with your initiative and look forward to working with you on future efforts. If you have questions or need additional information, please do not hesitate to contact me by telephone 760-803-5648 or by e-mail at Angelinag@sanpasqualtribe.org and please CC: THPO@sanpasqualtribe.org

Respectfully,

Angelina Gutierrez

Angelina Gutierrez
Tribal Historic Preservation Office, Monitor Supervisor
San Pasqual Band of Mission Indians

Scarpelli Project - NAHC Contact Form

2754 & 2770 Jefferson Street, City of Carlsbad, San Diego County, California

Date of Correspondence with NAHC: March 5, 2021
Date of NAHC Response: March 25, 2021
SLF Results: Positive
SLF Contacts: La Jolla Band of Luiseno Indians and San Luis Rey Band of Mission Indians

All Contacts:

Contact Information	First Attempt		Additional Attempt/s		Notes
	Contact Method	Date	Contact Method	Date	
Barona Group of the Capitan Grande Edwin Romero, Chairperson 1095 Barona Road Lakeside, CA, 92040 Phone: (619) 443 - 6612 Fax: (619) 443-0681 cloyd@barona-nsn.gov	email	3/26/2021	hard-copy letter	4/2/2021	3/26: email address did not work. Reached out to counciloffice@barona-nsn.gov for proper contact
Campo Band of Diegueno Mission Indians Ralph Goff, Chairperson 36190 Church Road, Suite 1 Campo, CA, 91906 Phone: (619) 478 - 9046 Fax: (619) 478-5818 rgoff@campo-nsn.gov	email	3/26/2021	hard-copy letter and follow up email	4/2/2021	3/26: email address did not work. Reached out to hceuro@campo-nsn.gov (Vice Chair) for proper contact info. 4/2/21: email send to MarcusCuero@campo-nsn.gov
Ewiiaapaayp Band of Kumeyaay Indians Robert Pinto, Chairperson 4054 Willows Road Alpine, CA, 91901 Phone: (619) 445 - 6315 Fax: (619) 445-9126 wmicklin@leaningrock.net	email	3/26/2021	hard-copy letter and follow up email	4/2/2021	

Ewiiaapaayp Band of Kumeyaay Indians Michael Garcia, Vice Chairperson 4054 Willows Road Alpine, CA, 91901 Phone: (619) 445 - 6315 Fax: (619) 445-9126 michaelg@leaningrock.net	email	3/26/2021	hard-copy letter and follow up email	4/2/2021	
Iipay Nation of Santa Ysabel Clint Linton, Director of Cultural Resources P.O. Box 507 Santa Ysabel, CA, 92070 Phone: (760) 803 - 5694 cjlinton73@aol.com	email	3/26/2021	hard-copy letter and follow up email	4/2/2021	
Iipay Nation of Santa Ysabel Virgil Perez, Chairperson P.O. Box 130 Santa Ysabel, CA, 92070 Phone: (760) 765 - 0845 Fax: (760) 765-0320	hard-copy letter	4/2/2021	phone conversation stated to email bpaipa@iipaynation-nsn.gov. email was sent	4/12/2021	
Inaja-Cosmit Band of Indians Rebecca Osuna, Chairperson 2005 S. Escondido Blvd. Escondido, CA, 92025 Phone: (760) 737 - 7628 Fax: (760) 747-8568	hard-copy letter	4/2/2021	phone conversation with vice chair Lisa Contreras	4/12/2021	4/12/2021: Inaja-Cosmit Band of Indians has no questions, comments, or concerns about the project due to the vicinity of the project being far away from their traditional tribal lands.
Jamul Indian Village Erica Pinto, Chairperson P.O. Box 612 Jamul, CA, 91935 Phone: (619) 669 - 4785 Fax: (619) 669-4817 epinto@jiv-nsn.gov	email	3/26/2021	hard-copy letter and follow up email	4/2/2021	
Jamul Indian Village Lisa Cumper, Tribal Historic Preservation Officer P.O. Box 612 Jamul, CA, 91935 Phone: (619) 669 - 4855 lcumper@jiv-nsn.gov	email	3/26/2021	hard-copy letter and follow up email	4/2/2021	

Kwaaymii Laguna Band of Mission Indians Carmen Lucas, P.O. Box 775 Pine Valley, CA, 91962 Phone: (619) 709 - 4207	hard-copy letter	4/2/2021	left voice message	4/12/2021	
La Jolla Band of Luiseno Indians Norma Contreras, Chairperson 22000 Highway 76 Pauma Valley, CA, 92061 Phone: (760) 742 - 3771	hard-copy letter	4/2/2021	left voice message	4/12/2021	
La Posta Band of Diegueno Mission Indians Javaughn Miller, Tribal Administrator 8 Crestwood Road Boulevard, CA, 91905 Phone: (619) 478 - 2113 Fax: (619) 478-2125 jmiller@LPtribe.net	email	3/26/2021	hard-copy letter and follow up email	4/2/2021	
La Posta Band of Diegueno Mission Indians Gwendolyn Parada, Chairperson 8 Crestwood Road Boulevard, CA, 91905 Phone: (619) 478 - 2113 Fax: (619) 478-2125 LP13boots@aol.com	email	3/26/2021	hard-copy letter and follow up email	4/2/2021	
Manzanita Band of Kumeyaay Nation Angela Elliott Santos, Chairperson P.O. Box 1302 Boulevard, CA, 91905 Phone: (619) 766 - 4930 Fax: (619) 766-4957	hard-copy letter	4/2/2021	left voice message	4/12/2021	
Mesa Grande Band of Diegueno Mission Indians Michael Linton, Chairperson P.O Box 270 Santa Ysabel, CA, 92070 Phone: (760) 782 - 3818 Fax: (760) 782-9092 mgbomi@mesagrandeband-nsn.gov	email	4/2/2021	hard-copy letter and follow up email	4/2/2021	

Pala Band of Mission Indians Shasta Gaughen, Tribal Historic Preservation Officer PMB 50, 35008 Pala Temecula Rd. Pala, CA, 92059 Phone: (760) 891 - 3515 Fax: (760) 742-3189 sgaughen@palatribe.com	email	3/26/2021	hard-copy letter and follow up email	4/2/2021	
Pauma Band of Luiseno Indians Temet Aguilar, Chairperson P.O. Box 369 Pauma Valley, CA, 92061 Phone: (760) 742 - 1289 Fax: (760) 742-3422 bennaecalac@aol.com	email	3/26/2021	hard-copy letter and follow up email	4/2/2021	
Pechanga Band of Luiseno Indians Mark Macarro, Chairperson P.O. Box 1477 Temecula, CA, 92593 Phone: (951) 770 - 6000 Fax: (951) 695-1778 epreston@pechanga-nsn.gov	email	3/26/2021	hard-copy letter and follow up email	4/2/2021	
Pechanga Band of Luiseno Indians Paul Macarro, Cultural Resources Coordinator P.O. Box 1477 Temecula, CA, 92593 Phone: (951) 770 - 6306 Fax: (951) 506-9491 pmacarro@pechanga-nsn.gov	email	3/26/2021	hard-copy letter and follow up email	4/2/2021	

Rincon Band of Luiseno Indians Cheryl Madrigal, Tribal Historic Preservation Officer One Government Center Lane Valley Center, CA, 92082 Phone: (760) 297 - 2635 crd@rincon-nsn.gov	email	3/26/2021	hard-copy letter and follow up email	4/2/2021	4/23/2021: Rincon Band of Luiseno Indians stated that they have specific concerns that that the project may impact tangible Tribal Cultural Resources (TCRs), Traditional Cultural Landscapes (TCLs), and potential Traditional Cultural Properties (TCPs). The Rincon Band recommends conducting an archaeological/cultural resources study, to include an archeological record search and complete intensive survey of the property. Additionally, they ask for a professional Tribal monitor from the Rincon Band to accompany the archaeologist during the survey. The Rincon Band further requests to consult directly with the lead agency regarding project impacts to cultural resources.
Rincon Band of Luiseno Indians Bo Mazzetti, Chairperson One Government Center Lane Valley Center, CA, 92082 Phone: (760) 749 - 1051 Fax: (760) 749-5144 bomazzetti@aol.com	email	3/26/2021	hard-copy letter and follow up email	4/2/2021	see comments above
San Luis Rey Band of Mission Indians San Luis Rey, Tribal Council 1889 Sunset Drive Vista, CA, 92081 Phone: (760) 724 - 8505 Fax: (760) 724-2172 cjmojado@slrmissionindians.org	email	3/26/2021	hard-copy letter and follow up email	4/2/2021	

San Pasqual Band of Diegueno Mission Indians John Flores, Environmental Coordinator P. O. Box 365 Valley Center, CA, 92082 Phone: (760) 749 - 3200 Fax: (760) 749-3876 johnf@sanpasqualtribe.org	email	3/26/2021	hard-copy letter and follow up email	4/2/2021	4/24/21: stated via letter that the project is within the bounds of their Traditional Use Area and would like to engage consultation . They would also like to be given access to any Cultural Resource Reports that may be generated so that they can contribute.
San Pasqual Band of Diegueno Mission Indians Allen Lawson, Chairperson P.O. Box 365 Valley Center, CA, 92082 Phone: (760) 749 - 3200 Fax: (760) 749-3876 allenl@sanpasqualtribe.org	email	3/26/2021	hard-copy letter and follow up email	4/2/2021	
Soboba Band of Luiseno Indians Isaiah Vivanco, Chairperson P. O. Box 487 San Jacinto, CA, 92581 Phone: (951) 654 - 5544 Fax: (951) 654-4198 ivivanco@soboba-nsn.gov	email	3/26/2021	hard-copy letter and follow up email	4/2/2021	
Soboba Band of Luiseno Indians Joseph Ontiveros, Cultural Resource Department P.O. BOX 487 San Jacinto, CA, 92581 Phone: (951) 663 - 5279 Fax: (951) 654-4198 jontiveros@soboba-nsn.gov	email	3/26/2021	hard-copy letter and follow up email	4/2/2021	
Sycuan Band of the Kumeyaay Nation Kristie Orosco, Kumeyaay Resource Specialist 1 Kwaaypaay Court El Cajon, CA, 92019 Phone: (619) 445 - 6917 korosco@sycuan-nsn.gov	email	3/26/2021	hard-copy letter and follow up email	4/2/2021	

Sycuan Band of the Kumeyaay Nation Cody Martinez, Chairperson 1 Kwaaypaay Court El Cajon, CA, 92019 Phone: (619) 445 - 2613 Fax: (619) 445-1927 ssilva@sycuan-nsn.gov	email	3/26/2021	hard-copy letter and follow up email	4/2/2021	
Viejas Band of Kumeyaay Indians John Christman, Chairperson 1 Viejas Grade Road Alpine, CA, 91901 Phone: (619) 445 - 3810 Fax: (619) 445-5337 jchristman@viejas-nsn.gov	email	3/26/2021			see comments below
Viejas Band of Kumeyaay Indians Ernest Pingleton, Tribal Historic Officer, Resource Management 1 Viejas Grade Road Alpine, CA, 91901 Phone: (619) 659 - 2314 epingleton@viejas-nsn.gov	email	3/26/2021			3/26/2021: Viejas response: The project area may contain many sacred sites to the Kumeyaay people. We request that these sacred sites be avoided with adequate buffer zones. Additionally, Viejas is requesting, as appropriate, the following: • All NEPA/CEQA/NAGPRA laws be followed • Immediately contact Viejas on any changes or inadvertent discoveries.

Appendix E
Historical Architecture Survey Photographs

2754 Jefferson Street

Overview of residence and attached garage.

Looking at window and eave

Side of house

Side of house

Second overview of house and attached garage.

Side of house, garage, and side of garage

Overview of front of house and porch area

Looking at window along the side of house.

Overview and back side of house

Water heater and window along back of house

Overview of side of house

Overview of backyard and attached stucco attached quarters.

Overview of backyard and attached stucco quarters.

2770 Jefferson Street

Overview of 2770 Jefferson Street

Side view of house

Overview of outside/backyard area

View of eaves

Overview of front of house

Overview of front of house

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Appendix B

Preliminary Geotechnical Investigation

PRELIMINARY GEOTECHNICAL EVALUATION
PROPOSED MIXED USE DEVELOPMENT
2754 & 2770 JEFFERSON STREET
CARLSBAD, SAN DIEGO COUNTY, CALIFORNIA 92008
ASSESSOR'S PARCEL NUMBERS (APNs) 203-201-01-00 & -02-00

FOR

WESTERN MUTUAL DEVELOPMENT CORPORATION
C/O KARNAK PLANNING AND DESIGN
381 CHRISTIANSEN WAY
CARLSBAD, CALIFORNIA 92008

W.O. 8014-A-SC DECEMBER 4, 2020

GeoSoils, Inc.

Geotechnical • Geologic • Coastal • Environmental

5741 Palmer Way • Carlsbad, California 92010 • (760) 438-3155 • FAX (760) 931-0915 • www.geosoilsinc.com

December 4, 2020

W.O. 8014-A-SC

Western Mutual Development Corporation
c/o **Karnak Planning and Design**
381 Christiansen Way
Carlsbad, California 92008

Attention: Mr. Robert Richardson

Subject: Preliminary Geotechnical Evaluation, Proposed Mixed Use Development, 2754 & 2770 Jefferson Street, Carlsbad, San Diego County, California 92008, Assessor's Parcel Numbers (APNs) 203-201-01-00 & -02-00

Dear Mr. Richardson:

In accordance with your request and authorization, GeoSoils, Inc. (GSI) is pleased to present the results of our preliminary geotechnical evaluation of the subject site, relative to the proposed mixed use (residential and commercial) development thereon. The purpose of our study was to evaluate the onsite geologic and geotechnical conditions in order to develop preliminary recommendations for earthwork and the design of foundations, retaining walls, and pavements as well as other improvements possibly associated with the project.

EXECUTIVE SUMMARY

Based upon our field exploration, laboratory testing, and geologic, and geotechnical engineering analysis, the proposed mixed use development at the subject site is considered technically feasible from geotechnical and geologic viewpoints, provided that the recommendations presented in the text of this report are properly incorporated into the design and construction phases of the project. The most significant elements of our study are summarized below:

- In general, the site may be characterized as being mantled by localized undocumented fill and a relatively thin layer of Quaternary-age colluvium (i.e., topsoil). These earth materials are in turn underlain by Quaternary-age old paralic deposits with a relatively thin (approximately 1 to 2-foot thick) weathering profile. Unweathered old paralic deposits occur at depths of approximately 2¼ to 3½ feet below the existing grades, and are considered formational earth materials (bedrock) at the subject site.

- Due to their relatively low density, lack of uniformity, and porous nature, all undocumented artificial fill, Quaternary-age colluvium, and weathered old paralic deposits are considered potentially compressible; and therefore, unsuitable for the support of proposed settlement-sensitive improvements (i.e., foundation elements, slab-on-grade floors, pavements, walls, etc.) and/or new planned fills in their existing state. Therefore, these earth materials should be removed to expose the underlying unweathered old paralic deposits, and then be reused as compacted fills in accordance with the recommendations in this report. Based on the available subsurface data, remedial grading excavations are anticipated to extend to approximate depths of 2¼ to 3½ feet below existing grades. However, the possibility of potentially compressible soils locally extending to greater depths, requiring deeper remedial excavations, cannot be precluded and should be anticipated.

- Expansion Index (E.I.) testing, performed on a representative sample of the near-surface onsite soils, indicates very low expansive soil conditions (E.I. < 5). On a preliminary basis, the proposed building foundations and slab-on-grade floors do not require structural considerations for the mitigation of expansive soils.

- The results of soil corrosion and soluble sulfates, and chlorides testing, performed on a representative sample of the near-surface onsite soils, are not available at this time. However, based on our experience with soil conditions in this area of Carlsbad, we anticipate that the near-surface site soils will likely be corrosive to exposed, buried metals when saturated; will likely present negligible sulfate exposure to concrete (i.e., Exposure Class S0 per Table 19.3.1.1 of American Concrete Institute [ACI] 318-14); and will likely have slightly elevated concentrations of soluble chlorides. The results of the soil corrosion testing will be provided in a geotechnical addendum. GSI does not consult in the field of corrosion engineering. Thus, the Client, Structural, Civil, Plumbing, Mechanical, and Electrical Engineers, and Project Architect should agree on the level of corrosion protection required for the project and seek consultation from a qualified corrosion consultant, as warranted.

- Groundwater was not encountered to the explored depths. However, GSI encountered saturated, unweathered old paralic deposits in Boring B-1 at an approximate depth of 13½ feet below the existing grades. These saturated deposits are likely the result of capillary action produced by an underlying perched groundwater table GSI has encountered at similar depths at other sites in this area of Carlsbad. The perched groundwater commonly occurs along the geologic contact between the old paralic deposits and the underlying Santiago Formation, owing to the contrasting permeabilities/densities of these earth units. The presence of these saturated deposits and the potential occurrence of the perched groundwater table would be considered a significant geotechnical factor if planned excavations extend to depths greater than about 10 feet below the existing grades. Should planned excavations extend below this depth, dewatering would likely be necessary.

- Due to the nature of the onsite earth materials, shallow perched groundwater conditions may develop both during and following site development. The perched groundwater would likely collect along zones of contrasting permeabilities/densities (i.e., fill/unweathered old paralic deposit contacts, fill lifts, etc.) and/or along geologic discontinuities (i.e., joints, fractures, etc.). The infiltration of storm water beneath the proposed permeable vehicular brick paver driveway would increase the likelihood for shallow perched groundwater to manifest in the future. The potential for the development of shallow perched groundwater at the site should be disclosed to all interested/affected parties. Recommendations are included herein to better control and mitigate perched groundwater created by the infiltration of storm water beneath the proposed driveway.

- Based on our testing, partial storm water infiltration appears feasible in proximity to the proposed permeable vehicular brick paver driveway shown on S&A (2020). However, as previously stated, the infiltration of storm water beneath this proposed driveway could lead to shallow perched groundwater conditions within the project area. The lateral migration of the perched groundwater may adversely affect the proposed onsite improvements and the existing improvements on the adjacent private properties, and the public right-of-way. Recommendations are included in this report to reduce the lateral migration of perched groundwater. These include the installation of concrete cut-off barriers (i.e., deepened edge restraints) or a vertically installed 30-mil PVC impermeable membrane around the perimeter of the driveway. A subgrade enhancement geotextile (SEG) should be placed atop the driveway subgrade to reduce the potential for deformations from a wet driveway subgrade to propagate to the surface of the driveway, and result in pavement irregularities. Increased fill compaction to 95 percent of the laboratory standard (per ASTM D 1557) is recommended for all planned and remedial grading to reduce the potential adverse effects on the proposed improvements from shallow perched groundwater, created by storm water infiltration. Where building foundations abut the permeable brick paver driveway, the footings should be deepened to extend at least 1 foot below the pavement subgrade. Additionally, a reduction in the allowable bearing value used in the design of the building footings is recommended where the building foundation is located within a horizontal distance of 8 feet from the permeable brick paver driveway. Lastly, low permeability concrete is recommended in the construction of the building foundations and slab-on-grade floor.

- Due to the depth of the recommended structural section for the proposed permeable brick paver driveway and its proximity to the proposed buildings, the Project Structural Engineer should evaluate a temporary reduction in the passive resistance of the building foundation during the installation of the pavement section, and wet/saturated subjacent conditions.

- The removal and recompaction of potentially compressible soils below a 1:1 (h:v) plane projected down from the bottom, outboard edge of the planned settlement-sensitive improvements and engineered fill, along the perimeter of the site, may be limited due to boundary restrictions. Existing onsite or offsite improvements that are to remain in service may also constrain the lateral extent of remedial grading. As such, any proposed settlement-sensitive improvement located above a 1:1 (h:v) plane projected up and into the project site from the bottom outboard edge of the remedial grading excavations at the property boundaries, or from existing onsite or offsite improvements that need to remain in service would require deepened foundations below this plane, additional reinforcement, or would retain some potential for distress; and therefore, a reduced service life. On a preliminary basis, any proposed settlement-sensitive improvement located within a horizontal distance of approximately 2¼ feet to 3½ feet from the property boundaries or existing onsite, or offsite improvements, that are to remain in service, would require deepened foundations or additional reinforcement by means of ground improvement or specific structural design. This should be considered during project planning and design. Slot grading may be performed to extend remedial grading to the properties boundaries or the aforementioned existing improvements. Recommendations for slot grading are included in this report.

- In order to provide uniform foundation support, all footings for the proposed buildings should be underlain by at least 24 inches of engineered fill. Based on the available subsurface data, this would require some overexcavation of the unweathered old paralic deposits.

- On a preliminary basis, temporary slopes for excavations located above an approximate depth of 10 feet from the existing grades, should be constructed in accordance with CAL-OSHA guidelines for Type "B" soils, provided water, seepage, and/or running sands are not present. GSI encountered evidence of caving soils in Boring B-1 at an approximate depth of 11½ feet below the existing grade, following the removal of the hollow-stem auger. In addition, saturated unweathered old paralic deposits occurred in this boring at an approximate depth of 13½ feet below the existing grade. Given these conditions, temporary slopes for any planned excavations, extending below an approximate depth of 10 feet from the existing grades, should be constructed in accordance with CAL-OSHA guidelines for Type "C" soils, on a preliminary basis. All temporary slopes should be evaluated by the geotechnical consultant, prior to worker entry. Should adverse conditions be identified, the slope may need to be laid back to a flatter gradient or require the use of shoring. If the recommended temporary slopes conflict with property lines or existing improvements that need to remain in service, slot excavations or shoring may be necessary. Recommendations for slot excavations are included herein.

- Site soils are considered erosive. Therefore, site drainage should be designed to eliminate the potential for concentrated flows along the ground surface. Positive surface drainage away from foundations is recommended. Temporary erosion control measures should be implemented until vegetative covering is well

established. The property owner and/or the owner's association (if planned) will need to maintain proper surface drainage over the life of the project.

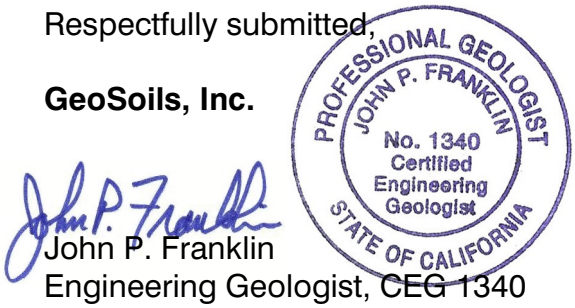
- The site is subject to moderate to strong ground shaking should an earthquake occur along any of a number of the regional, Holocene-active fault systems. The seismic acceleration values and design parameters, provided herein, should be considered during the design of the proposed development. The adverse effects of seismic shaking on the structure(s) will likely be wall cracks, some foundation/slab distress, and some seismic settlement. However, it is anticipated that the proposed structures will be repairable in the event of the design seismic event. This potential should be disclosed to any owners and all interested/affected parties.

- The recommendations presented in this report should be incorporated into the design and construction considerations of the project.

The opportunity to be of service is sincerely appreciated. If you should have any questions, please do not hesitate to contact our office.

Respectfully submitted,

GeoSoils, Inc.



John P. Franklin
Engineering Geologist, CEG 1340

David W. Skelly
Civil Engineer, RCE 47857

Ryan B. Boehmer
Staff Geologist

RBB/JPF/DWS/mn

Distribution: (1) Addressee (via email)
(3) Karnak Planning and Design, Attention: Mr. Robert Richardson (wet signed/stamped)

TABLE OF CONTENTS

PRELIMINARY GEOTECHNICAL EVALUATION
PROPOSED MIXED USE DEVELOPMENT
2754 & 2770 JEFFERSON STREET
CARLSBAD, SAN DIEGO COUNTY, CALIFORNIA 92008
ASSESSOR'S PARCEL NUMBERS (APNs) 203-201-01-00 & -02-00

SCOPE OF SERVICES

The scope of our services has included the following:

1. Review of readily available published geologic literature and maps, and aerial photographs (see Appendix A).

2. Site reconnaissance mapping and advancing three (3) exploratory hollow-stem auger borings and four hand-auger borings to evaluate the near-surface soil/geologic profiles and to sample the onsite earth materials (see Appendix B).

3. Percolation testing in two (2) of the hollow-stem auger borings to evaluate storm water infiltration feasibility in proximity to the proposed permeable brick paver driveway (see Appendix C).

4. General areal geologic and seismic hazards evaluation (see Appendix D).

5. Appropriate laboratory testing of representative bulk and relatively undisturbed soil samples collected during our subsurface exploration program (see Appendix E).

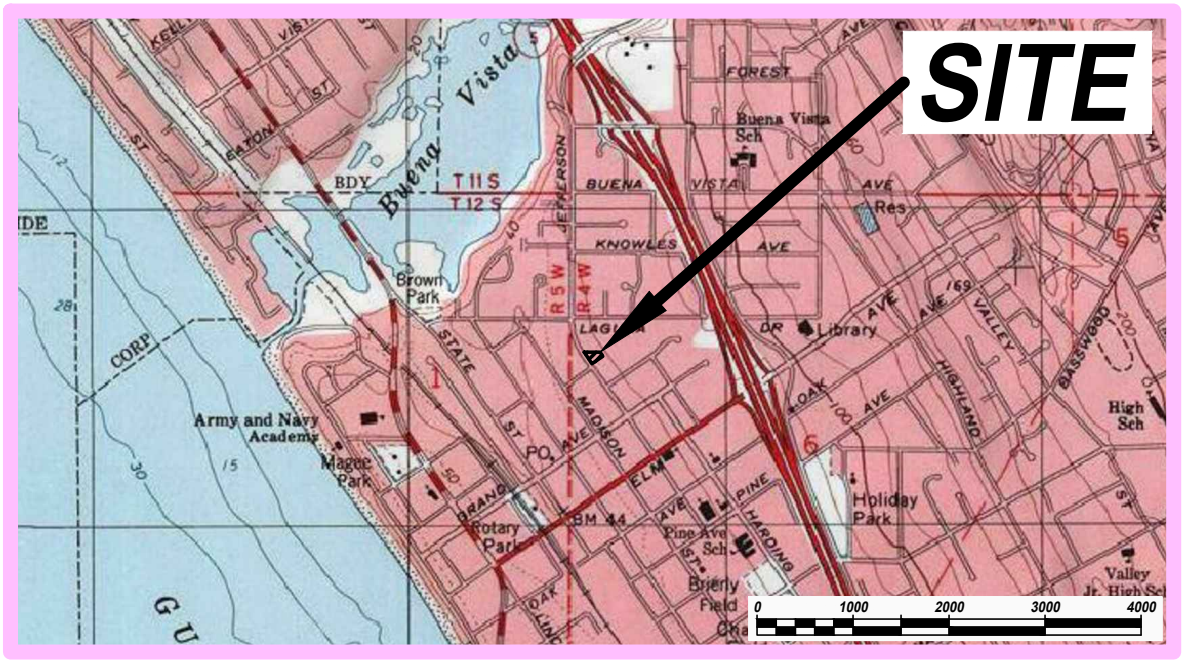
6. Analysis of field and laboratory data relative to the proposed development.

7. The preparation of this summary report and accompaniments.

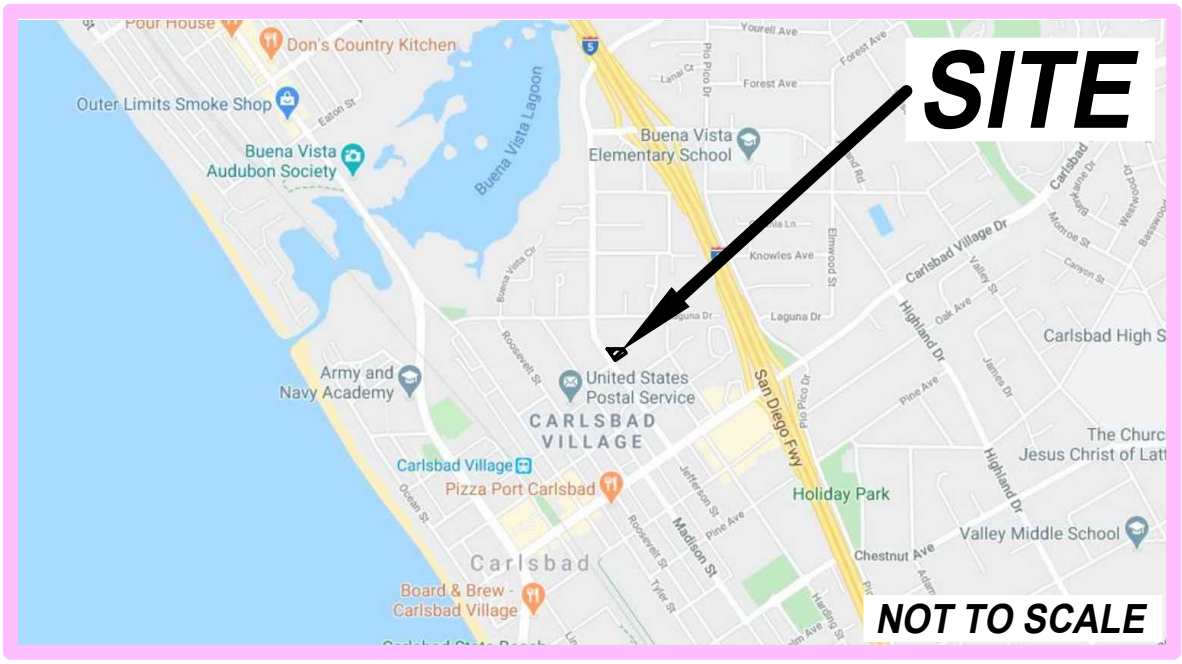
SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The subject site consists of existing developed residential properties located at 2754 and 2770 Jefferson Street in Carlsbad, San Diego, County, California 92008 (see Figure 1, Site Location Map). The latitude and longitude of the approximate centroid of the project area are 33.1642˚ and -117.3476˚. The study area is bounded by Jefferson Street to the southwest and by existing residential development to the remaining quadrants. Topographically, the site is generally flat-lying to very gently sloping in a southwesterly direction. According to the "Preliminary Grading Plans" for the subject project, prepared by Spear and Associates, Inc. ([S&A], 2020), the existing site elevations range between approximately 55 feet and 57 feet (National Geodetic Vertical Datum of 1929), for an overall relief of roughly 2 feet. Surface drainage appears to be controlled by sheet flow runoff, primarily directed to the southwest.

Two existing one-story residential structures and associated single-story outbuildings occupy approximately two-thirds of the site. Other improvements consists of Portland



Base Map: TOPO!® ©2003 National Geographic, U.S.G.S. Oceanside Quadrangle, California -- San Diego Co., 7.5 Minute, dated 1996, current, 2000.



Base Map: Google Maps, Copyright 2020 Google, Map Data Copyright 2020 Google

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SITE LOCATION MAP

Figure 1

Cement Concrete (PCC) hardscape (driveways, walkways, and patios). Site vegetation consists of grass, shrubbery, and sparse trees.

Based on our review of architectural plans prepared by Karnak Planning and Design ([KP&D], 2020), GSI understands that the proposed development consists of razing the existing structures and preparing the site to receive a two- (2-)story commercial/office building and a two- (2-)story, four- (4-) unit multi-family residential building. Below-grade floor levels are not proposed. Ancillary site improvements such as underground utilities and pedestrian, and vehicular pavements will also be included in the proposed development. GSI anticipates that the proposed structures will consist of wood frames with concrete slab-on-grade floors. Building loads are currently unknown.

According to S&A (2020), minor cut and fill grading will be necessary to bring the site to the design grades. The currently planned grading will require maximum planned cut and fills of less than 1 foot. S&A (2020) does not indicate the construction of graded slopes. Based on communication with an S&A representative, GSI understands that the onsite vehicular pavement (i.e., driveway) will consist of interlocking permeable brick pavers. Sanitary sewage disposal is to be connected into the municipal system.

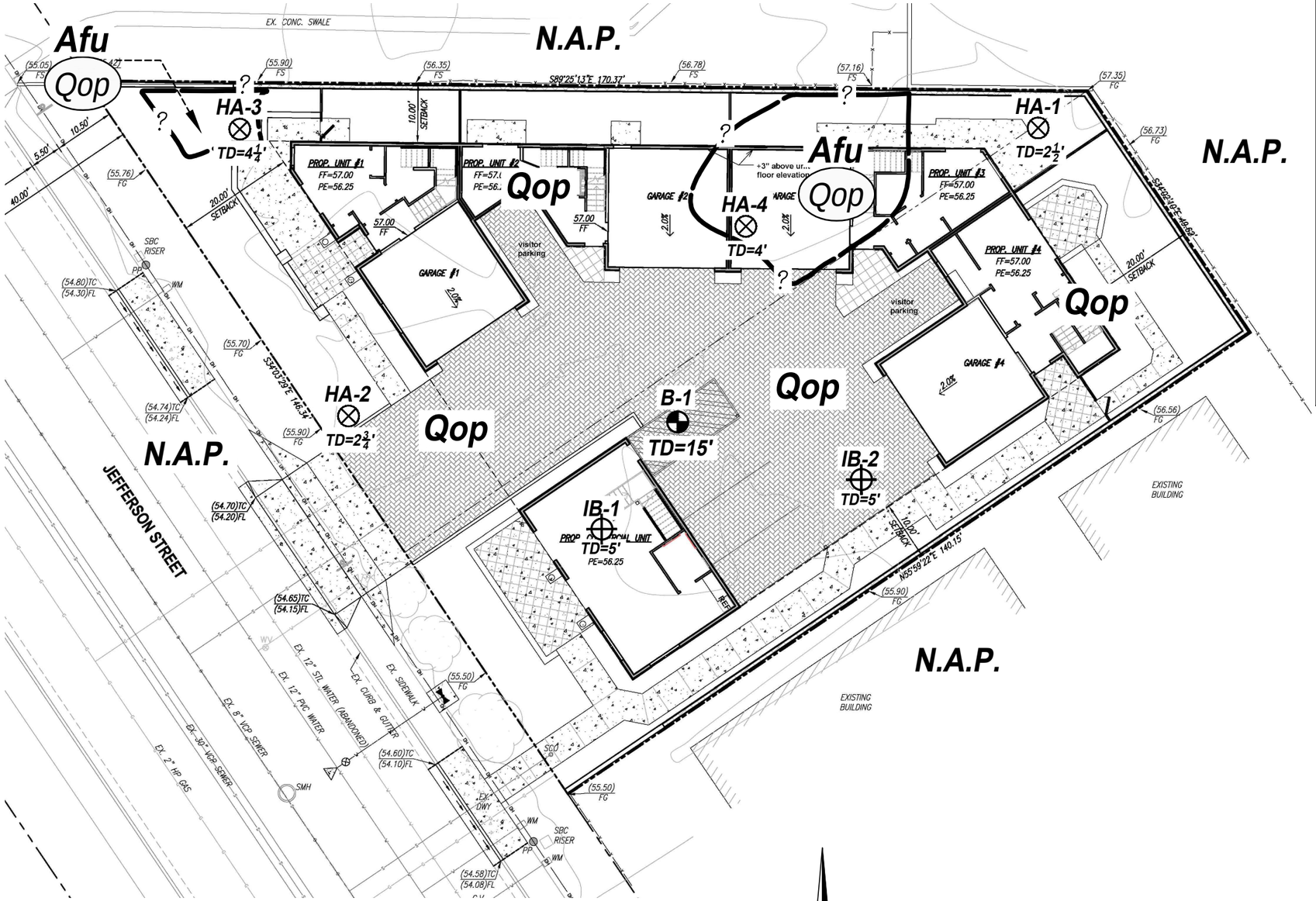
FIELD STUDIES

Site-specific field studies were conducted by GSI on November 11 and 12, 2020, and consisted of reconnaissance geologic mapping, and advancing three (3) hollow-stem auger borings and four (4) hand-auger borings. Two (2) of the hollow-stem auger borings were developed for percolation testing to evaluate the feasibility of storm water infiltration. The borings were logged by a representative of this office who collected representative bulk and relatively undisturbed soil samples for appropriate laboratory testing. The logs of the borings are presented in Appendix B. Site geology and the location of the borings are shown on the Boring Location Map (see Figure 2), which has been adopted from S&A (2020). The percolation test field data are presented in Appendix C.

PHYSIOGRAPHIC AND REGIONAL GEOLOGIC SETTINGS

Physiographic Setting

The site is located in the coastal plain physiographic section of San Diego County. The coastal plain section is characterized by pronounced marine wave-cut terraces intermittently dissected by stream channels that convey water from the eastern highlands to the Pacific Ocean.



GSI LEGEND

Afu	—	ARTIFICIAL FILL – UNDOCUMENTED
Qop	—	QUATERNARY OLD PARALIC DEPOSITS, CIRCLED WHERE BURIED
~?~	—	APPROXIMATE LOCATION OF GEOLOGIC CONTACT, QUERIED WHERE UNCERTAIN
B-1 TD=15'	—	APPROXIMATE LOCATION OF EXPLORATORY HOLLOW-STEM AUGER BORING WITH TOTAL DEPTH IN FEET
HA-4 TD=4¼'	—	APPROXIMATE LOCATION OF EXPLORATORY HAND-AUGER BORING WITH TOTAL DEPTH IN FEET
IB-2 TD=5'	—	APPROXIMATE LOCATION OF INFILTRATION BORING WITH TOTAL DEPTH IN FEET
N.A.P.	—	NOT A PART OF THIS STUDY

BASE MAP FROM:

PLANS PREPARED BY:
SPEAR & ASSOCIATES, INC.
CIVIL ENGINEERING & LAND SURVEYING
475 PRODUCTION STREET, SAN MARCOS, CA 92078
PHONE (760) 736-2040 FAX (760) 736-4866
WWW.SPEARINC.NET

SHEET 1	CITY OF CARLSBAD ENGINEERING DEPARTMENT	SHEETS 1
PRELIMINARY GRADING PLANS FOR: 2754 & 2770 JEFFERSON ST.		
APPROVED		
CITY ENGINEER PE	EXPIRES	DATE
DWN BY: AJV CHKD BY: JRZ RVWD BY:	PROJECT NO.	DRAWING NO.

N

GRAPHIC SCALE

20 0 10 20 40

1" = 20'

ALL LOCATIONS ARE APPROXIMATE

This document or efile is not a part of the Construction Documents and should not be relied upon as being an accurate depiction of design.

GeoSoils, Inc.

BORING LOCATION MAP

Figure 2

W.O. 8014-A-SC	DATE: 12/20	SCALE: 1" = 20'

Regional Geologic Setting

San Diego County lies within the Peninsular Ranges Geomorphic Province of Southern California. This province is characterized by elongated mountain ranges and valleys that trend northwesterly (Norris and Webb, 1990). This geomorphic province extends from thebase of the east-west aligned Santa Monica - San Gabriel Mountains, and continues south into Baja California, Mexico. The mountain ranges within this province are underlain by basement rocks consisting of pre-Cretaceous metasedimentary rocks, Jurassic metavolcanic rocks, and Cretaceous plutonic (granitic) rocks.

The San Diego County region was originally a broad area composed of pre-batholithic rocks that were subsequently subjected to tectonism and metamorphism. In the late Cretaceous Period, the southern California Batholith was emplaced causing the aforementioned metamorphism of pre-batholithic rocks. Many separate magmatic injections originating from this body occurred along zones of structural weakness.

Following batholith emplacement, uplift occurred, resulting in the removal of the overlying rocks by erosion. Erosion continued until the area was that of low relief and highly weathered. The eroded materials were deposited along the sea margins. Sedimentation also occurred during the late Cretaceous Period. However, subsequent erosion has removed much of this evidence. In the early Tertiary Period, terrestrial sedimentation occurred on a low-relief land surface. In Eocene time, previously fluctuating sea levels stabilized and marine deposition occurred. In the late Eocene, regional uplift produced erosion and thick deposition of terrestrial sediments. In the middle Miocene, the submergence of the Los Angeles Basin resulted in the deposition of thick marine beds in the northwestern portion of San Diego County. During the Pliocene, marine sedimentation was more discontinuous and generally occurred within shallow marine embayments. The Pleistocene saw regressive and transgressive sea levels that fluctuated with prograding and recessive glaciation. The changes in sea level had a significant effect on coastal topography and resultant wave erosion and deposition formed many terraces along the coastal plain. In the mid-Pleistocene, regional faulting separated highland erosional surfaces into major blocks lying at varying elevations. A later rise in sea level, during the late Pleistocene, caused the deposition of thick alluvial deposits within the coastal river channels. In recent geologic time, crystalline rocks have weathered to form soil residuum, highland areas have eroded, and deposition of river, lake, lagoonal, and beach sediments has occurred.

Regional geologic mapping by Kennedy and Tan (2007) indicates that the site is underlain by late to middle Pleistocene-age old paralic deposits (Subunits 6-7), formerly termed “terrace deposits” on older geologic maps. The old paralic deposits consist of marine and non-marine sediments deposited on a wave cut abrasion platform that emerged from the sea approximately 80,000 to 120,000 years before present.

SITE GEOLOGIC UNITS

General

The earth material units that were observed and/or encountered at the subject site during our field exploration consisted of localized undocumented fill, Quaternary-age colluvium (topsoil), and weathered and unweathered Quaternary-age old paralic deposits (formerly termed "terrace deposits on some older regional geologic maps). A general description of each material type is presented as follows, from youngest to oldest. The general distribution of these materials across the site is presented on Figure 2.

Artificial Fill - Undocumented (Map Symbol - Afu)

Undocumented artificial fill was encountered at the surface in Hand-Auger Borings HA-3 and HA-4. As observed therein, the undocumented fill generally consisted of dark brownish gray silty fine- to medium-grained sand and gravelly fine- to coarse-grained sand. The gravelly sand component included subangular and angular gravels with sizes ranging between ¾ inches and 1½ inches in dimension. The fill was typically dry and loose to medium dense. The thickness of the fill ranged between approximately ¾ foot and 1 foot, where encountered. The undocumented fill is considered potentially compressible in its existing state and is also placed upon earth materials subject to settlement under load. Therefore, the fill should not be relied upon for the support of proposed settlement-sensitive improvements and new planned fills in its existing state.

Quaternary Colluvium (Not Mapped)

Quaternary colluvium (topsoil) was encountered at the surface in all the hollow-stem auger borings (B-1, IB-1, and IB-2) and in Hand-Auger Borings HA-1 and HA-2. It was also encountered underlying the undocumented fill in Hand-Auger Borings HA-3 and HA-4. The colluvium generally consisted of dark brownish gray and dark grayish brown fine- to medium-grained silty sand, and brown fine- to medium-grained sand with trace silt. The colluvium was typically dry, loose to locally medium dense, and porous. The thickness of the colluvium generally ranged between approximately 1 foot and 1½ feet, where encountered. The colluvium may settle appreciably under improvement and fill loads. As such, it should not be used for the support of proposed improvements and new planned fills in its existing state.

Quaternary Old Paralic Deposits (Map Symbol - Qop)

Quaternary old paralic deposits were observed underlying the colluvium in all borings. These sediments were weathered in the upper 1 foot to 2 feet of their vertical extent. Weathered old paralic deposits generally consisted of brown and dark yellowish brown fine- to medium-grained sand with trace silt. The weathered old paralic deposits were typically dry, loose to medium dense, and locally porous. Unweathered old paralic

deposits were encountered at shallow depth ranging between approximately 2¼ feet and 3½ feet below the existing grades. The unweathered old paralic deposits generally consisted of reddish yellow and dark yellowish brown, fine- to locally medium-grained silty sand; dark yellowish brown, dark gray, and yellowish brown fine- to medium-grained sand with localized traces of silt; and light yellowish brown and light brownish gray fine- to coarse-grained sand with localized traces of gravel. Weathered old paralic deposits are considered potentially compressible in their existing state. Unweathered old paralic deposits are considered suitable formational materials (bedrock) for the site. Following the removal of the hollow-stem auger in Boring B-1, caving was encountered at an approximate depth of 11½ feet below the existing grade. The caving observed in this boring may be the result of the relatively cohesionless old paralic deposits with higher moisture contents encountered below the aforementioned depth. Saturated unweathered old paralic deposits were encountered at an approximate depth of 13½ feet below the existing grades.

Structural Geology

Owing to the subsurface investigative techniques, the geologic structure was not readily observed. However, based on our experience and observations in the site vicinity, the old paralic deposits are generally thickly bedded to massive with local subhorizontal to gentle westerly dipping bedding. No adverse geologic structures that would preclude or otherwise hinder project feasibility were observed on the site or noted during our review of Tan and Kennedy (2007).

USDA SOILS CLASSIFICATION

According to the United States Department of Agriculture/Natural Resources Conservation Service's (USDA/NRCS's) Web Soil Survey website (http://websoilsurvey.sc.egov.usda.gov), the onsite soils consist of Marina loamy coarse sand, 2 to 9 percent slopes. This soil unit typically occurs on ridges and is generally derived from eolian sands of mixed sources. The capacity of the most limiting layer of this unit to transmit water (K_{sat}) is classified as moderately high to high (0.57 to 1.98 inches per hour [in/hr]). The hydrologic soil group (HSG) designation for this soil unit is "B."

GROUNDWATER

Groundwater was not encountered in the borings to the maximum depth explored (i.e., 15 feet below the existing grades). However, saturated, unweathered old paralic deposits occurred in Boring B-1 at an approximate depth of 13½ feet below the existing grade. These saturated deposits may be the product of capillary action created by a perched groundwater table GSI has encountered at similar depths on other sites in this area of Carlsbad in the past. The perched groundwater typically occurs near the geologic contact

between the old paralic deposits and the underlying Tertiary-age Santiago Formation, owing to the dissimilar permeabilities exhibited by these contrasting units. The regional groundwater table is anticipated to be within a few feet of sea level or approximately 55 feet below the lowest site elevation. Based on our understanding of the proposed site development, groundwater is not anticipated to be a significant geotechnical factor, provided that planned excavations for underground utilities or other improvements do not extend to depths greater than about ±10 feet below the existing grade, and the recommendations contained in this report are properly incorporated into final design and construction. These observations reflect site conditions at the time of our field investigation and do not preclude future changes in local groundwater conditions from climatic factors, excessive irrigation, above-normal precipitation, or other circumstances that were not obvious, at the time of our field exploration.

Owing to the nature of the onsite earth materials, perched groundwater conditions may develop in the future along zones of contrasting permeabilities and densities (i.e., fill/unweathered old paralic deposits contacts, fill lifts, etc.) and geologic discontinuities (i.e., joints, fractures, etc.). This should be disclosed to all interested/affected parties. Should perched groundwater conditions manifest, this office can provide recommendations for mitigation. Typical mitigation includes the installation of subdrain systems and/or cut-off walls/barriers or impermeable membranes.

Due to the potential for post-development perched groundwater to manifest near the surface, owing to as-graded permeability/density contrasts, more rigorous slab-on-grade floor design is recommended (State of California, 2020). Recommendations for reducing the amount of water and/or water vapor through slab-on-grade floors are provided in the "Soil Moisture Considerations" sections of this report.

EARTH MATERIAL EXCAVATION CHARACTERISTICS

GSI encountered difficulty while advancing Boring B-1 into the unweathered old paralic deposits below a depth of approximately 10 feet from the existing grade. This boring was advanced using a John Deere skid-steer, equipped with a drilling apparatus. Based on our past experience with nearby sites, GSI anticipates that easy to moderately difficult excavation would be encountered using standard heavy earth-moving equipment in good working order. Localized areas of highly cemented old paralic deposits may present very difficult excavation, especially if relatively lightweight excavation equipment such as a backhoe or mini-excavator are used. Therefore, excavation equipment should be appropriately sized and powered for the required excavation task. If additional information regarding the excavation characteristics of the onsite earth materials is needed, this office can perform seismic refraction studies.

STORM WATER INFILTRATION FEASIBILITY

As part of this preliminary geotechnical evaluation, GSI evaluated the feasibility of storm water infiltration in the area of the site where the permeable vehicular brick paver driveway is proposed (S&A, 2020). Our evaluation consisted of advancing two (2) hollow-stem auger borings to an approximate depth of 5 feet below the existing grade for the purpose of percolation testing (Infiltration Test Borings IB-1 and IB-2 [see Appendix B and Figure 2]). An additional boring was advanced to evaluate the presence of groundwater within 10 feet of the theoretical infiltration surface elevation (Boring B-1 [see Appendix B and Figure 2]). As previously indicated free groundwater was not encountered to the explored depth (i.e., 15 feet below the existing grade). However, saturated, unweathered old paralic deposits occurred within the vadose zone, at an approximate depth of 13½ feet below existing grade.

Percolation testing was performed in Infiltration Test Borings IB-1 and IB-2 in general accordance with Riverside County Flood Control and Water Conservation District (2011) guidelines. Following development of the test borings, water was continuously added to the borings over a four- (4-) hour period. The water level was then allowed to drop overnight. The following day, the test borings were refilled with water over a one (1) hour period to re-establish a wetted front. GSI then evaluated if the soil conditions in Infiltration Test Borings IB-1 and IB-2 met the "sandy soil criteria" by adding water to the test borings and allowing the water level to fall over two (2), 25-minute test intervals to see if greater than a 6-inch change in water column height occurred within each test period. As observed, the soil conditions in the aforementioned borings did not meet the "sandy soil criteria." Thus, the borings were refilled with water and tested over a 6-hour period, taking readings at 30-minute intervals. At the beginning of each test interval, the boring was refilled with water and the water level was allowed to drop for 30 minutes. Both initial and final readings were rounded to the nearest ¼ inch. The field percolation test data sheets are provided in Appendix C.

The change in water height recorded during the last test interval was then used to calculate the infiltration rate using the Porchet Method per Riverside County Flood Control and Water Conservation District (2011) guidelines. Calculation sheets showing the conversion of the field percolation test data to infiltration rates are provided in Appendix C.

The following table presents the change in water column height in each test boring during the last test interval:

INFILTRATION TEST BORING NO.	CHANGE IN WATER HEIGHT DURING FINAL TESTING PERIOD (INCHES)
IB-1	3.0
IB-2	4.0

The following table summarizes the calculated infiltration rate within each test boring using Porchet Method:

INFILTRATION TEST BORING	INFILTRATION RATE (INCHES PER HOUR [IN/HR])
IB-1	0.29
IB-2	0.42

Estimated Reliable Infiltration Rate

The results of the infiltration testing demonstrate somewhat variable soil infiltration rates that are less than the K_{sat} values indicated by the USDA/NRCS for the Marina loamy coarse sand, 2 to 9 percent slopes (i.e., the mapped soil unit at the subject site). The lower infiltration rate is likely attributed to the less permeable, indurated nature of the unweathered old paralic deposits, which occur at approximate depths of 2¼ feet to 3½ feet below the existing grade within the subject properties, based on the available subsurface data.

Given the variable infiltration rates, GSI recommends that the lower infiltration rate reported in the table above be used when calculating the estimated reliable infiltration rate. In other words, an infiltration rate of 0.29 in/hr should be used in calculating the estimated reliable infiltration rate. As indicated on the City of Carlsbad (2016) Worksheet D.5-1 (see Appendix C), a minimum safety factor of 2.0 should be applied to the aforementioned infiltration rate, obtained from our field testing, when calculating the estimated reliable infiltration rate. Thus, an estimated reliable infiltration rate of roughly 0.14 in/hr is considered appropriate for the onsite soil conditions. An infiltration rate of 0.14 in/hr supports the feasibility of partial infiltration for the proposed permeable vehicular brick paver driveway. However, it is not considered sound engineering practice to allow for storm water infiltration in proximity to engineered improvements as water tends to weaken soil strength and may induce settlement. Thus, GSI has provided mitigative recommendations to be used in the design and construction of the proposed permeable vehicular brick paver driveway.

Appendix C also includes the completed City of Carlsbad (2016) Worksheet C.4-1.

GEOLOGIC HAZARDS EVALUATION

Mass Wasting/Landslide Susceptibility

Mass wasting refers to the various processes by which earth materials are moved down slope in response to the force of gravity. Examples of these processes include slope creep, surficial failures, and deep-seated landslides. Creep is the slowest form of mass

wasting and generally involves the outer 5 to 10 feet of a slope surface. During heavy rains, such as those in El Niño years, creep-affected materials may become saturated, resulting in a more rapid form of downslope movement (i.e., landslides and/or surficial failures).

According to regional landslide susceptibility mapping by Tan and Giffen (1995), the site is located within landslide susceptibility Subarea 2, which is characterized as being "marginally susceptible" to landsliding. Owing to the site's flat-lying to gently sloping topography and its position relative to significant ascending or descending slopes, the susceptibility of the proposed development to significant mass wasting events is considered low.

Geomorphic expressions indicative of past mass wasting events (i.e., scarps, hummocky terrain, debris cones, arcuate drainage patterns, etc.) were not observed during our field studies nor during our review of stereoscopic aerial photographs (Fairchild Aerial Surveys, 1939). Further, no adverse geologic structures or landslide debris were encountered during our subsurface exploration nor during our review of regional geologic maps.

The onsite soils are, however, considered erodible. Properly designed and regularly, and periodically maintained surface drainage is recommended to mitigate erosion.

FAULTING AND REGIONAL SEISMICITY

Regional Faults

Our review indicates that there are no known Holocene-active faults (i.e., faults that have ruptured in the last 11,700 years) crossing the subject parcels, and the site is not within an Alquist-Priolo Earthquake Fault Zone (California Geological Survey, 2018; Jennings and Bryant, 2010; Bryant and Hart, 2007). However, the site is situated in a region subject to periodic earthquakes along active faults. The offshore segment of the Newport-Inglewood fault (part of the Newport-Inglewood - Rose Canyon fault zone) is the closest known Holecene-active fault to the site, located at a distance of approximately 5.1 miles (8.2 kilometers) to the southwest. This fault should have the greatest effect on the site in the form of strong ground shaking, should the design earthquake occur. Cao, et al. (2003) indicate the slip rate on the offshore segment of the Newport-Inglewood fault is 1.5 ($\pm$0.5) millimeters per year (mm/yr) and the fault is capable of a maximum magnitude 7.1 earthquake. The location of the offshore segment of the Newport-Inglewood fault and other major faults within 100 kilometers of the site are shown on the "California Fault Map" in Appendix D. The possibility of ground acceleration, or shaking at the site, may be considered as approximately similar to the southern California region as a whole.

Local Faulting

Although Holocene-active faults lie within a few miles of the site, no Holocene-active faults

were observed to specifically transect the site during the field investigation. Additionally, a review of available regional geologic maps does not indicate the presence of Holocene-active faults crossing the specific project site.

Surface Rupture

Owing to the lack of known Holocene-active or pre-Holocene faults crossing the site, the potential for the proposed development to be adversely affected by surface rupture from fault movement is considered very low.

Seismicity

The acceleration-attenuation relation of Bozorgnia, Campbell, and Niazi (1999) has been incorporated into EQFAULT (Blake, 2000a). EQFAULT is a computer program developed by Thomas F. Blake (2000a), which performs deterministic seismic hazard analyses using digitized California faults as earthquake sources.

The program estimates the closest distance between each fault and a given site. If a fault is found to be within a user-selected radius, the program estimates peak horizontal ground acceleration that may occur at the site from an upper bound (formerly "maximum credible earthquake"), on that fault. Upper bound refers to the maximum expected ground acceleration produced from a given fault. Site acceleration (g) was computed by one user-selected acceleration-attenuation relation that is contained in EQFAULT. Based on the EQFAULT program, a peak horizontal ground acceleration from an upper bound event on the offshore segment of the Newport-Inglewood fault may be on the order of 0.61 g. The computer printouts of pertinent portions of the EQFAULT program are included within Appendix E.

Historical site seismicity was evaluated with the acceleration-attenuation relation of Bozorgnia, Campbell, and Niazi (1999), and the computer program EQSEARCH (Blake, 2000b, updated to August 15, 2018). This program performs a search of the historical earthquake records for magnitude 5.0 to 9.0 seismic events within a 100-kilometer radius, between the years 1800 through August 15, 2018. Based on the selected acceleration-attenuation relationship, a peak horizontal ground acceleration is estimated, which may have affected the site during the specific time frame. Based on the available data and the attenuation relationship used, the estimated maximum (peak) site acceleration during the period 1800 through August 15, 2018 was about 0.24 g. A historic earthquake epicenter map and a seismic recurrence curve are also estimated/generated from the historical data. Computer printouts of the EQSEARCH program are presented in Appendix E.

Seismic Shaking Parameters

The following table summarizes the site-specific seismic design criteria obtained from the 2019 California Building Code (CBC), Chapter 16 Structural Design, Section 1613,

Earthquake Loads (California Building Standards Commission [CBSC], 2019a). The computer program Seismic Design Maps, provided by the California Office of Statewide Health Planning and Development (OSHPD) and the Structural Engineers Association of California (SEAOC) has been utilized to aid in design (https://seismicmaps.org). The short spectral response utilizes a period of 0.2 seconds. Based on the findings from our onsite subsurface exploration and our experience with other similar sites, it is our opinion that Site Class "D" conditions are applicable to the proposed development.

2019 CBC SEISMIC DESIGN PARAMETERS			
PARAMETER	**VALUE per OSHPD/SEAOC SEISMIC DESIGN MAPS**	**VALUE per ASCE 7-16**	**2019 CBC or REFERENCE**
Risk Category[1]	II	-	Table 1604.5
Site Class	D	-	Section 1613.2.2/Chap. 20 ASCE 7-16 (p. 203-204)
Spectral Response - (0.2 sec), S_s	1.069 g	-	Section 1613.2.1 Figure 1613.2.1(1)
Spectral Response - (1 sec), S_1	0.387 g	-	Section 1613.2.1 Figure 1613.2.1(2)
Site Coefficient, F_a	1.2	-	Table 1613.2.3(1)
Site Coefficient, F_v	null - see Section 11.48 ASCE 7-16	2.5[2] (Section 21.3)	Table 1613.2.3(2)
Maximum Considered Earthquake Spectral Response Acceleration (0.2 sec), S_{MS}	1.283 g	1.332 g[3] (Section 21.4)	Section 1613.2.3 (Eqn 16-36)
Maximum Considered Earthquake Spectral Response Acceleration (1 sec),S_{M1}	null - see Section 11.48 ASCE 7-16	1.107 g[4] (Section 21.4)	Section 1613.2.3 (Eqn 16-37)
5% Damped Design Spectral Response Acceleration (0.2 sec), S_{DS}	0.855 g	0.888 g[5]	Section 1613.2.4 (Eqn 16-38)
5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	null - see Section 11.48 ASCE 7-16	0.738 g[6] (Section 21.4)	Section 1613.2.4 (Eqn 16-39)
PGA_M - Probabilistic Vertical Ground Acceleration may be assumed as about 50% of these values.	0.565 g	-	ASCE 7-16 (Eqn 11.8.1)
Seismic Design Category	null - see Section 11.48 ASCE 7-16	D[7] (Section 11.6)	Section 1613.2.5/ASCE 7-16 (p. 85: Table 11.6-1 or 11.6-2)

1. Risk Category to be confirmed by the Project Architect.
2. Per Table 11.4-1 of ASCE 7-16, since $S_1 \geq 0.2$, F_v is taken as 2.5.
3. Per Section 21.4 of ASCE 7-16, $S_{MS} = (1.5)(S_{DS}) = (1.5)(0.888\ g) = 1.332\ g$
4. Per Section 21.4 of ASCE 7-16, $S_{M1} = (1.5)(S_{D1}) = (1.5)(0.738\ g) = 1.107\ g$
5. Per Section 21.4 of ASCE 7-16, S_{DS} shall be taken as 90 percent of the maximum spectral acceleration (S_a) obtained from the site-specific spectrum at any period within the range from 0.2 to 5 seconds, inclusive.
6. Per Section 21.4 of ASCE 7-16, S_{D1} shall be taken as the maximum value of the product TS_a obtained from the site-specific spectrum from the period within the range of 1 to 5 seconds, inclusive.
7. Per Table 11.6-1 of ASCE 7-16, $S_{D1} \geq 0.2 \Rightarrow 0.738 \geq 0.2$. Thus, the seismic design category is "D".

GENERAL SEISMIC PARAMETERS	
PARAMETER	**VALUE**
Distance to Seismic Source (Newport Inglewood [offshore segment])	5.1 mi (8.2 km)[1]
Upper Bound Earthquake (Newport Inglewood [offshore segment])	M_w = 7.1[2]
[1] - Blake (2000a) [2] - Cao, et al. (2003)	

Conformance to the criteria above for seismic design does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur in the event of a large earthquake. The primary goal of seismic design is to protect life, not to eliminate all damage, since such design may be economically prohibitive. Cumulative effects of seismic events are not addressed in the 2019 CBC (CBSC, 2019) and regular maintenance and repair following locally significant seismic events (i.e., M_w5.5) will likely be necessary, as is the case in all of southern California.

SECONDARY SEISMIC HAZARDS

Liquefaction/Lateral Spreading

Liquefaction describes a phenomenon in which cyclic stresses, produced by earthquake-induced ground motion, create excess pore pressures in relatively cohesionless soils. These soils may thereby acquire a high degree of mobility, which can lead to vertical deformation, lateral movement, lurching, sliding, and as a result of seismic loading, volumetric strain and manifestation in surface settlement of loose sediments, sand boils and other damaging lateral deformations. This phenomenon occurs only below the water table, but after liquefaction has developed, it can propagate upward into overlying non-saturated soil as excess pore water dissipates.

One of the primary factors controlling the potential for liquefaction is depth to groundwater. Typically, liquefaction has a relatively low potential at depths greater than 50 feet and is unlikely and/or will produce vertical strains well below 1 percent for depths below 60 feet when relative densities are 40 to 60 percent and effective overburden pressures are two or more atmospheres (i.e., 4,232 pounds per square foot [Seed, 2005]).

The condition of liquefaction has two principal effects. One is the consolidation of loose sediments with resultant settlement of the ground surface. The other effect is lateral sliding. Significant permanent lateral movement generally occurs only when there is significant differential loading, such as fill or natural ground slopes within susceptible materials. No such loading conditions exist at the site.

Liquefaction susceptibility is related to numerous factors and the following five conditions should be concurrently present for liquefaction to occur: 1) sediments must be relatively young in age and not have developed a large amount of cementation; 2) sediments must generally consist of medium- to fine-grained, relatively cohesionless sands; 3) the sediments must have low relative density; 4) free groundwater must be present in the sediment; and 5) the site must experience a seismic event of a sufficient duration and magnitude, to induce straining of soil particles. Only about two to perhaps three of these five necessary conditions have the potential to affect the site, concurrently.

Seismic Densification

Seismic densification is a phenomenon that typically occurs in low relative density granular soils (i.e., United States Soil Classification System [USCS] soil types SP, SW, SM, and SC) that are above the groundwater table. These unsaturated granular soils are susceptible if left in the original density (unmitigated), and are generally dry of their optimum moisture content (as defined by the ASTM D 1557). During seismic-induced ground shaking, these natural or artificial soils deform under loading and volumetrically strain, potentially resulting in ground surface settlements. The herein provided earthwork recommendations would mitigate seismic densification onsite. However, some densification of the adjoining unmitigated properties may influence improvements at the perimeter of the site. Special setbacks and/or foundations may be utilized if significant structures/improvements are placed close to the perimeter of the site and remedial grading cannot be performed below a 1:1 (horizontal:vertical [h:v]) plane projected down from the bottom outboard edges of footings that will support the proposed structures. If there is insufficient space to complete remedial grading below the aforementioned plane, foundations near the perimeter of the site should extend below a 1:1 (h:v) plane projected up and into the project area from the bottom the remedial grading excavation at the property lines in order to mitigate the potential for offsite seismic densification. Our evaluation assumed that the current offsite conditions will not be significantly modified by future grading at the time of the design earthquake, which is a reasonably conservative assumption.

Summary

It is the opinion of GSI that the susceptibility of the site to experience damaging deformations from seismically-induced liquefaction and densification is relatively low owing to the dense, nature of the unweathered old paralic deposits that underlie the site in the near-surface. In addition, the recommendations for remedial earthwork and foundations would further reduce any significant liquefaction/densification potential. Some seismic densification of the adjoining unmitigated site(s) may adversely influence planned improvements at the perimeter of the site. However, given the remedial earthwork and foundation recommendations provided herein, the potential for the site to be affected by significant seismic densification or liquefaction of adjoining offsite soils may be considered low.

Other Geologic/Secondary Seismic Hazards

The following list includes other geologic/seismic related hazards that have been considered during our evaluation of the site. The hazards listed are considered negligible and/or mitigated as a result of site location, soil characteristics, and typical site development procedures:

- Subsidence
- Ground Lurching or Shallow Ground Rupture
- Tsunami
- Seiche

LABORATORY TESTING

Laboratory tests were performed on representative samples of site earth materials collected during our subsurface exploration in order to evaluate their physical characteristics. Test procedures used and results obtained are presented below.

Classification

Soils were visually classified with respect to the Unified Soil Classification System (U.S.C.S.) in general accordance with ASTM D 2487 and D 2488. The soil classifications of the onsite soils are provided on the Boring Logs in Appendix B.

Moisture-Density Relations

The field moisture contents and dry unit weights were determined for relatively undisturbed samples of site earth materials in the laboratory. Testing was performed in general accordance with ASTM D 2937 and ASTM D 2216. The dry unit weight was determined in pounds per cubic foot (pcf), and the field moisture content was determined as a percentage of the dry weight. The results of these tests are shown on the Boring Logs in Appendix B.

Laboratory Standard

The maximum density and optimum moisture content was evaluated for a representative, near-surface bulk soil sample collected from the borings. Testing was performed in general accordance with ASTM D 1557. The moisture-density relationships obtained for this soil are shown on the following table:

SAMPLE LOCATION AND DEPTH (FT)	MAXIMUM DENSITY (PCF)	OPTIMUM MOISTURE CONTENT (%)
B-1 @ 0-5	131.4	8.2

Expansion Index

A representative sample of near-surface site soils was evaluated for expansion potential. Expansion Index (E.I.) testing and expansion potential classification was performed in general accordance with ASTM Standard D 4829, the results of the expansion testing are presented in the following table.

SAMPLE LOCATION AND DEPTH (FT)	EXPANSION INDEX	EXPANSION POTENTIAL
B-1 @ 0-5	<5	Very Low

Direct Shear

Shear testing was performed on a representative, remolded sample of the near-surface site soils in general accordance with ASTM Test Method D 3080 in a Direct Shear Machine of the strain control type. Prior to testing, the bulk soil sample was remolded to 90 percent of the laboratory standard (ASTM D 1557) at optimum moisture conditions. The shear test results are presented as follows and in Appendix E:

SAMPLE LOCATION AND DEPTH (FT)	PRIMARY		RESIDUAL	
	COHESION (PSF)	FRICTION ANGLE (DEGREES)	COHESION (PSF)	FRICTION ANGLE (DEGREES)
B-1 @ 0-5	132	33.6	36	33.8

Saturated Resistivity, pH, and Soluble Sulfates, and Chlorides

GSI conducted sampling of the near-surface onsite earth materials for general soil corrosivity and soluble sulfates, and chlorides testing. At this time, the testing is still in progress. An addendum will be provided presenting the results of the testing once they become available.

Based on our experience with soil conditions in this area of Carlsbad, we anticipate that the near-surface site soils will likely be corrosive to exposed, buried metals when

saturated; will likely present negligible sulfate exposure to concrete (i.e., Exposure Class S0 per Table 19.3.1.1 of American Concrete Institute [ACI] 318-14); and will likely have slightly elevated concentrations of soluble chlorides. GSI does not consult in the field of corrosion engineering. Thus, the Client, Structural, Civil, Plumbing, Mechanical, and Electrical Engineers, and Project Architect should agree on the level of corrosion protection required for the project and seek consultation from a qualified corrosion consultant, as warranted.

PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

Based on our field exploration, laboratory testing, and geotechnical engineering analysis, it is our opinion that the proposed mixed use development at the subject site is technically feasible from geotechnical engineering and geologic viewpoints, provided that the recommendations presented in the following sections are incorporated into the design and construction phases of site development. The primary geotechnical concerns with respect to the proposed development and improvements are:

- Earth materials characteristics and depth to competent bearing materials below the existing grades.
- The on-going corrosion potential of the onsite soils.
- Saturated soils and the potential for a shallow perched groundwater table that may be a factor when conducting planned excavations below a depth of roughly 10 feet below the existing grades.
- The potential for perched groundwater to manifest both during and following site development.
- Potential adverse effects of storm water infiltration on the proposed onsite and existing offsite improvements.
- The temporary reduction in passive resistance on the building footings during the installation of the adjacent permeable brick paver driveway section.
- Perimeter conditions and planned improvements near the property boundaries.
- Uniform support of building foundations.
- The potential for caving soils and temporary slope stability.
- Erodibility of the onsite earth materials.
- Regional seismic activity.

The aforementioned geotechnical factors are further discussed herein.

The recommendations presented herein consider these as well as other aspects of the site. The engineering analyses performed concerning site preparation and the recommendations presented herein have been completed using the information provided and obtained during our field work.

In the event that any significant changes are made to proposed site development, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the recommendations of this report verified or modified in writing by this office. Foundation design parameters are considered preliminary until the foundation design, layout, and structural loads are provided to this office for review.

1. Geotechnical engineering, observation, and testing services should be provided during grading to aid the contractor in removing unsuitable soils and in their effort to compact the fill.

2. Geologic observations should be performed during any grading and foundation construction to further evaluate the onsite geologic conditions. Although unlikely, if adverse geologic conditions or structures are encountered, supplemental recommendations and earthwork may be warranted.

3. All undocumented fill, Quaternary-age colluvium (topsoil), and weathered old paralic deposits are considered unsuitable for the support of the proposed settlement-sensitive improvements (i.e., foundations, slab-on-grade floors, walls, exterior hardscape, etc.) and new planned fills. Unsuitable soils within the influence of proposed settlement-sensitive improvements and engineered fills should be removed to expose unweathered old paralic deposits and then be reused as properly engineered fill. Based on the available subsurface data, excavations for remedial grading are anticipated to extend to depths ranging between approximately 2¼ feet and 3½ feet below existing grades. However, locally deeper remedial grading excavations cannot be precluded and should be anticipated.

4. Expansion Index (E.I.) testing, performed on a representative sample of the near-surface onsite soils, indicates very low expansive soil conditions (E.I. < 5). On a preliminary basis, the proposed building foundations and slab-on-grade floors do not require structural considerations for the mitigation of expansive soils.

5. The results of soil corrosion and soluble sulfates, and chlorides testing, performed on a representative sample of the near-surface onsite soils, are not available at this time. However, based on our experience with soil conditions in this area of Carlsbad, we anticipate that the near-surface site soils will likely be corrosive to exposed, buried metals when saturated; will likely present negligible sulfate exposure to concrete (i.e., Exposure Class S0 per Table 19.3.1.1 of American Concrete Institute [ACI] 318-14); and will likely have slightly elevated concentrations of soluble chlorides. The results of the soil corrosion testing will be provided in a geotechnical addendum when they become available. GSI does not consult in the field of corrosion engineering. Thus, the Client, Structural, Civil, Plumbing, Mechanical, and Electrical Engineers, and Project Architect should agree on the level of corrosion protection required for the project and seek consultation from a qualified corrosion consultant, as warranted.

6. Groundwater was not encountered to the explored depths. However, GSI encountered saturated, unweathered old paralic deposits in Boring B-1 at an approximate depth of 13½ feet below the existing grades. These saturated deposits are likely the result of capillary action from an underlying perched groundwater table GSI has encountered at similar depths at other sites in this area of Carlsbad. The perched groundwater commonly occurs along the geologic contact between the old paralic deposits and the underlying Santiago Formation, owing to the contrasting permeabilities/densities of these earth units. The presence of these saturated deposits and the potential occurrence of the perched groundwater table would be considered a significant geotechnical factor if planned excavations extend to depths greater than about ±10 feet below the existing grades. Should planned excavations extend below this depth, dewatering would likely be necessary.

7. Due to the nature of the onsite earth materials, shallow perched groundwater conditions may develop both during and following site development. The perched groundwater would likely collect along zones of contrasting permeabilities/densities (i.e., fill/unweathered old paralic deposit contacts, fill lifts, etc.) and/or along geologic discontinuities (i.e., joints, fractures, etc.). The infiltration of storm water beneath the proposed permeable vehicular brick paver driveway would increase the likelihood for shallow perched groundwater to manifest in the future. The potential for the development of shallow perched groundwater at the site should be disclosed to all interested/affected parties. Recommendations are included herein to better control and mitigate perched groundwater created by the infiltration of storm water beneath the proposed driveway.

8. Based on our testing, partial storm water infiltration appears feasible in proximity to the proposed permeable vehicular brick paver driveway shown on S&A (2020). However, as previously stated, the infiltration of storm water beneath this proposed driveway could lead to shallow perched groundwater conditions within the project area. The lateral migration of the perched groundwater may adversely affect the proposed onsite improvements and the existing improvements on the adjacent private properties, and the public right-of-way. Recommendations are included in this report to reduce the lateral migration of perched groundwater. These include the installation of concrete cut-off barriers (i.e., deepened edge restraints) or a vertically installed 30-mil PVC impermeable membrane around the perimeter of the driveway. A subgrade enhancement geotextile (SEG) should be placed atop the driveway subgrade to reduce the potential for deformations from a wet driveway subgrade to propagate to the surface of the driveway, and result in pavement irregularities. Increased fill compaction to 95 percent of the laboratory standard (per ASTM D 1557) is recommended for all planned and remedial grading to reduce the potential adverse effects on the proposed improvements from shallow perched groundwater, created by storm water infiltration. Where building foundations abut the permeable brick paver driveway, the footings should be deepened to extend at least 1 foot below the pavement subgrade. Additionally, a reduction in the allowable bearing value used in the design of the building footings is recommended

where the building foundation is located within a horizontal distance of 8 feet from the permeable brick paver driveway. Lastly, low permeability concrete is recommended in the construction of the building foundations and slab-on-grade floor.

9. Due to the depth of the recommended structural section for the proposed permeable brick paver driveway and its proximity to the proposed buildings, the Project Structural Engineer should evaluate a temporary reduction in the passive resistance of the building foundation during the installation of the pavement section.

10. The removal and recompaction of potentially compressible soils below a 1:1 (h:v) plane projected down from the bottom, outboard edge of the planned settlement-sensitive improvements and engineered fill, along the perimeter of the site, may be limited due to boundary restrictions. Existing onsite or offsite improvements that are to remain in service may also constrain the lateral extent of remedial grading. As such, any proposed settlement-sensitive improvement located above a 1:1 (h:v) plane projected up and into the project area from the bottom outboard edge of the remedial grading excavations at the property boundaries, or from existing onsite or offsite improvements that need to remain in service would require deepened foundations below this plane, additional reinforcement, or would retain some potential for distress; and therefore, a reduced service life. On a preliminary basis, any proposed settlement-sensitive improvement located within a horizontal distance of approximately 2¼ feet to 3½ feet from the property boundaries or existing onsite, or offsite improvements, that are to remain in service, would require deepened foundations or additional reinforcement by means of ground improvement or specific structural design. This should be considered during project planning and design. Slot grading may be performed to extend remedial grading to the properties boundaries or the aforementioned existing improvements. Recommendations for slot grading are included in this report.

11. In order to provide uniform foundation support, all footings for the proposed buildings should be underlain by at least 24 inches of engineered fill. Based on the available subsurface data, this would require some overexcavation of the unweathered old paralic deposits.

12. On a preliminary basis, temporary slopes for excavations located above an approximate depth of 10 feet from the existing grades, should be constructed in accordance with CAL-OSHA guidelines for Type “B” soils, provided water, seepage, and/or running sands are <u>not</u> present. GSI encountered evidence of caving soils in Boring B-1 at an approximate depth of 11½ feet below the existing grade, following the removal of the hollow-stem auger. In addition, saturated unweathered old paralic deposits occurred in this boring at an approximate depth of 13½ feet below the existing grade. Given these conditions, temporary slopes for any planned excavation, extending below an approximate depth of 10 feet from the existing grades, should be constructed in accordance with CAL-OSHA guidelines for Type

"C" soils, on a preliminary basis. All temporary slopes should be evaluated by the geotechnical consultant, prior to worker entry. Should adverse conditions be identified, the temporary slope may need to be laid back to a flatter gradient or require the use of shoring. If the recommended temporary slopes conflict with property lines or existing improvements that need to remain in service, slot excavations or shoring may be necessary.

13. Site soils are considered erodible. Therefore, site drainage should be designed to eliminate the potential for concentrated flows along the ground surface. Positive surface drainage away from foundations is recommended. Temporary erosion control measures should be implemented until vegetative covering is well established. The property owner and/or the owner's association (if planned) will need to maintain proper surface drainage over the life of the project.

14. The site is subject to moderate to strong ground shaking should an earthquake occur along any of a number of the regional, Holocene-active fault systems. The seismic acceleration values and design parameters, provided herein, should be considered during the design of the proposed development. The adverse effects of seismic shaking on the structure(s) will likely be wall cracks, some foundation/slab distress, and some seismic settlement. However, it is anticipated that the proposed structures will be repairable in the event of the design seismic event. This potential should be disclosed to any owners and all interested/affected parties.

15. General Earthwork and Grading Guidelines are provided at the end of this report as Appendix F. Specific recommendations are provided below.

EARTHWORK CONSTRUCTION RECOMMENDATIONS

General

All earthwork should conform to the guidelines presented in Appendix Chapter "J" of the 2019 CBC (CBSC, 2019a), the requirements of the City of Carlsbad, and the General Earthwork and Grading Guidelines presented in Appendix F, except where specifically superceded in the text of this report. Prior to earthwork, a GSI representative should be present at the pre-construction meeting to provide additional earthwork guidelines, if needed, and to review the earthwork schedule. This office should be notified in advance of any fill placement, supplemental regrading of the site, or backfilling underground utility trenches and retaining walls after rough earthwork has been completed. This includes grading for driveway approaches, driveway, and exterior pedestrian hardscape.

During earthwork construction, all site preparation and the general grading procedures of the contractor should be observed and the fill selectively tested by a representative(s) of GSI. If unusual or unexpected conditions are exposed in the field, they should be reviewed

by this office and, if warranted, modified and/or additional recommendations will be offered. All applicable requirements of local and national construction and general industry safety orders, the Occupational Safety and Health Act (OSHA), and the Construction Safety Act should be met. It is the onsite general contractor's and individual subcontractors' responsibility to provide a safe working environment for our field staff who are onsite. GSI does not consult in the area of safety engineering.

Site Preparation

All existing improvements, vegetation (including root systems) and deleterious debris should be removed from the site prior to the start of construction if they are located in areas of proposed earthwork.

Any remaining cavities should be observed by the geotechnical consultant. Mitigation of cavities would likely include removing any potentially compressible soils to expose unweathered old paralic deposits and then backfilling the excavation with a controlled engineered fill or soils that have been moisture conditioned to optimum moisture content and compacted to at least 95 percent of the laboratory standard (per ASTM D 1557).

Given the age of the existing residences, it is possible that an onsite sewage disposal system (i.e., cisterns, seepage pits, leach lines, etc.) may be present, Should such structures be encountered during earthwork, this office should be contacted to provide recommendations for removal and disposal.

Removal and Recompaction of Potentially Compressible Earth Materials

Potentially compressible undocumented artificial fill, colluvium (topsoil), and weathered old paralic deposits should be removed to expose unweathered old paralic deposits. Following removal, these soils should be cleaned of any vegetation and deleterious debris, moisture conditioned to at least the soil's optimum moisture content, and then be recompacted to at least 95 percent of the laboratory standard (per ASTM D 1557). Based on the available data, excavations necessary to remove unsuitable soils are anticipated to extend to depths ranging between approximately 2¼ feet and 3½ feet below the existing grades (excluding the recommended compacted fill blanket below the proposed building footings). The potential for remedial grading excavations to extend to greater depths than stated above, cannot be precluded and should be anticipated. Potentially compressible soils should be removed below a 1:1 (h:v) plane projected down from the bottom, outboard edge of any proposed settlement-sensitive improvement or the limits of planned fill, or to a minimum distance of 5 feet outside the perimeter edges of the proposed buildings (whichever is greater), where not limited by property lines and existing onsite, or offsite improvements that need to remain in service. Remedial grading excavations should be observed by the geotechnical consultant prior to scarification and fill placement. Once observed and approved, the bottom of the remedial grading excavation should be scarified at least 6 to 8 inches, moisture conditioned to at least the soils' optimum moisture content,

and then recompacted to a minimum 95 percent of the laboratory standard (per ASTM D 1557).

Slot Grading

Slot grading may be performed for remedial excavation adjacent to the property boundaries and/or existing improvements that need to remain in service. The slot excavations should be performed in an "A," "B," and "C" sequence, and should be a maximum of 6 feet in width. Multiple slots may be simultaneously excavated provided that open slots are separated by at least 12 feet of tested and approved compacted fill or undisturbed soils. The actual number and widths of the slot excavations should not cause the allowable bearing capacity of any existing, adjacent residential or wall footings to increase by more than 2.0 times the allowable bearing. This will require proper sequencing during construction. Pre-construction surveys and survey monitoring should be performed in conjunction with slot grading.

Perimeter Conditions

It should be noted that the 2019 CBC (CBSC, 2019) indicates that removals of unsuitable soils be performed across all areas to be graded, under the purview of the grading permit, not just within the influence of the proposed structures. Relatively deep removals may also necessitate a special zone of consideration, on perimeter/confining areas. This zone would be approximately equal to the depth of the remedial grading excavations, if remedial grading cannot be performed onsite or offsite. In general, any planned improvement located above a 1:1 (h:v) plane projected up from the bottom, outboard edge of the remedial grading excavation would be affected by perimeter conditions. On a preliminary basis, any planned settlement-sensitive improvement located within approximately 2¼ feet to 3½ feet from the property lines or existing onsite, or offsite improvements that need to remain in service would require deepened foundations or additional reinforcement by means of ground improvement or specific structural design, for the perimeter conditions discussed above. Otherwise, these improvements may be subject to distress and a reduced service life. This potential should be disclosed to all interested/affected parties should this condition exist at the conclusion of grading.

Overexcavation

In order to provide uniform foundation support, any unweathered old paralic deposits exposed within 48 inches from pad grade or 24 inches below the lowest foundation element (whichever is greater) should be overexcavated (undercut) and replaced with engineered fill, prepared and compacted in accordance with the recommendations in the "Fill Placement" section of this report. The maximum to minimum fill thickness beneath the proposed buildings should not exceed a ratio of 3:1 (maximum:minimum). The bottom of the overexcavation should be sloped toward the driveway.

Fill Placement

Following scarification of the bottom of the remedial grading excavations and overexcavations, the reused onsite soils and import (if necessary) should be placed in ±6- to ±8-inch lifts, cleaned of vegetation and debris, moisture conditioned to at least the soil's optimum moisture content, and compacted to achieve a minimum relative compaction of 95 percent of the laboratory standard (ASTM D 1557). Fill placement and compaction should be observed and tested by the geotechnical consultant.

Import Soils

If import fill is necessary, a sample of the soil import should be evaluated by this office prior to importing, in order to assure compatibility with the onsite soils and the recommendations presented in this report. If non-manufactured materials are used, environmental documentation for the export site should be provided for GSI review. At least three (3) business days of lead time should be allowed by builders or contractors for proposed import submittals. This lead time will allow for environmental document review, particle size analysis, laboratory standard, expansion index testing, and an evaluation of the blended import/native characteristics as deemed necessary. Import soils should have an E.I. of 20 or less and a plasticity index (P.I.) of 14 or less. The use of subdrains at the bottom of the fill cap may be necessary, and may be subsequently recommended based on compatibility with the onsite soils.

Graded Slope Construction

According to S&A (2020), permanent graded slopes are not proposed. Thus, recommendations for graded slope construction have not been provided, but could be provided upon request.

Temporary Slopes

Temporary slopes for excavations that extend to depths less than approximately 10 feet below the existing grades should conform to CAL-OSHA and/or OSHA requirements for Type "B" soils (i.e., 1:1 [h:v] gradient), provided water or seepage and/or running sands are not present. Due to the potential for caving and saturated earth materials to be encountered, temporary slopes for excavations extending to depths greater than approximately 10 feet below the existing grades should conform to CAL-OSHA and/or OSHA requirements for Type "C" soils (i.e., 1.5:1 [h:v] gradient) Temporary slopes greater than 15 feet in overall height will require additional geotechnical evaluation prior to construction. Construction materials and soil stockpiles, and heavy equipment storage/traffic should not occur within "H" of the top of any temporary slope where "H" equals the height of the temporary slope. All temporary slopes should be observed by a licensed engineering geologist and/or geotechnical engineer prior to unprotected worker entry into the excavation. Based on the exposed field conditions, inclining temporary

slopes to flatter gradients or the use of shoring may be necessary if adverse conditions are observed. If adverse conditions are exposed or if temporary slopes conflict with property boundaries, or existing improvements that need to remain in service, shoring or alternating slot excavations may be necessary. The need for shoring or alternating slot excavations could be further evaluated during the grading plan review stage and during site earthwork.

Excavation Observation and Monitoring (All Excavations)

When excavations are made adjacent to an existing improvement (i.e., underground utility, wall, road, building, etc.) there is a risk of some damage even if a well designed system of excavation is planned and executed. We therefore recommend that a systematic program of observations be made before, during, and after construction to determine the effects (if any) of the excavation on existing improvements.

We believe that this is necessary for two reasons: First, if excessive movements (i.e., more than ½-inch) are detected early enough, remedial measures can be taken which could possibly prevent serious damage to existing improvements. Second, the responsibility for damage to the existing improvement can be evaluated more equitably if the cause and extent of the damage can be determined more precisely.

Monitoring should include the measurement of any horizontal and vertical movements of the existing structures/improvements. Locations and types of monitoring devices should be selected prior to the start of construction. The program of monitoring should be agreed upon between the project team, the site surveyor and the Geotechnical Engineer-of-Record, prior to excavation.

Reference points should be provided on existing walls, buildings, and other settlement-sensitive improvements. These points should be placed as low as possible on the walls and buildings adjacent to the excavation. Exact locations may be dictated by critical points, such as bearing walls or columns for buildings; and surface points on roadways or curbs near the top of the excavation.

For a survey monitoring system, an accuracy of a least 0.01 foot should be required. Reference points should be installed and read initially prior to excavation. The readings should continue until all construction below ground has been completed and the permanent backfill has been brought to finish grade.

The frequency of readings will depend upon the results of previous readings and the rate of construction. Weekly readings could be assumed throughout the duration of construction with daily readings during rapid excavation near the bottom of the excavation. The reading should be plotted by the Surveyor and then reviewed by the Geotechnical Engineer. In addition to the monitoring system, it would be prudent for the Geotechnical Engineer and the Contractor to make a complete inspection of the existing structures and improvements both before and after construction. The inspection should be directed

toward detecting any signs of damage, particularly those caused by settlement. Notes should be made and pictures should be taken where necessary.

Observation

It is recommended that all excavations be observed by a licensed Engineering Geologist and/or Geotechnical Engineer. Any fill which is placed should be tested and approved by the geotechnical consultant if used for engineered purposes. Should the observation reveal any unforseen hazard, the Engineering Geologist or Geotechnical Engineer will recommend treatment. Please inform GSI at least 24 hours prior to any required site observation.

Earthwork Balance (Shrinkage/Bulking)

The volume change of excavated materials upon compaction as engineered fill is anticipated to vary with material type and location. The overall earthwork shrinkage and bulking may be approximated by using the following parameters:

Undocumented Fill and Quaternary Colluvium . . . . . 5% to 10% shrinkage
Weathered Old Paralic Deposits . . . . . 2% to 5% shrinkage or 2% to 3% bulk
Unweathered Old Paralic Deposits . . . . . 2% to 5% bulking

It should be noted that the above factors are estimates only, based on preliminary data. The undocumented fill, colluvium, and weathered old paralic deposits may achieve higher shrinkage if organics or clay content is higher than anticipated, if a high degree of porosity is encountered, or if compaction averages more than 95 percent of the laboratory standard (per ASTM D 1557). In addition, extensive rodent burrowing may result in higher shrinkage. Final earthwork balance factors could vary. In this regard, it is recommended that balance areas be reserved where grades could be adjusted up or down near the completion of grading in order to accommodate any yardage imbalance for the project.

PRELIMINARY RECOMMENDATIONS - FOUNDATIONS

General

Preliminary recommendations for foundation design and construction are provided in the following sections. These preliminary recommendations have been developed from our understanding of the currently planned site development, site observations, subsurface exploration, laboratory testing, and engineering analyses. Foundation design should be re-evaluated at the conclusion of site grading/remedial earthwork for the as-graded soil conditions. Although not anticipated, revisions to these recommendations may be necessary. In the event that the information concerning the proposed development plan is not correct, or any changes in the design, location or loading conditions of the proposed

buildings are made, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report are modified or approved in writing by this office.

The information and recommendations presented in this section are not meant to supercede design by the project structural engineer or civil engineer specializing in structural design. Upon request, GSI could provide additional input/consultation regarding soil parameters, as related to foundation design.

The preliminary geotechnical data indicates the subject site is underlain by very low expansive soils (E.I. of 20 or less) with a plasticity index (P.I.) of 14 or less. In the following sections, GSI provides preliminary design and construction recommendations for foundations and slab-on-grade floor systems underlain by this type of soil condition. Footings for the proposed buildings should be founded into approved engineered fill observed and tested by this office that overlies suitable, unweathered old paralic deposits.

Preliminary Foundation Design

1. The foundation systems should be designed and constructed in accordance with guidelines presented in the 2019 CBC.

2. An allowable bearing value of 2,000 pounds per square foot (psf) may be used for the design of continuous spread footings that maintain a minimum width of 12 inches and a minimum depth of 12 inches (below the lowest adjacent grade), into approved engineered fill overlying suitable, unweathered old paralic deposits. A similar bearing value may be used in the design of isolated spread footings that have a minimum dimension of at least 24 inches square and a minimum embedment of 24 inches below the lowest adjacent grade, into approved engineered fill overlying suitable, unweathered old paralic deposits. Foundation embedment depth excludes concrete slabs-on-grade, and/or slab underlayment. The bearing value may be increased by 20 percent for each additional 12 inches in footing depth to a maximum value of 2,500 psf for footings founded into approved engineered fill overlying suitable, unweathered old paralic deposits. The bearing value may be increased by one-third when considering short duration seismic or wind loads.

3. Where the building foundations are located within a horizontal distance of 10 feet from the proposed permeable brick paver driveway, the allowable bearing used in the design of the footings should be reduced to 1,000 psf. In this case, there should be no increase in bearing for increased depth or width, and/or transient loads.

4. For foundations deriving passive resistance from approved very low expansive engineered fill (E.I. $\leq$ 20 and P.I. $\leq$ 14), a passive earth pressure may be computed as an equivalent fluid having a density of 250 pcf, with a maximum earth pressure of 2,500 psf.

5. The upper 6 inches of passive pressure should be neglected if not confined by slabs or pavement.

6. For lateral sliding resistance, a 0.35 coefficient of friction may be utilized for a concrete to soil contact when multiplied by the dead load.

7. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one-third.

8. Although significant slopes are not anticipated to be a part of the proposed development, all footing setbacks from slopes should comply with Figure 1808.7.1 of the 2019 CBC. GSI recommends a minimum horizontal setback distance of 7 feet as measured from the bottom, outboard edge of the footing to the slope face.

9. Footings for structures adjacent to any retaining walls should be deepened so as to extend below a 1:1 projection up from the heel of the wall footing.

PRELIMINARY FOUNDATION CONSTRUCTION RECOMMENDATIONS

Conventional Foundation and Slab-On-Grade Floor Systems

The following recommendations are intended to support foundations and slab-on-grade floor systems underlain by soils with an E.I.$\leq$ 20 and P.I. $\leq$ 14.

1. Exterior and interior continuous footings should be founded into approved engineered fill overlying suitable, unweathered old paralic deposits at a minimum depth of 12 and 18 inches below the lowest adjacent grade for one- and two-story floor loads, respectively. For one- and two-story floor loads, continuous footing widths should be 12 and 15 inches, respectively. Isolated, column, panel pad, or retaining wall footings, should be at least 24 inches square, and should be founded at a minimum depth of 24 inches below the lowest adjacent grade into approved engineered fill overlying suitable, unweathered old paralic deposits. All footings should be minimally reinforced with four (4), No. 4 reinforcing bars. Two bars should be placed near the top and two bars should be placed near the bottom of the footing.

2. Where building foundations abut the permeable brick paver driveway, the footings should be deepened at least 1 foot below the driveway subgrade.

3. All interior and exterior isolated column footings should be tied to the perimeter foundation via a reinforced grade beam in at least one direction. The grade beam should be at least 12 inches square in cross section, and should be provided with a minimum of one (1), No.4 reinforcing bar placed near the top, and one (1), No.4

reinforcing bar placed near the bottom of the grade beam. The base of the reinforced grade beam should be at the same elevation as the adjoining footings. This may require the use of a stepped grade beam if there are differences in the bearing elevations.

4. A grade beam, reinforced as previously recommended and at least 12 inches square, should be provided across large (garage) entrances. The base of the reinforced grade beam should be at the same elevation as the adjoining footings.

5. A minimum concrete slab-on-grade thickness of 4½ inches is recommended. This includes garage slabs-on-grade.

6. Concrete slabs should be reinforced with a minimum of No. 3 steel reinforcement bars placed at 18 inches on center, in two horizontally perpendicular directions (i.e., long axis and short axis).

7. All slab reinforcement should be supported to ensure proper mid-slab height positioning during placement of the concrete. "Hooking" of reinforcement is not an acceptable method of positioning.

8. Slab subgrade pre-soaking is not required for very low expansive soil conditions. However, the owner/developer should consider pre-moistening the slab subgrade materials to at least the soils' optimum moisture content to a minimum depth of 12 inches, within 72 hours prior to the placement of the underlayment sand and vapor retarder.

9. Soils generated from footing excavations to be used onsite should be compacted to a minimum relative compaction of 95 percent of the laboratory standard (per ASTM D 1557), whether the soils are to be placed inside the foundation perimeter or in the yard/right-of-way areas. This material must not alter positive drainage patterns that direct drainage away from the structural areas and toward the street.

10. Reinforced concrete mix design should consider the results of the soil corrosion testing when they become available.

11. Since the proposed permeable brick paver driveway abuts the proposed building foundation and slab-on-grade floor, GSI recommends that the concrete used in the construction of the foundation and floor slab conform to the requirements for Exposure Class W1 in Table 19.3.2.1 of American Concrete Institute (ACI) 318-14. The need for corrosion protection of the steel reinforcing bars in the footings and the concrete slab-on-grade should be evaluated by the Project Structural Engineer and waterproofing consultant.

Foundation Settlement

Provided that the earthwork and foundation recommendations in this report are adhered, foundations bearing on approved engineered fill overlying suitable, unweathered old paralic deposits should be minimally designed to accommodate a total settlement of 1½ inches and a differential settlement of ¾-inch over a 40-foot horizontal span (angular distortion = 1/640).

SOIL MOISTURE TRANSMISSION CONSIDERATIONS

GSI has evaluated the potential for vapor or water transmission through the concrete floor slabs, in light of typical floor coverings and improvements. Please note that slab moisture emission rates range from about 2 to 27 lbs/24 hours/1,000 square feet from a typical slab (Kanare, 2005), while floor covering manufacturers generally recommend about 3 lbs/24 hours as an upper limit. The recommendations in this section are not intended to preclude the transmission of water or vapor through the foundation or slabs. Foundation systems and slabs shall not allow water or water vapor to enter into the structure so as to cause damage to another building component or to limit the installation of the type of flooring materials typically used for the particular application (State of California, 2020). These recommendations may be exceeded or supplemented by a "water proofing" consultant, the project architect, or the structural consultant. Thus, the Client will need to evaluate the following in light of a cost vs. benefit analysis (owner expectations and repairs/replacement), along with disclosure to all interested/affected parties. It should also be noted that vapor transmission will occur in new slab-on-grade floors as a result of chemical reactions taking place within the curing concrete. Vapor transmission through concrete floor slabs as a result of concrete curing has the potential to adversely affect sensitive floor coverings depending on the thickness of the concrete floor slab and the duration of time between the placement of concrete, and the floor covering. It is possible that a slab moisture sealant may be needed prior to the placement of sensitive floor coverings if a thick slab-on-grade floor is used and the time frame between concrete and floor covering placement is relatively short.

Considering the E.I. test results presented herein, and known soil conditions in the region, the anticipated typical water vapor transmission rates, floor coverings, and improvements (to be chosen by the Client, project architect, and/or individual homeowners/tenants) that can tolerate vapor transmission rates without significant distress, the following alternatives are provided:

- Concrete slabs, including garages, should be a minimum of 5 inches thick.

- Concrete slab underlayment should consist of a 15-mil vapor retarder, or equivalent, with all laps sealed per the 2019 CBC and the manufacturer's recommendation. The vapor retarder should comply with the ASTM E 1745 - Class A criteria (i.e.,

Stego Wrap or approved equivalent), and be installed in accordance with ACI 302.1R-04 and ASTM E 1643.

- The 15-mil vapor retarder (ASTM E 1745 - Class A) shall be installed per the recommendations of the manufacturer, including all penetrations (i.e., pipe, ducting, rebar, etc.).

- Concrete slabs, including the garage areas, should be underlain by 2 inches of clean, washed sand (SE $\geq$ 30) above a 15-mil vapor retarder (ASTM E-1745 - Class A, per Engineering Bulletin 119 [Kanare, 2005]) installed per the recommendations of the manufacturer, including all penetrations (i.e., pipe, ducting, rebar, etc.). The manufacturer shall provide instructions for lap sealing, including minimum width of lap, method of sealing, and either supply or specify suitable products for lap sealing (ASTM E 1745), and per code.

  ACI 302.1R-04 (2004) states "If a cushion or sand layer is desired between the vapor retarder and the slab, care must be taken to protect the sand layer from taking on additional water from a source such as rain, curing, cutting, or cleaning. Wet cushion or sand layer has been directly linked in the past to significant lengthening of time required for a slab to reach an acceptable level of dryness for floor covering applications." Therefore, additional observation and/or testing will be necessary for the cushion or sand layer for moisture content, and relatively uniform thicknesses, prior to the placement of concrete.

- For very low expansive soil conditions, the vapor retarder should be underlain by 2 inches of sand (sand equivalent [SE] $\geq$ 30) placed directly on the prepared, moisture conditioned, subgrade and should be sealed to provide a continuous moisture retarder under the entire slab, as discussed above. The underlying 2-inch sand layer may be omitted provided testing indicates the SE of the slab subgrade soils is greater than or equal to 30.

- Concrete used in the construction of the building footings and slab-on-grade floors should have a maximum water/cement ratio of 0.50. This does not supercede Table 19.3.2.1 of American Concrete Institute 318-14 ([ACI], 2014a and 2014b) for corrosion or other corrosive requirements. Additional concrete mix design recommendations should be provided by the structural consultant and/or waterproofing consultant. Concrete finishing and workablity should be addressed by the structural consultant and a waterproofing consultant.

- Where slab water/cement ratios are as indicated herein, and/or admixtures used, the structural consultant should also make changes to the concrete in the grade beams and footings in kind, so that the concrete used in the foundation and slabs are designed and/or treated for more uniform moisture protection.

- The homeowner(s)/tenants should be specifically advised which areas are suitable for tile flooring, vinyl flooring, or other types of water/vapor-sensitive flooring and which areas are not suitable for these types of flooring applications. In all planned floor areas, flooring shall be installed per the manufactures recommendations.

- Additional recommendations regarding water or vapor transmission should be provided by the architect/structural engineer/slab or foundation designer and should be consistent with the specified floor coverings indicated by the architect.

Regardless of the mitigation, some limited moisture/moisture vapor transmission through the slab cannot be entirely precluded and should be anticipated. Construction crews may require special training for installation of certain product(s), as well as concrete finishing techniques. The use of specialized product(s) should be approved by the slab designer and water-proofing consultant. A technical representative of the flooring contractor should review the slab and moisture retarder plans and provide comment prior to the construction of the foundation or improvement. The vapor retarder contractor should have representatives onsite during the initial installation.

SITE RETAINING WALL DESIGN PARAMETERS (IF WARRANTED)

General

Based on our review of S&A (2020), there are no proposed retaining walls associated with the project at this time. However, should they be needed or incorporated into future owner/developer landscape improvements, recommendations for the design and construction of conventional retaining walls are provided herein. Recommendations for specialty walls (i.e., crib, earthstone, segmental, etc.) can be provided upon request, and would be based on site-specific conditions.

Conventional Retaining Walls

The design parameters provided below assume that either very low expansive soils (typically Class 2 permeable filter material or Class 3 aggregate base) or native onsite materials with an E.I. up to 20 and a P.I. up to 14 are used to backfill any retaining wall. The type of backfill (i.e., select or native), should be specified by the wall designer, and clearly shown on the plans. Building walls, below grade, should be water-proofed. Waterproofing should also be provided for site retaining walls in order to reduce the potential for efflorescence staining at the face. Soils intended for retaining wall backfill should be evaluated for suitability prior to placement.

Preliminary Retaining Wall Foundation Design

Preliminary foundation design for retaining walls should incorporate the following recommendations:

Minimum Footing Embedment - 24 inches below the lowest adjacent grade into approved engineered fill overlying suitable, unweathered old paralic deposits (excluding landscape layer [upper 6 inches]).

Minimum Footing Width - 24 inches.

Allowable Bearing Pressure - An allowable bearing pressure of 2,500 pcf may be used in the preliminary design of retaining wall foundations provided that the footing maintains a minimum width of 24 inches and extends at least 24 inches into approved engineered fill overlying suitable, unweathered old paralic deposits. This pressure may be increased by one-third for short-term wind and/or seismic loads.

Passive Earth Pressure - A passive earth pressure of 250 pcf with a maximum earth pressure of 2,500 psf may be used in the preliminary design of retaining wall foundations provided the foundation is embedded into properly compacted very low expansive fill.

Lateral Sliding Resistance - A 0.35 coefficient of friction may be utilized for a concrete to soil contact when multiplied by the dead load. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one-third.

Backfill Soil Density - Soil densities ranging between 125 pcf and 130 pcf may be used in the preliminary design of retaining walls. This assumes an average engineered fill compaction of at least 95 percent of the laboratory standard (per ASTM D 1557).

Any retaining wall footings near the perimeter of the site will likely need to be deepened into unweathered old paralic deposits for adequate vertical and lateral bearing support. All retaining wall footing setbacks from slopes should comply with Figure 1808.7.1 of the 2019 CBC. GSI recommends a minimum horizontal setback distance of 7 feet as measured from the bottom, outboard edge of the footing to the slope face.

Restrained Walls

Any retaining walls that will be restrained prior to placing and compacting backfill material or that have re-entrant or male corners, should be designed for an at-rest equivalent fluid pressure (EFP) of 55 pcf and 65 pcf for select and very low expansive native backfill, respectively. The design should include any applicable surcharge loading. For areas of male or re-entrant corners, the restrained wall design should extend a minimum distance of twice the height of the wall (2H) laterally from the corner.

Cantilevered Walls

The recommendations presented below are for cantilevered retaining walls up to 10 feet high. Design parameters for walls less than 3 feet in height may be superceded by County of San Diego regional standard design. However, regional standard design requires that the wall backfill consist of clean sands or gravels or mixtures of the aforementioned. Based on the onsite soil conditions, imported backfill would be necessary for regional standard design retaining walls.

Active earth pressure may be used for retaining wall design, provided the top of the wall is not restrained from minor deflections. An equivalent fluid pressure approach may be used to compute the horizontal pressure against the wall. Appropriate fluid unit weights are given below for specific slope gradients of the retained material. These do not include other superimposed loading conditions due to traffic, structures, seismic events or adverse geologic conditions. When wall configurations are finalized, the appropriate loading conditions for superimposed loads can be provided upon request.

For preliminary planning purposes, the structural consultant/wall designer should incorporate the surcharge of traffic on the back of retaining walls where vehicular traffic could occur within horizontal distance "H" from the back of the retaining wall (where "H" equals the wall height). The traffic surcharge may be taken as 100 psf/ft in the upper 5 feet of backfill for light passenger truck and car traffic. For heavy axle loads (HS20), a 300 psf/ft traffic surcharge should be applied in the upper 5 feet of the wall. This does not include the surcharge of parked vehicles which should be evaluated at a higher surcharge to account for the effects of seismic loading. Equivalent fluid pressures for the design of cantilevered retaining walls are provided in the following table:

SURFACE SLOPE OF RETAINED MATERIAL (HORIZONTAL:VERTICAL)	EQUIVALENT FLUID WEIGHT P.C.F. (SELECT BACKFILL)[2]	EQUIVALENT FLUID WEIGHT P.C.F. (NATIVE BACKFILL)[3]
Level[1]	38	50
2 to 1	55	65

[1] Level backfill behind a retaining wall is defined as compacted earth materials, properly drained, without a slope for a distance of 2H behind the wall, where H is the height of the wall.
[2] SE $\geq$ 30, P.I. < 15, E.I. < 21, and $\leq$ 10% passing No. 200 sieve.
[3] E.I. = 0 to 50, SE $\geq$ 30, P.I. < 15, E.I. < 21, and $\leq$ 15% passing No. 200 sieve.

Seismic Surcharge

For retaining walls incorporated into buildings, site retaining walls with more than 6 feet of retained materials as measured vertically from the bottom of the wall footing at the heel to daylight, or retaining walls that could present ingress/egress constraints in the event of failure, GSI recommends that the walls be evaluated for seismic surcharge in general

accordance with 2019 CBC requirements. The retaining walls in this category should maintain an overturning Factor-of-Safety (FOS) of approximately 1.25 when the seismic surcharge (increment), is applied. For restrained walls, the seismic surcharge should be applied as a uniform surcharge load from the bottom of the footing (excluding shear keys) to the top of the backfill at the heel of the wall footing. This seismic surcharge pressure (seismic increment) may be taken as 20H where "H" for restrained walls is the dimension previously noted as the height of the backfill to the bottom of the footing. For cantilevered walls, a seismic increment of 20H should be applied as an inverted triangular pressure distribution from 0.6H from the bottom of the footing to the top of the wall. For the evaluation of the seismic surcharge, the bearing pressure may exceed the static value by one-third, considering the transient nature of this surcharge. Please note this is for local wall stability only.

The 20H is derived from the guidelines set forth in City of Los Angeles Department of Building and Safety (LADBS) Information Bulletin Document No.: P/BC 2020-83 (LADBS, 2020), which are based on Seed and Whitman (1970).

$$\gamma_{EFP\ (seismic)} = \tfrac{3}{4} k_h \gamma_{soil}$$

Where:

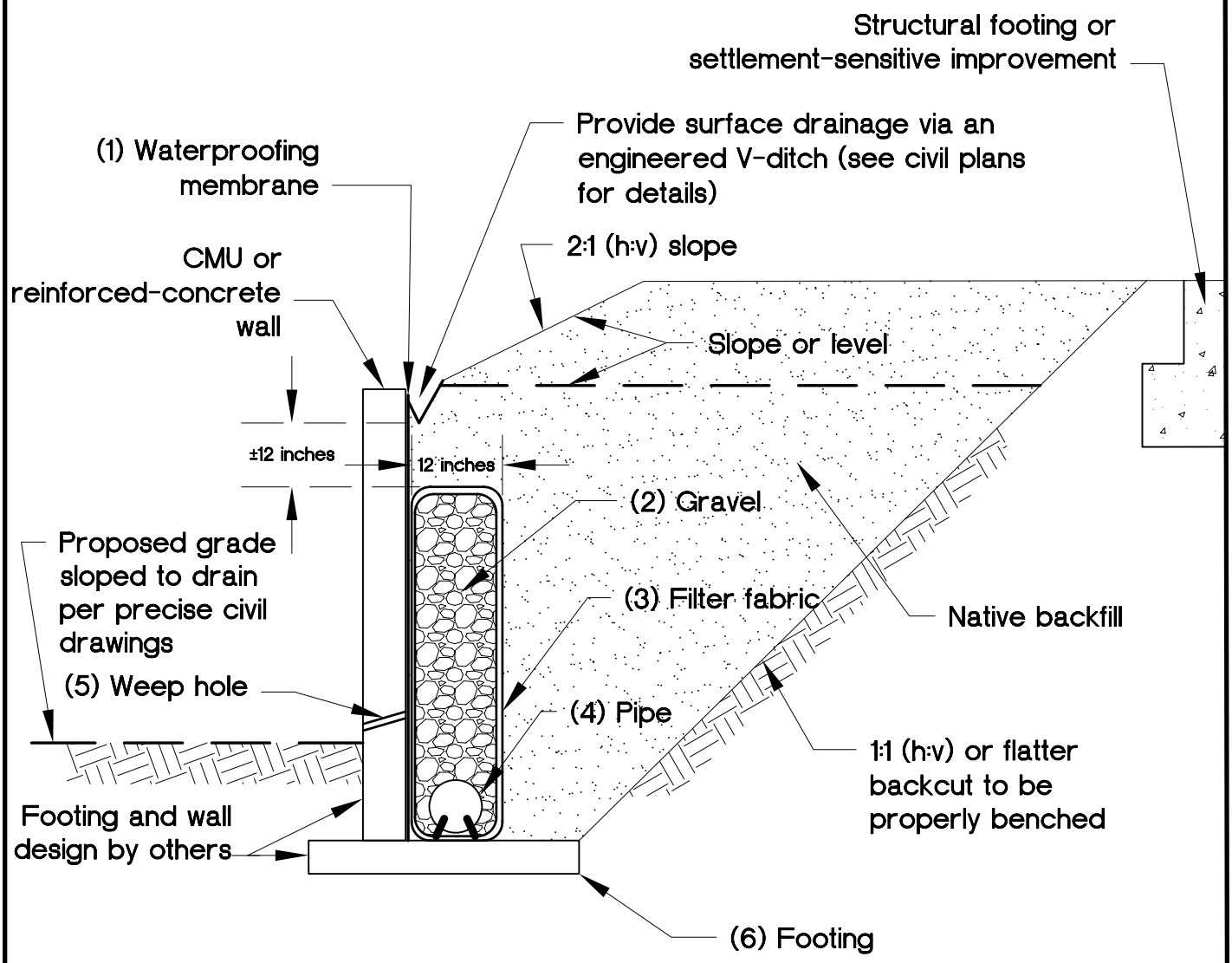
$\gamma_{EFP\ (seismic)}$	is the seismic increment expressed as equivalent fluid pressure (pounds per cubic foot [pcf]);
k_h	is the seismic lateral earth pressure coefficient equivalent to one-half of two-thirds of PGA_M (0.565 g x ⅔ x ½ = 0.176 g);
γ_{soil}	is the total unit weight of the retained soils (130 pcf)

Thus, for the proposed retaining walls:

$$\gamma_{EFP\ (seismic)} = \tfrac{3}{4} \times \tfrac{1}{2} \times \tfrac{2}{3} \times 0.526 \times 135 \text{ pcf} = 19.2 \text{ pcf (use 20 pcf [20H])}$$

Retaining Wall Backfill and Drainage

Positive drainage must be provided behind all retaining walls in the form of gravel wrapped in geofabric and outlets. A backdrain system is considered necessary for retaining walls that are 2 feet or greater in height. Details 1, 2, and 3, present the backdrainage options discussed below. Backdrains should consist of a 4-inch diameter perforated Schedule 40 or SDR 35 drain pipe encased in either Class 2 permeable filter material or ¾-inch to 1½-inch gravel wrapped in approved filter fabric (Mirafi 140 or equivalent). The backdrain should flow via gravity (minimum 1 percent slope) toward an approved drainage facility. For select backfill, the filter material should extend a minimum of 1 horizontal foot



(1) Waterproofing membrane.

(2) Gravel: Clean, crushed, ¾ to 1½ inch.

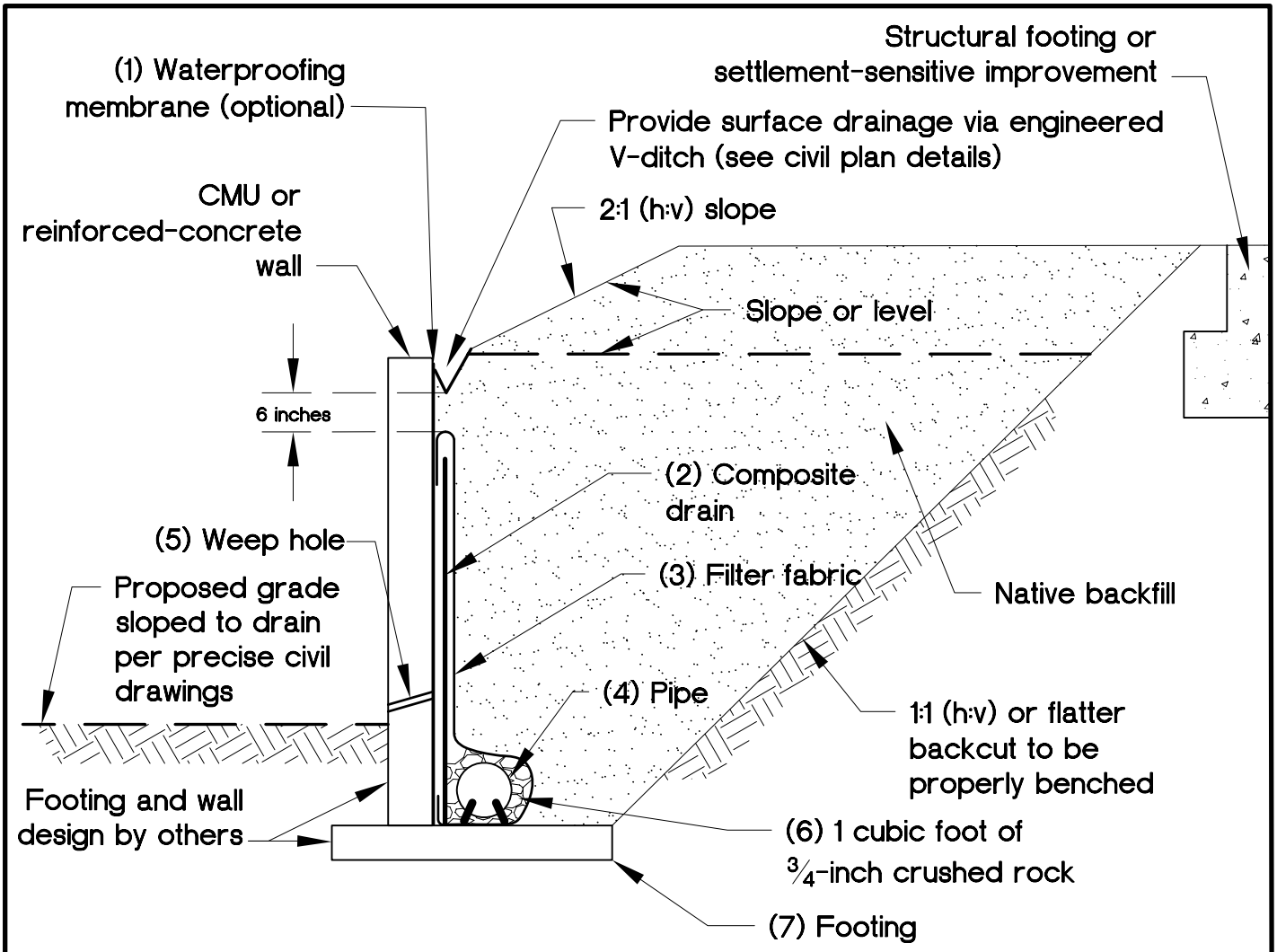
(3) Filter fabric: Mirafi 140N or approved equivalent.

(4) Pipe: 4-inch-diameter perforated PVC, Schedule 40, or approved alternative with minimum of 1 percent gradient sloped to suitable, approved outlet point (perforations down).

(5) Weep hole: Minimum 2-inch diameter placed at 20-foot centers along the wall and placed 3 inches above finished surface. Design civil engineer to provide drainage at toe of wall. No weep holes for below-grade walls.

(6) Footing: If bench is created behind the footing greater than the footing width, use level fill or cut natural earth materials. An additional "heel" drain will likely be required by geotechnical consultant.

GeoSoils, Inc.	RETAINING WALL DETAIL – ALTERNATIVE A	Detail 1



(1) Waterproofing membrane (optional): Liquid boot or approved mastic equivalent.

(2) Drain: Miradrain 6000 or J-drain 200 or equivalent for non-waterproofed walls; Miradrain 6200 or J-drain 200 or equivalent for waterproofed walls (all perforations down).

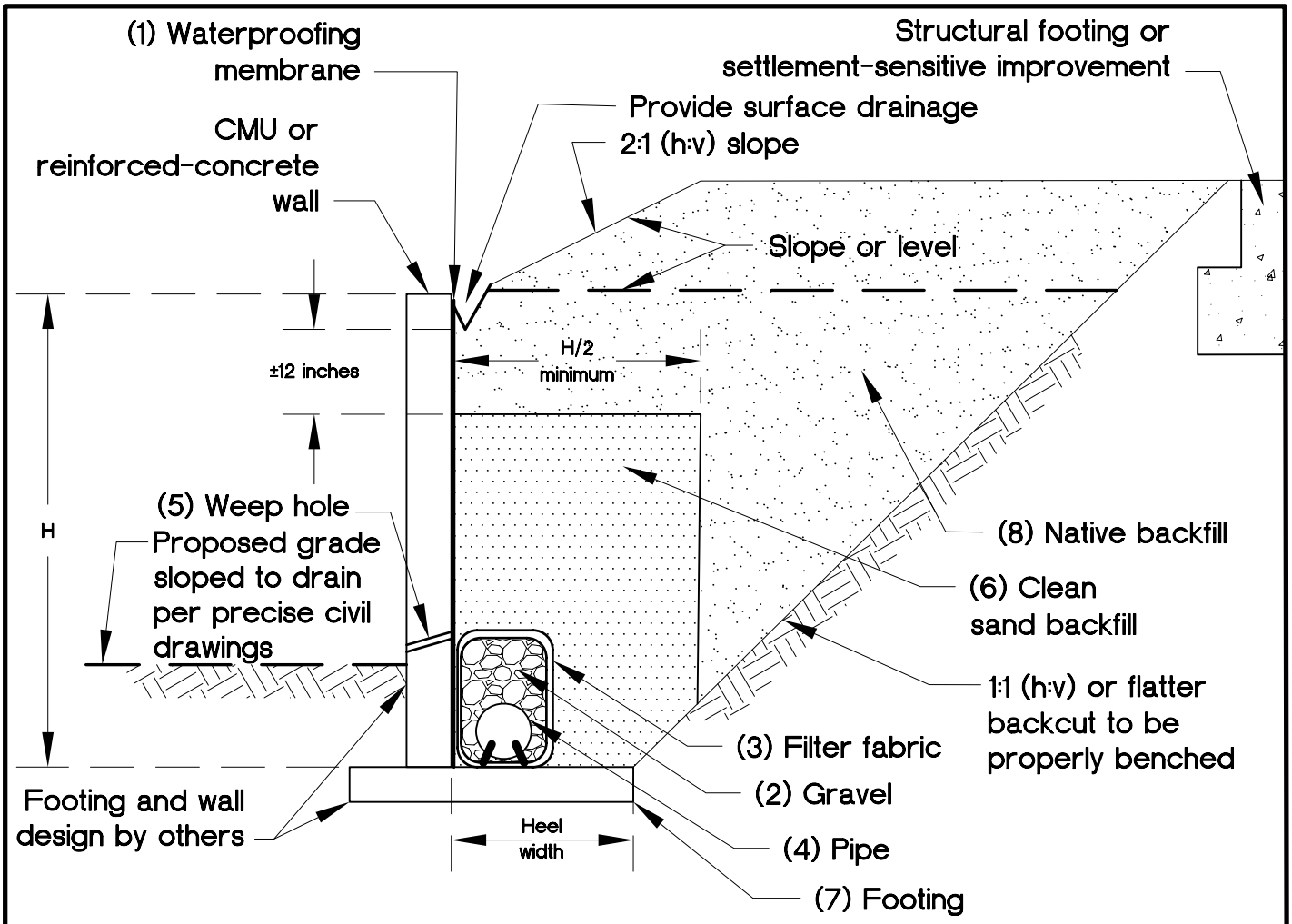
(3) Filter fabric: Mirafi 140N or approved equivalent; place fabric flap behind core.

(4) Pipe: 4-inch-diameter perforated PVC, Schedule 40, or approved alternative with minimum of 1 percent gradient to proper outlet point (perforations down).

(5) Weep hole: Minimum 2-inch diameter placed at 20-foot centers along the wall and placed 3 inches above finished surface. Design civil engineer to provide drainage at toe of wall. No weep holes for below-grade walls.

(6) Gravel: Clean, crushed, ¾ to 1½ inch.

(7) Footing: If bench is created behind the footing greater than the footing width, use level fill or cut natural earth materials. An additional "heel" drain will likely be required by geotechnical consultant.



(1) Waterproofing membrane: Liquid boot or approved masticequivalent.

(2) Gravel: Clean, crushed, ¾ to 1½ inch.

(3) Filter fabric: Mirafi 140N or approved equivalent.

(4) Pipe: 4-inch-diameter perforated PVC, Schedule 40, or approved alternative with minimum of 1 percent gradient to proper outlet point (perforations down).

(5) Weep hole: Minimum 2-inch diameter placed at 20-foot centers along the wall and placed 3 inches above finished surface. Design civil engineer to provide drainage at toe of wall. No weep holes for below-grade walls.

(6) Clean sand backfill: Must have sand equivalent value (S.E.) of 35 or greater; can be densified by water jetting upon approval by geotechnical engineer.

(7) Footing: If bench is created behind the footing greater than the footing width, use level fill or cut natural earth materials. An additional "heel" drain will likely be required by geotechnical consultant.

(8) Native backfill: If E.I. <21 and S.E. ≥ 35 then all sand requirements also may not be required and will be reviewed by the geotechnical consultant.

behind the base of the walls and upward at least 1 foot. For native backfill that has up to E.I. = 20, continuous Class 2 permeable drain materials should be used behind the wall. This material should be continuous (i.e., full height) behind the wall, and it should be constructed in accordance with the enclosed Detail 1 (Typical Retaining Wall Backfill and Drainage Detail). For limited access and confined areas, (panel) drainage behind the wall may be constructed in accordance with Detail 2 (Retaining Wall Backfill and Subdrain Detail Geotextile Drain). Materials with an expansion index (E.I.) greater than 20 and a P.I. greater than 14 should not be used as backfill for retaining walls. For more onerous expansive situations, backfill and drainage behind the retaining wall should conform with Detail 3 (Retaining Wall And Subdrain Detail Clean Sand Backfill). Retaining wall backfill should be moisture conditioned to 1.1 to 1.2 times the soils' optimum moisture content, placed in relatively thin lifts, and compacted to at least 95 percent of the laboratory standard (ASTM D 1557).

Outlets should consist of a 4-inch diameter solid PVC or ABS pipe spaced no greater than ±100 feet apart, with a minimum of two outlets, one on each end. The use of weep holes, only, in walls higher than 2 feet, is not recommended. The surface of the backfill should be sealed by pavement or the top 18 inches compacted with native soil (E.I. $\leq$ 50). Proper surface drainage should also be provided. For additional mitigation, consideration should be given to applying a waterproofing membrane to the back of all retaining structures. The use of a waterstop should be considered for all concrete and masonry joints.

Wall/Retaining Wall Footing Transitions

Site walls are anticipated to be founded on footings designed in accordance with the recommendations in this report. Should wall footings transition from cut to fill, the wall designer may specify either:

a) A minimum of a 2-foot overexcavation and recompaction of cut materials for a distance of 2H, from the point of transition.

b) Increase of the amount of reinforcing steel and wall detailing (i.e., expansion joints or crack control joints) such that a angular distortion of 1/360 for a distance of 2H on either side of the transition may be accommodated. Expansion joints should be placed no greater than 20 feet on-center, in accordance with the structural engineer's/wall designer's recommendations, regardless of whether or not transition conditions exist. Expansion joints should be sealed with a flexible, non-shrink grout.

c) Embed the footings entirely into native formational material (i.e., deepened footings).

If transitions from cut to fill transect the wall footing alignment at an angle of less than 45 degrees (plan view), then the designer should follow recommendation "a" (above) and until such transition is between 45 and 90 degrees to the wall alignment.

PRELIMINARY PERMEABLE VEHICULAR BRICK PAVER DRIVEWAY DESIGN

Based on our review of S&A (2020) and communication with an S&A representative, GSI understands that the proposed private driveway will incorporate permeable vehicular brick pavers in order to reduce impervious surface areas and the volume of storm water runoff leaving the site. Thus, GSI has included preliminary recommendations for the design and construction of this type of pavement system.

Pavement Structural Section

The recommended permeable brick paver structural section is based on our review of the guidelines contained in the "Pervious Pavement Design Guidance" published by the State of California Department of Transportation ([Caltrans], 2013) and "Structural Design of Interlocking Concrete Pavement for Municipal Streets and Roadways" prepared by American Society of Civil Engineers ([ASCE], 2010), and our professional experience. On a preliminary basis, GSI assumes that the resistance value (R-value) of the native subgrade materials will be 20 and that the traffic index (T.I.) for the proposed driveway is 5.0. The actual TI for the proposed driveway should be confirmed by the Project Civil Engineer based on the anticipated vehicle loading conditions and traffic volume. Based on the aforementioned assumptions, the recommended permeable vehicular brick paver section for the proposed driveway (from top to bottom) is provided in the following table:

BRICK PAVER THICKNESS	NO. 8 STONE LEVELING BASE THICKNESS[(1)]	CLASS II PERMEABLE BASE THICKNESS
3.15 inches[(1)]	2.0 inches	8.0[(2)]

[(1)] - Minimum specified thickness for vehicular traffic applications (Caltrans, 2013; ASCE, 2010)
[(2)]- Thicker Class II permeable base will be required where the permeable brick pavers are located adjacent to a thick section of non-pervious pavement or if there is a high hydraulic storage requirement. The bottom of the Class II permeable base should be 0.05 feet lower than the adjacent non-permeable pavement structure (Caltrans, 2013).

The final permeable vehicular brick paver section should be re-evaluated at the conclusion of grading and underground utility construction, and should be based on the results of actual R-value testing performed on a representative sample of soils located near subgrade.

Subgrade Preparation

Subgrade materials to receive permeable vehicular brick paver sections should be scarified at least 12 inches, moisture conditioned to at least optimum moisture content and compacted to at least 90 percent of the laboratory standard (ASTM D 1557). Given the

"permeable" nature of this pavement application, GSI recommends that following subgrade testing and approval, the subgrade be covered with Tencate Mirafi HP570 subgrade enhancement geotextile to help reduce the potential for infiltrated runoff to weaken and deform the pavement subgrade when subject to vehicle loading.

The geotextile should be rolled out in the direction of travel so that the machine direction (i.e., long axis) of the roll is parallel with the channelized traffic patterns. Adjacent rolls should be overlapped 24 to 36 inches along their sides and ends. The geotextile should extend up the sides of the excavation to resist pullout and sliding forces. The geotextile should be rolled out flat and tight with no folds or wrinkles. Prior to placement of the aggregate base layer, the geotextile should be held in place using pins, piles of aggregate base, nails, etc. so it does not move around during aggregate base placement.

The Class II permeable base materials may be placed atop the geotextile using rubber-tired vehicles driven at slow speeds (less than 5 miles per hour) and in straight paths. Sudden braking and starting, and sharp turning should be avoided. Tracked construction equipment should not be operated directly upon the geotextile. A minimum Class II permeable base lift of 6 inches is required above the geotextile prior to receiving traffic from tracked equipment. Turning of tracked equipment should be kept to a minimum to prevent the tracks from displacing the fill and damaging the geotextile. Damaged areas of geotextile should be removed and replaced with new strips of geotextile with overlapping edges that conform to the recommendations previously stated.

Class II Permeable Base Properties and Preparation

Properties

The properties of the Class II permeable base materials should meet the minimum requirements indicated in Section 68-2.02F(3) of Caltrans Standard Specifications (Caltrans, 2018). The durability index of the aggregate shall not be less than 35 and shall be evaluated in accordance with California Test Method (CTM) 229. The aggregate should consist of at least 2 fractured faces to assist with interlock.

Preparation

The Class II permeable base materials should placed atop the HP570 stabilization geotextile and the prepared subgrade. As previously indicated, care should be taken to prevent damage to the HP570 stabilization geotextile from delivery truck and construction equipment traffic, during aggregate base placement. The base materials should be moisture conditioned to at least optimum moisture content and then compacted to at least 90 percent of the laboratory standard (per ASTM D 1557).

No. 8 Stone Leveling Base

The No. 8 stone leveling base should conform to the following particle-size distribution:

US SIEVE SIZE	PERCENT PASSING
½"	100
⅜"	85 - 100
No. 4	10 - 30
No. 8	0 - 10
No. 16	0 - 5

Additional Recommendations for Permeable Brick Paver Sections

1. In accordance with the guidelines in Caltrans (2013), edge support for the paver brick driveway should be provided by installing a raised or flush modified Type A1 or Type B1 curb without a chamfer per Caltrans Standard Plan A87A. The curb should minimally extend downward to the pavement subgrade. A similar curb should be provided at the juncture between the permeable brick paver driveway and any adjacent non-permeable pavement. In this case, the curb should extend at least 0.05 feet below the subgrade for the impervious pavement section.

2. In order to reduce the potential for the infiltrated stormwater to migrate laterally beneath the proposed buildings or beyond the driveway area, a 30-mil polyvinyl chloride (PVC) impermeable liner should either be installed vertically around the perimeter of the brick paver driveway (i.e., behind the Type A1 or Type B1 curbs), and extend at least 1 foot below the brick paver subgrade. Alternatively, the Type A1 or Type B1 curbs may be deepened to at least 1 foot below the brick paver subgrade to serve as a cut-off barrier. If used, the impermeable liner should be installed in a narrow trench not exceeding 6 inches wide. The trench should be backfilled with slurry or a jetted clean sand with a Sand Equivalent (SE) of 50 or greater.

3. The 30-mil PVC membrane should have the following minimum properties:

   Specific Gravity (ASTM D792): 1.2 (g/cc, min.); Tensile Strength at Break (ASTM D882): 73 (lb/in-width, min); Elongation (ASTM D882): 380 (%, min); Modulus at 100 percent (ASTM D882): 32 (lb/in-width, min.); Tear Strength (ASTM D1004): 8 (lbs, min); Seam Strength (ASTM D882): 58.4 (lb/in, min); Seam Shear Strength (ASTM D882): 15 (lbs/in, min.); and Seam Peel Strength (ASTM D882) 2.6 (kN/m, min).

4. In order to improve the structural capacity of the brick paver section, the brick pavers should be installed in a 45- or 90-degree herringbone pattern where they will receive vehicular traffic (ASCE, 2010). Provided that the pavers are confined by the Type A1 or Type B1 curbs, a sailor or soldier course is not required to increase edge stability. However, a sailor or soldier course is recommended where utility structures and other protrusions occur in the pavement surface (ASCE, 2010).

5. Where the permeable brick paver driveway abuts the building foundations, the footings should extend at least 1 foot below the adjacent pavement subgrade.

FLATWORK AND OTHER IMPROVEMENTS

In order to reduce the likelihood of distress, the following recommendations are presented for all exterior flatwork:

1. Remedial grading, as recommended previously, should be performed below a 1:1 (h:v) plane projected down from the bottom, outboard edges of driveways approaches and flatwork, if possible. The subgrade area for exterior concrete slabs to receive pedestrian traffic should be compacted to achieve a minimum 90 percent relative compaction, and then be presoaked to at least the soils' optimum moisture content, to a depth of 12 inches below subgrade elevation. Mitigation of any potentially compressible soils within the influence of the hardscape should be performed prior to subgrade preparation.

2. Concrete slabs should be cast over a non-yielding surface, consisting of a 4-inch layer of crushed rock, gravel, or clean sand, that should be compacted and level prior to pouring concrete. If very low expansive soils are present, the rock or gravel or sand may be deleted. The layer or subgrade should be wet-down completely prior to pouring concrete, to minimize loss of concrete moisture to the surrounding earth materials.

3. Exterior slabs should be a minimum of 4 inches thick. Driveway slabs and approaches should additionally have a thickened edge (12 inches) adjacent to all landscape areas, to help impede infiltration of landscape water under the slab.

4. The use of transverse and longitudinal control joints are recommended to help control slab cracking due to concrete shrinkage or expansion. Two ways to mitigate such cracking are: a) add a sufficient amount of reinforcing steel, increasing tensile strength of the slab; and, b) provide an adequate amount of control and/or expansion joints to accommodate anticipated concrete shrinkage and expansion.

In order to reduce the potential for unsightly cracks, slabs should be reinforced at mid-height with a minimum of No. 3 bars placed at 18 inches on center, in each direction. If subgrade soils within the top 7 feet from finish grade are very low expansive soils (i.e., E.I. ≤20), then 6x6-W1.4xW1.4 welded-wire mesh may be substituted for the rebar, provided the reinforcement is placed on chairs, at slab mid-height. The exterior slabs should be scored or saw cut, ½ to ⅜ inches deep, often enough so that no section is greater than 10 feet by 10 feet. For sidewalks or narrow slabs, control joints should be provided at intervals of every 6 feet. The slabs should be separated from the foundations and sidewalks with expansion joint filler material.

5. No traffic should be allowed upon the newly poured concrete slabs until they have been properly cured to within 75 percent of design strength. Concrete compression strength should be a minimum of 2,500 psi.

6. Driveways, sidewalks, and patio slabs adjacent to the proposed buildings should be separated from the structures with thick expansion joint filler material. In areas directly adjacent to a continuous source of moisture (i.e., irrigation, planters, etc.), all joints should be additionally sealed with flexible mastic.

7. Planters and walls should not be tied to the proposed buildings.

8. Overhang structures should be supported on the slabs, or structurally designed with continuous footings tied in at least one direction.

9. Any masonry landscape or retaining walls that are to be constructed throughout the property should be grouted and articulated in segments no more than 20 feet long. These segments should be keyed or doweled together.

11. Positive site drainage should be maintained at all times. Finish grade on the property should provide a minimum of 1 to 2 percent fall to the street, as indicated herein or conform to Section 1804.3 of the 2019 CBC (whichever is more conservative). It should be kept in mind that drainage reversals could occur, including post-construction settlement, if relatively flat yard drainage gradients are not periodically maintained by the property owner or owner association.

12. Air conditioning (A/C) units should be supported by slabs that are incorporated into the building foundation or constructed on a rigid slab with flexible couplings for plumbing and electrical lines. A/C waste water lines should be drained to a suitable non-erosive outlet.

13. Shrinkage cracks could become excessive if proper finishing and curing practices are not followed. Finishing and curing practices should be performed per the Portland Cement Association Guidelines. Mix design should incorporate rate of

curing for climate and time of year, sulfate content of soils, corrosion potential of soils, and fertilizers used on site.

DEVELOPMENT CRITERIA

Drainage

Adequate surface drainage is a very important factor in reducing the likelihood of adverse performance of foundations, hardscape, and slopes. Surface drainage should be sufficient to mitigate ponding of water anywhere on the property, and especially near structures and tops of slopes. Surface drainage should be carefully taken into consideration during fine grading, landscaping, and building construction. Therefore, care should be taken that future landscaping or construction activities do not create adverse drainage conditions. Positive site drainage within the property should be provided and maintained at all times. Water should be directed away from foundations, and not allowed to pond and/or seep into the ground. In general, finish grade on the property should provide a minimum of 1 to 2 percent fall to the street or other approved areas, or conform to Section 1804.3 of the 2019 CBC (whichever is more conservative). Consideration should be given to avoiding construction of planters adjacent to the residential structures. Building pad drainage should be directed toward the street or other approved area(s). Although not a geotechnical requirement, roof gutters, down spouts, or other appropriate means may be utilized to control roof drainage. Down spouts, or drainage devices should outlet a minimum of 5 feet from structures or into a subsurface drainage system. Areas of seepage may develop due to irrigation or heavy rainfall, and should be anticipated. Minimizing irrigation will lessen this potential. If areas of seepage develop, recommendations for minimizing this effect could be provided upon request.

Erosion Control

Onsite earth materials have a moderate to high erosion potential. Consideration should be given to providing hay bales and silt fences for the temporary control of surface water, from a geotechnical viewpoint.

Landscape Maintenance and Design of Open Bottom Planters

Only the amount of irrigation necessary to sustain plant life should be provided. Over-watering the landscape areas will adversely affect proposed site improvements. We would recommend that any proposed open-bottom planters adjacent to proposed structures be eliminated for a minimum distance of 10 feet. As an alternative, closed-bottom type planters could be utilized. An outlet placed in the bottom of the planter, could be installed to direct drainage away from structures or any exterior concrete flatwork. If planters are constructed adjacent to structures, the sides and bottom of the planter should be provided with a moisture barrier to prevent penetration of irrigation water

into the subgrade. Provisions should be made to drain the excess irrigation water from the planters without saturating the subgrade below or adjacent to the planters. Consideration should be given to the type of vegetation chosen and their potential effect upon surface improvements (i.e., some trees will have an effect on concrete flatwork with their extensive root systems). From a geotechnical standpoint leaching is not recommended for establishing landscaping. If the surface soils are processed for the purpose of adding amendments, they should be recompacted to 90 percent minimum relative compaction.

Gutters and Downspouts

As previously discussed in the drainage section, the installation of gutters and downspouts should be considered to collect roof water that may otherwise infiltrate the soils adjacent to the structures. If utilized, the downspouts should be drained into PVC collector pipes or other non-erosive devices (e.g., paved swales or ditches; below grade, solid tight-lined PVC pipes; etc.), that will carry the water away from the house, to an appropriate outlet, in accordance with the recommendations of the design civil engineer. Downspouts and gutters are not a requirement; however, from a geotechnical viewpoint, provided that positive drainage is incorporated into project design (as discussed previously).

Subsurface and Surface Water

Subsurface and surface water are not anticipated to affect site development, provided that the recommendations contained in this report are incorporated into final design and construction and that prudent surface and subsurface drainage practices are incorporated into the construction plans. Perched groundwater conditions along zones of contrasting permeabilities may not be precluded from occurring in the future due to site irrigation, poor drainage conditions, or damaged utilities, and should be anticipated. Should perched groundwater conditions develop, this office could assess the affected area(s) and provide the appropriate recommendations to mitigate the observed groundwater conditions. Groundwater conditions may change with the introduction of irrigation, rainfall, or other factors.

Site Improvements

If in the future, any additional improvements (e.g., pools, spas, etc.) are planned for the site, recommendations concerning the geological or geotechnical aspects of design and construction of said improvements could be provided upon request. Pools and/or spas should not be constructed without specific design and construction recommendations from GSI, and this construction recommendation should be provided to all interested/affected parties. This office should be notified in advance of any fill placement, grading of the site, or trench backfilling after rough grading has been completed. This includes any grading, utility trench and retaining wall backfills, flatwork, etc.

Tile Flooring

Tile flooring can crack, reflecting cracks in the concrete slab below the tile, although small cracks in a conventional slab may not be significant. Therefore, the designer should consider additional steel reinforcement for concrete slabs-on-grade where tile will be placed. The tile installer should consider installation methods that reduce possible cracking of the tile such as slipsheets. Slipsheets or a vinyl crack isolation membrane (approved by the Tile Council of America/Ceramic Tile Institute) are recommended between tile and concrete slabs on grade.

Additional Grading

This office should be notified in advance of any fill placement, supplemental regrading of the site, or trench backfilling after rough grading has been completed. This includes completion of grading in the street, driveway approaches, driveways, parking areas, and utility trench and retaining wall backfills.

Footing Trench Excavation

All footing excavations should be observed by a representative of this firm subsequent to trenching and prior to concrete form and reinforcement placement. The purpose of the observations is to evaluate that the excavations have been made into the recommended bearing material and to the minimum widths and depths recommended for construction. If loose or compressible materials are exposed within the footing excavation, a deeper footing or removal and recompaction of the subgrade materials would be recommended at that time. Footing trench spoil and any excess soils generated from utility trench excavations should be compacted to a minimum relative compaction of 90 percent, if not removed from the site.

Trenching/Temporary Construction Backcuts

Considering the nature of the onsite earth materials, it should be anticipated that caving or sloughing could be a factor in subsurface excavations and trenching. Shoring or excavating the trench walls/backcuts at the angle of repose (typically 25 to 45 degrees [except as specifically superceded within the text of this report]), should be anticipated. All excavations should be observed by an engineering geologist or soil engineer from GSI, prior to workers entering the excavation or trench, and minimally conform to CAL-OSHA, state, and local safety codes. Should adverse conditions exist, appropriate recommendations would be offered at that time. The above recommendations should be provided to any contractors and/or subcontractors, or homeowner(s), etc., that may perform such work.

Utility Trench Backfill

1. All interior utility trench backfill should be brought to at least 2 percent above optimum moisture content and then compacted to obtain a minimum relative compaction of 90 percent of the laboratory standard. As an alternative for shallow (12-inch to 18-inch) under-slab trenches, sand having a sand equivalent value of 30 or greater may be utilized and jetted or flooded into place. Observation, probing and testing should be provided to evaluate the desired results.

2. Exterior trenches adjacent to, and within areas extending below a 1:1 plane projected from the outside bottom edge of the footing, and all trenches beneath hardscape features and in slopes, should be compacted to at least 90 percent of the laboratory standard. Sand backfill, unless excavated from the trench, should not be used in these backfill areas. Compaction testing and observations, along with probing, should be accomplished to evaluate the desired results.

3. All trench excavations should conform to CAL-OSHA, state, and local safety codes.

4. Utilities crossing grade beams, perimeter beams, or footings should either pass below the footing or grade beam utilizing a hardened collar or foam spacer, or pass through the footing or grade beam in accordance with the recommendations of the structural engineer.

SUMMARY OF RECOMMENDATIONS REGARDING GEOTECHNICAL OBSERVATION AND TESTING

We recommend that observation and/or testing be performed by GSI at each of the following construction stages:

- During grading.

- During excavation.

- During placement of subdrains or other subdrainage devices, prior to placing fill and/or backfill.

- After excavation of building footings, retaining wall footings, and free standing walls footings, prior to the placement of reinforcing steel or concrete.

- Prior to pouring any slabs or flatwork, after presoaking/presaturation of building pads and other flatwork subgrade, before the placement of concrete, reinforcing steel, capillary break (i.e., sand, pea-gravel, etc.), or vapor retarders (i.e., visqueen, etc.).

- During retaining wall subdrain installation, prior to backfill placement.

- During placement of backfill for area drain, interior plumbing, utility line trenches, and retaining wall backfill.

- During any slope construction/repair.

- When any unusual soil conditions are encountered during any construction operations, subsequent to the issuance of this report.

- When any homeowner improvements, such as flatwork, spas, pools, walls, etc., are constructed, prior to construction.

- A report of geotechnical observation and testing should be provided at the conclusion of each of the above stages, in order to provide concise and clear documentation of site work, and/or to comply with code requirements.

OTHER DESIGN PROFESSIONALS/CONSULTANTS

The design civil engineer, structural engineer, post-tension designer, architect, landscape architect, wall designer, etc., should review the recommendations provided herein, incorporate those recommendations into all their respective plans, and by explicit reference, make this report part of their project plans. This report presents minimum design criteria for the design of slabs, foundations and other elements possibly applicable to the project. These criteria should not be considered as substitutes for actual designs by the structural engineer/designer. Please note that the recommendations contained herein are not intended to preclude the transmission of water or vapor through the slab or foundation. The structural engineer/foundation and/or slab designer should provide recommendations to not allow water or vapor to enter into the structure so as to cause damage to another building component, or so as to limit the installation of the type of flooring materials typically used for the particular application.

The structural engineer/designer should analyze actual soil-structure interaction and consider, as needed, bearing, expansive soil influence, and strength, stiffness and deflections in the various slab, foundation, and other elements in order to develop appropriate, design-specific details. As conditions dictate, it is possible that other influences will also have to be considered. The structural engineer/designer should consider all applicable codes and authoritative sources where needed. If analyses by the structural engineer/designer result in less critical details than are provided herein as minimums, the minimums presented herein should be adopted. It is considered likely that some, more restrictive details will be required.

If the structural engineer/designer has any questions or requires further assistance, they should not hesitate to call or otherwise transmit their requests to GSI. In order to mitigate potential distress, the foundation and/or improvement's designer should confirm to GSI and the governing agency, in writing, that the proposed foundations and/or improvements can tolerate the amount of differential settlement and/or expansion characteristics and other design criteria specified herein.

PLAN REVIEW

Final project plans (grading, precise grading, foundation, retaining wall, landscaping, etc.), should be reviewed by this office prior to construction, so that construction is in accordance with the conclusions and recommendations of this report. Based on our review, supplemental recommendations and/or further geotechnical studies may be warranted.

LIMITATIONS

The materials encountered on the project site and utilized for our analysis are believed representative of the area; however, soil and bedrock materials vary in character between excavations and natural outcrops or conditions exposed during mass grading. Site conditions may vary due to seasonal changes or other factors.

Inasmuch as our study is based upon our review and engineering analyses and laboratory data, the conclusions and recommendations are professional opinions. These opinions have been derived in accordance with current standards of practice, and no warranty, either express or implied, is given. Standards of practice are subject to change with time. GSI assumes no responsibility or liability for work or testing performed by others, or their inaction; or work performed when GSI is not requested to be onsite, to evaluate if our recommendations have been properly implemented. Use of this report constitutes an agreement and consent by the user to all the limitations outlined above, notwithstanding any other agreements that may be in place. In addition, this report may be subject to review by the controlling authorities. Thus, this report brings to completion our scope of services for this portion of the project. All samples will be disposed of after 30 days, unless specifically requested by the client, in writing.

APPENDIX A

REFERENCES

APPENDIX A

REFERENCES

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APPENDIX B

BORING LOGS

UNIFIED SOIL CLASSIFICATION SYSTEM

Major Divisions			Group Symbols	Typical Names
Coarse-Grained Soils More than 50% retained on No. 200 sieve	Gravels 50% or more of coarse fraction retained on No. 4 sieve	Clean Gravels	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
		Gravel with	GM	Silty gravels gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	Sands more than 50% of coarse fraction passes No. 4 sieve	Clean Sands	SW	Well-graded sands and gravelly sands, little or no fines
			SP	Poorly graded sands and gravelly sands, little or no fines
		Sands with Fines	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
Fine-Grained Soils 50% or more passes No. 200 sieve	Silts and Clays Liquid limit 50% or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	Silts and Clays Liquid limit greater than 50%		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
Highly Organic Soils			PT	Peat, mucic, and other highly organic soils

CONSISTENCY OR RELATIVE DENSITY

CRITERIA

Standard Penetration Test

Penetration Resistance N (blows/ft)	Relative Density
0 - 4	Very loose
4 - 10	Loose
10 - 30	Medium
30 - 50	Dense
> 50	Very dense

Standard Penetration Test

Penetration Resistance N (blows/ft)	Consistency	Unconfined Compressive Strength (tons/ft^2)
<2	Very Soft	<0.25
2 - 4	Soft	0.25 - .050
4 - 8	Medium	0.50 - 1.00
8 - 15	Stiff	1.00 - 2.00
15 - 30	Very Stiff	2.00 - 4.00
>30	Hard	>4.00

3" 3/4" #4 #10 #40 #200 U.S. Standard Sieve

Unified Soil Classification	Cobbles	Gravel		Sand			Silt or Clay
		coarse	fine	coarse	medium	fine	

MOISTURE CONDITIONS

Dry	Absence of moisture: dusty, dry to the touch
Slightly Moist	Below optimum moisture content for compaction
Moist	Near optimum moisture content
Very Moist	Above optimum moisture content
Wet	Visible free water; below water table

MATERIAL QUANTITY

trace	0 - 5 %
few	5 - 10 %
little	10 - 25 %
some	25 - 45 %

OTHER SYMBOLS

C Core Sample
S SPT Sample
B Bulk Sample
__ Groundwater
Qp Pocket Penetrometer

BASIC LOG FORMAT:
Group name, Group symbol, (grain size), color, moisture, consistency or relative density. Additional comments: odor, presence of roots, mica, gypsum, coarse grained particles, etc.

EXAMPLE:
Sand (SP), fine to medium grained, brown, moist, loose, trace silt, little fine gravel, few cobbles up to 4" in size, some hair roots and rootlets.

GeoSoils, Inc.

BORING LOG

PROJECT: WESTERN MUTUAL DEVELOPMENT CORPORATION
2754 & 2770 Jefferson Street
Carlsbad, CA

W.O. 8014-A-SC *BORING* B-1 *SHEET* 1 *OF* 1

DATE EXCAVATED 11-11-20 *LOGGED BY:* RB *APPROX. ELEV.:* ±56'NGVD29

SAMPLE METHOD: Modified Cal. Sampler & Standard Pen., 140 lb Hammer @ 30-in.

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/Ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Saturation (%)	Material Description
0				SM				**QUATERNARY COLLUVIUM (TOPSOIL):**
				SP				@ 0' SILTY SAND, dark grayish brown, dry, loose; fine to medium grained, porous, abundant organics.
			71	SM	119.8	6.7	46.9	**WEATHERED QUATERNARY OLD PARALIC DEPOSITS:**
								@ 1' SAND, brown, dry, medium dense; fine to medium grained, trace silt, porous, trace organics.
5			54	SM	118.8	7.0	47.1	**QUATERNARY OLD PARALIC DEPOSITS:**
								@ 3' SILTY SAND, reddish yellow, damp, dense; fine grained, trace clay, manganese-oxide staining.
								@ 5' SILTY SAND, reddish yellow, damp, dense; fine grained, trace clay.
			48	SP	110.7	5.5	29.4	@ 8½' SAND, dark yellowish brown and dark gray, damp, dense; fine to medium grained, trace silt.
10			31/ 50-5½"		108.4	5.6	28.2	@ 10' SAND, yellowish brown, damp, very dense; fine to medium grained, trace silt.
			37		107.1	15.1	73.3	@ 11' SAND, yellowish brown, damp, dense; fine to medium grained, trace coarse grains, micaceous.
			30/ 50-5½"	SW				@ 12½' SAND, light yellowish brown, moist, very dense; fine to coarse grained, trace gravel.
15			39					@ 13½' SAND, light brownish gray, saturated, dense; fine to coarse grained.
								Total Depth = 15'
								No Groundwater Encountered
								Caving at ~11½'
								Backfilled 11-11-20
20								
25								
30								

▼ *Standard Penetration Test*
⌶ *Undisturbed, Ring Sample*
▽ *Groundwater*
♀ *Seepage*

GeoSoils, Inc.

BORING LOG

PROJECT: WESTERN MUTUAL DEVELOPMENT CORPORATION
2754 & 2770 Jefferson Street
Carlsbad, CA

W.O. 8014-A-SC *BORING* IB-1 *SHEET* 1 *OF* 1

DATE EXCAVATED 11-11-20 *LOGGED BY:* RB *APPROX. ELEV.:* ±55'NGVD29

SAMPLE METHOD: N/A

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/Ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Saturation (%)	Material Description
0				SM				**QUATERNARY COLLUVIUM (TOPSOIL):** @ 0' SILTY SAND, dark grayish brown, dry, loose; fine to medium grained, porous, abundant organics.
				SP				**WEATHERED QUATERNARY OLD PARALIC DEPOSITS:** @ 1½' SAND, brown, dry, medium dense; fine to medium grained, trace silt, trace organics.
				SM				**QUATERNARY OLD PARALIC DEPOSITS:** @ 3' SILTY SAND, reddish yellow, damp, dense; fine grained.
5								Total Depth = 5' No Groundwater or Caving Encountered Backfilled 11-12-20
10								
15								
20								
25								
30								

Standard Penetration Test
Undisturbed, Ring Sample
Groundwater
Seepage

GeoSoils, Inc.

PLATE B-3

GeoSoils, Inc.

BORING LOG

PROJECT: WESTERN MUTUAL DEVELOPMENT CORPORATION
2754 & 2770 Jefferson Street
Carlsbad, CA

W.O. 8014-A-SC *BORING* IB-2 *SHEET* 1 *OF* 1

DATE EXCAVATED 11-11-20 *LOGGED BY:* RB *APPROX. ELEV.:* ±56'NGVD29

SAMPLE METHOD: N/A

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/Ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Saturation (%)	Material Description
0				SM				**QUATERNARY COLLUVIUM (TOPSOIL):**
				SP				@ 0' SILTY SAND, dark grayish brown, dry, loose; fine to medium grained, porous, abundant organics.
				SM				**WEATHERED QUATERNARY OLD PARALIC DEPOSITS:**
5								@ 1' SAND, brown, dry, medium dense; fine grained, trace silt, trace organics.
								QUATERNARY OLD PARALIC DEPOSITS:
								@ 3' SILTY SAND, reddish yellow, damp, dense; fine grained.
								Total Depth = 5'
								No Groundwater or Caving Encountered
								Backfilled 11-12-20
10								
15								
20								
25								
30								

▼ *Standard Penetration Test*
⌶ *Undisturbed, Ring Sample*
▽ *Groundwater*
♀ *Seepage*

GeoSoils, Inc.

W.O. 8014-A-SC
Western Mutual Development Corporation
2754 & 2770 Jefferson St., Carlsbad
Logged By: RBB
11-11-20

LOG OF EXPLORATORY HAND-AUGER BORING

HAND AUGER NO.	ELEV. (ft.)	DEPTH (ft.)	GROUP SYMBOL	SAMPLE DEPTH (ft.)	MOISTURE (%)	FIELD DRY DENSITY (pcf)	DESCRIPTION
HA-1	±56 NGVD 29	0-1	SM				**QUATERNARY COLLUVIUM (TOPSOIL)**: SILTY SAND, dark brownish gray, dry, loose; fine to medium grained, porous, abundant organics.
		1-2¼	SP	Und @ 1¼	3.3	99.8	**WEATHERED QUATERNARY OLD PARALIC DEPOSITS**: SAND, brown, dry, medium dense; fine to medium grained, trace silt, porous, abundant organics.
		2¼-2½	SP				**QUATERNARY OLD PARALIC DEPOSITS**: SAND, dark yellowish brown, dry, dense; fine to medium grained, trace silt, trace organics.
	Und= Relatively Undisturbed Sample						Total Depth = 2½' No Groundwater or Caving Encountered Backfilled 11-11-20

PLATE B-5

GeoSoils, Inc.

W.O. 8014-A-SC
Western Mutual Development Corporation
2754 & 2770 Jefferson St., Carlsbad
Logged By: RBB
11-11-20

LOG OF EXPLORATORY HAND-AUGER BORING

HAND AUGER NO.	ELEV. (ft.)	DEPTH (ft.)	GROUP SYMBOL	SAMPLE DEPTH (ft.)	MOISTURE (%)	FIELD DRY DENSITY (pcf)	DESCRIPTION
HA-2	±56 NGVD 29	0-1½	SM				**QUATERNARY COLLUVIUM (TOPSOIL)**: SILTY SAND, dark brownish gray, dry, loose; fine to medium grained, porous, trace organics.
		1½-2½	SP				**WEATHERED QUATERNARY OLD PARALIC DEPOSITS**: SAND, brown, dry, medium dense; fine to medium grained, trace silt, porous, trace organics.
		2½-2¾	SP				**QUATERNARY OLD PARALIC DEPOSITS**: SAND, dark yellowish brown, dry, dense; fine to medium grained, trace silt, trace organics, manganese-oxide staining.
							Total Depth = 2¾' No Groundwater or Caving Encountered Backfilled 11-11-20

PLATE B-6

GeoSoils, Inc.

W.O. 8014-A-SC
Western Mutual Development Corporation
2754 & 2770 Jefferson St., Carlsbad
Logged By: RBB
11-11-20

LOG OF EXPLORATORY HAND-AUGER BORING

HAND AUGER NO.	ELEV. (ft.)	DEPTH (ft.)	GROUP SYMBOL	SAMPLE DEPTH (ft.)	MOISTURE (%)	FIELD DRY DENSITY (pcf)	DESCRIPTION
HA-3	±55 NGVD 29	0-¾	SW				**ARTIFICIAL FILL - UNDOCUMENTED**: GRAVELLY SAND, dark brownish gray, dry, loose; fine to coarse grained, abundant ¾" - 1½" subangular and angular gravel, trace trash (plastic and aluminum foil), abundant organics.
		¾-2	SP				**QUATERNARY COLLUVIUM**: SAND, brown, dry, medium dense; fine to medium grained, trace silt, abundant organics (roots).
		2-3½	SP				**WEATHERED QUATERNARY OLD PARALIC DEPOSITS**: SAND, brown, dry, loose becoming medium dense at approximately 3 feet; fine to medium grained, trace silt, trace organics.
		3½-4¼	SP				**QUATERNARY OLD PARALIC DEPOSITS**: SAND, dark yellowish brown, dry, dense; fine to medium grained, trace silt.
							Total Depth = 4¼' No Groundwater or Caving Encountered Backfilled 11-11-20

GeoSoils, Inc.

W.O. 8014-A-SC
Western Mutual Development Corporation
2754 & 2770 Jefferson St., Carlsbad
Logged By: RBB
11-11-20

LOG OF EXPLORATORY HAND-AUGER BORING

HAND AUGER NO.	ELEV. (ft.)	DEPTH (ft.)	GROUP SYMBOL	SAMPLE DEPTH (ft.)	MOISTURE (%)	FIELD DRY DENSITY (pcf)	DESCRIPTION
HA-4	±57 NGVD 29	0-1	SM				**ARTIFICIAL FILL - UNDOCUMENTED**: SILTY SAND, dark brownish gray, dry, medium dense; fine to medium grained, trace trash (anchor bolt).
		1-2	SP	Und @ 1			**QUATERNARY COLLUVIUM**: SAND, brown, dry, loose; fine to medium grained, trace silt, porous, trace organics (roots).
		2-3½	SP				**WEATHERED OLD PARALIC DEPOSITS**: SAND, dark yellowish brown, dry, loose becoming medium dense at approximately 3 feet; fine to medium grained, trace silt.
		3½-4	SM	SM Bag @3½-4			**QUATERNARY OLD PARALIC DEPOSITS**: SILTY SAND, dark yellowish brown, damp, dense; fine to medium grained.
	Und= Relatively Undisturbed Sample SM Bag = SM Bag Sample						Total Depth = 4' No Groundwater or Caving Encountered Backfilled 11-11-20

PLATE B-8

APPENDIX C

STORM WATER BMP CHECKLISTS/FORMS

Percolation Test Data Sheet

Project:	WESTERN MUTUAL DEVELOPMENT CORPORATION	Project No:	8014-A-SC	Date:	11/12/20
Test Hole No:	IB-2	Tested By:	RB		
Depth of Test Hole, D_T:	60"	USCS Soil Classification:	SM/SP		
Test Hole Dimensions (inches)			Length	Width	
Diameter (if round)=	8"	Sides (if rectangular)=	N/A	N/A	

Sandy Soil Criteria Test*

Trial No.	Start Time	Stop Time	Time Interval, (min.)	Initial Depth to Water (in.)	Final Depth to Water (in.)	Change in Water Level (in.)	Greater than or Equal to 6"? (y/n)
1	9:20AM	9:45AM	25	22.0	26.75	4.75	N
2	9:47AM	10:12AM	25	22.25	26.5	4.25	N

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Other wise, pre-soak (fill) overnight. Obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at least 0.25".

Trial No.	Start Time	Stop Time	Δt Time Interval (min.)	D_o Initial Depth to Water (in.)	D_f Final Depth to Water (in.)	ΔD Change in Water Level (in.)	Percolation Rate (min./in.)
1	10:14AM	10:44AM	30	23.5	27.5	4.0	7.5
2	10:47AM	11:17AM	30	24.0	27.5	3.5	8.6
3	11:21AM	11:51AM	30	25.5	28.5	3.0	10.0
4	11:54AM	12:24PM	30	21.0	26.0	5.0	6.0
5	12:27PM	12:57PM	30	18.25	24.75	6.5	4.6
6	12:58PM	1:28PM	30	20.25	25.25	5.0	6.0
7	1:31PM	2:01PM	30	22.5	26.5	4.0	7.5
8	2:03PM	2:33PM	30	22.0	26.5	4.5	6.7
9	2:36PM	3:06PM	30	22.5	26.25	3.75	8.0
10	3:08PM	3:38PM	30	21.5	25.75	4.25	7.1
11	3:40PM	4:10PM	30	21.5	25.75	4.25	7.1
12	4:12PM	4:42PM	30	22.0	26.0	4.0	7.5
13							
14							
15							

COMMENTS:

Table 5 – Sample Test Data Form for Percolation Test

GeoSoils, Inc.

SHEET 1 OF 1

CALCULATED BY: RB DATE: 11/16/20

CHECKED BY: _____ DATE: _____

CLIENT: WESTERN MUTUAL DEVELOPMENT CORPORATION PROJECT: 2754 & 2770 JEFFERSON STREET CARLSBAD, CA W.O. 8014-A-SC SCALE: NONE

INFILTRATION RATE CONVERSION CALCULATIONS

INFILTRATION BORING NO: IB-1

PORCHET METHOD (RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, 2011)

$$I_t = \frac{\Delta H 60 r}{\Delta t (r + 2H_{AVG})}$$

$$I_t = \frac{(3)(60)(4)}{30[4 + 2(39.5)]}$$

$$I_t = \frac{720}{30(4 + 79)}$$

$$I_t = \frac{720}{(30)(83)}$$

$$I_t = \frac{720}{2,490}$$

$I_t = 0.29$ INCHES PER HOUR

WHERE:

I_t = TESTED INFILTRATION RATE (INCHES PER HOUR)

ΔH = CHANGE IN WATER HEIGHT OVER TIMED TEST INTERVAL (INCHES)

r = RADIUS OF TEST HOLE (INCHES)

Δt = TIME INTERVAL OF TEST (MINUTES)

H_{AVG} = AVERAGE HEAD HEIGHT OVER THE TIMED TEST INTERVAL (INCHES)

FOR IB-1:

ΔH = 3.0 INCHES

r = 4.0 INCHES

Δt = 30 MINUTES

H_{AVG} = 39.5 INCHES

GeoSoils, Inc.

SHEET 1 OF 1

CALCULATED BY: RB DATE: 11/16/20

CHECKED BY: _____ DATE: _____

CLIENT: Western Mutual Development Corporation PROJECT: 2754 & 2770 Jefferson Street Carlsbad, CA W.O. 8014-A-SC SCALE: None

Infiltration Rate Conversion Calculations

Infiltration Boring No: IB-2

Porchet Method (Riverside County Flood Control and Water Conservation District, 2011)

$$I_t = \frac{\Delta H 60 r}{\Delta t (r + 2H_{AVG})}$$

$$I_t = \frac{(4)(60)(4)}{30[4 + 2(36)]}$$

$$I_t = \frac{960}{30(4 + 72)}$$

$$I_t = \frac{960}{(30)(76)}$$

$$I_t = \frac{960}{2,280}$$

I_t = 0.42 Inches Per Hour

Where:

I_t = Tested Infiltration Rate (Inches Per Hour)

ΔH = Change In Water Height Over Timed Test Interval (Inches)

r = Radius Of Test Hole (Inches)

Δt = Time Interval Of Test (Minutes)

H_{AVG} = Average Head Height Over The Timed Test Interval (Inches)

For IB-2:

ΔH = 4.0 Inches

r = 4.0 Inches

Δt = 30 minutes

H_{AVG} = 36.0 Inches

Worksheet C.4-1: Categorization of Infiltration Feasibility Condition

Categorization of Infiltration Condition			**Worksheet C.4-1**
Part 1 - Full Infiltration Feasibility Screening Criteria **Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?** Note that it is not necessary to investigate each and every criterion in the worksheet if infiltration is precluded. Instead a letter of justification from a geotechnical professional familiar with the local conditions substantiating any geotechnical issues will be required.			
Criteria	**Screening Question**	**Yes**	**No**
1	**Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X
Provide basis: No. Testing demonstrates that the estimated reliable infiltration rate is less than 0.5 in/hr Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
2	**Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		
Provide basis: No response required. See Criteria No. 1. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			

Worksheet C.4.1 Page 2 of 4			
Criteria	**Screening Question**	**Yes**	**No**
3	**Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensible evaluation of the factors presented in Appendix C.3.		
Provide basis: No response required. See Criteria No. 1. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
4	**Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as a change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		
Provide basis: No response required. See Criteria No. 1. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
Part 1 Result*	In the answers to rows 1-4 are "**Yes**" a full infiltration design is potentially feasible. The feasibility screening category is **Full Infiltration** If any answer from row 1-4 is "**No**", infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a "full infiltration" design. Proceed to Part 2		**Proceed to Part 2**

* To be completed using gathered site information and best professional judgement considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by [City Engineer] to substantiate findings.

Worksheet C.4.1 Page 3 of 4

Part 2 - Partial Infiltration vs. No Infiltration Feasibility Screening Criteria

Would infiltration of water in an appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
5	**Do soil and geologic conditions allow for infiltration in any appreciable rate or volume?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	X	

Provide basis:

Testing and analyses show the near-surface earth materials have an estimated reliable infiltration rate of roughly 0.14 in/hr in the general vicinity of the proposed permeable vehicular pavement shown on S&A (2020).

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

6	**Can infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.	X	

Provide basis:

If storm water infiltration into the onsite soils were to occur, there would be an increased potential for shallow perched groundwater conditions (i.e., groundwater mounding) to develop, owing to the collection of water upon the indurated and less permeable unweathered old paralic deposits, which occur at depths ranging between approximately 2¼ feet and 3½ feet below the existing grades, within the project area. Perched groundwater conditions could adversely affect the performance of the proposed onsite improvements and the existing offsite improvements on adjacent private properties and the public right-of-way. Recommendations for the mitigation of potential perched groundwater conditions, created by the installation of the proposed pervious vehicular pavers, are included in the text of the encompassing report.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

Worksheet C.4.1 Page 4 of 4			
Criteria	**Screening Question**	**Yes**	**No**
7	**Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: See Criteria No. 6. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
8	**Can infiltration be allowed without violating downstream water rights?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: Downstream water rights are a legal matter that do not fall under the purview of geotechnical engineering. However, there are no water courses traversing the subject site. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
Part 2 Result*	If all answers from row 5-8 are yes then partial infiltration design is potentially feasible. The feasibility screening category is **Partial Infiltration.** If any answer from row 5-8 is no, then infiltration of any volume is considered to be **infeasible** within the drainage area. The feasibility screening category is **No Infiltration.**		**Partial Infiltration**

* To be completed using gathered site information and best professional judgement considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by Agency/Jurisdictions to substantiate findings.

Worksheet D.5-1: Factor of Safety and Design Infiltration Rate Worksheet

BMP-1 Through BMP-5

Factor of Safety Infiltration Rate Worksheet			**Worksheet D.5-1**		
Factor Criteria		**Factor Description**	**Assigned Weight (w)**	**Factor Value (v)**	**Product (p) p = w x v**
A	Suitability Assessment	Soil assessment methods	0.25	2	0.5
		Predominant soil texture	0.25	1	0.25
		Site soil variability	0.25	2	0.5
		Depth to groundwater/impervious layer	0.25	2	0.5
		Suitability Assessment Safety Factor, $S_A = \Sigma p$			~~1.75~~ 2.0
B	Design	Level of pretreatment/expected sediment loads	0.5		
		Redundancy/resiliency	0.25		
		Compaction during construction	0.25		
		Design Safety Factor, $S_B = \Sigma p$			
Combined Safety Factor, $S_{total} = S_A \times S_B$					
Observed Infiltration Rate, inch/hr, $K_{observed}$ (corrected for test-specific bias)					
Design Infiltration Rate, in/hr, $K_{design} = K_{observed} / S_{total} = 0.29/2 = 0.14$					0.14
Supporting Data					
Briefly describe infiltration test and provide reference to test forms:					

APPENDIX D

SEISMICITY

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*                    *
*    E Q F A U L T   *
*                    *
*    Version 3.00    *
*                    *
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DETERMINISTIC ESTIMATION OF
PEAK ACCELERATION FROM DIGITIZED FAULTS

JOB NUMBER: 8014-A-SC

DATE: 11-02-2020

JOB NAME: WESTERN MUTUAL DEVELOPMENT CORPORATION

CALCULATION NAME: 8014

FAULT-DATA-FILE NAME: C:\Program Files\EQFAULT1\CGSFLTE.DAT

SITE COORDINATES:
   SITE LATITUDE: 33.1642
   SITE LONGITUDE: 117.3476

SEARCH RADIUS: 62.2 mi

ATTENUATION RELATION: 11) Bozorgnia Campbell Niazi (1999) Hor.-Pleist. Soil-Cor.
   UNCERTAINTY (M=Median, S=Sigma): S   Number of Sigmas: 1.0
   DISTANCE MEASURE: cdist
   SCOND: 0
   Basement Depth: 5.00 km   Campbell SSR: 0   Campbell SHR: 0
   COMPUTE PEAK HORIZONTAL ACCELERATION

FAULT-DATA FILE USED: C:\Program Files\EQFAULT1\CGSFLTE.DAT

MINIMUM DEPTH VALUE (km): 3.0

EQFAULT SUMMARY

DETERMINISTIC SITE PARAMETERS

Page 1

ABBREVIATED FAULT NAME	APPROXIMATE DISTANCE mi (km)	ESTIMATED MAX. EARTHQUAKE EVENT: MAXIMUM EARTHQUAKE MAG.(Mw)	ESTIMATED MAX. EARTHQUAKE EVENT: PEAK SITE ACCEL. g	ESTIMATED MAX. EARTHQUAKE EVENT: EST. SITE INTENSITY MOD.MERC.
NEWPORT-INGLEWOOD (Offshore)	5.1(8.2)	7.1	0.608	X
ROSE CANYON	5.6(9.0)	7.2	0.600	X
CORONADO BANK	21.2(34.1)	7.6	0.272	IX
ELSINORE (TEMECULA)	24.0(38.7)	6.8	0.140	VIII
ELSINORE (JULIAN)	24.4(39.2)	7.1	0.170	VIII
ELSINORE (GLEN IVY)	33.1(53.3)	6.8	0.101	VII
SAN JOAQUIN HILLS	34.6(55.7)	6.6	0.120	VII
PALOS VERDES	35.3(56.8)	7.3	0.133	VIII
EARTHQUAKE VALLEY	44.4(71.4)	6.5	0.061	VI
NEWPORT-INGLEWOOD (L.A.Basin)	45.3(72.9)	7.1	0.089	VII
SAN JACINTO-ANZA	46.6(75.0)	7.2	0.093	VII
SAN JACINTO-SAN JACINTO VALLEY	47.0(75.6)	6.9	0.075	VII
CHINO-CENTRAL AVE. (Elsinore)	47.0(75.7)	6.7	0.092	VII
WHITTIER	51.0(82.0)	6.8	0.064	VI
SAN JACINTO-COYOTE CREEK	52.6(84.7)	6.6	0.054	VI
ELSINORE (COYOTE MOUNTAIN)	58.7(94.4)	6.8	0.055	VI
SAN JACINTO-SAN BERNARDINO	59.3(95.4)	6.7	0.051	VI
PUENTE HILLS BLIND THRUST	60.8(97.8)	7.1	0.093	VII

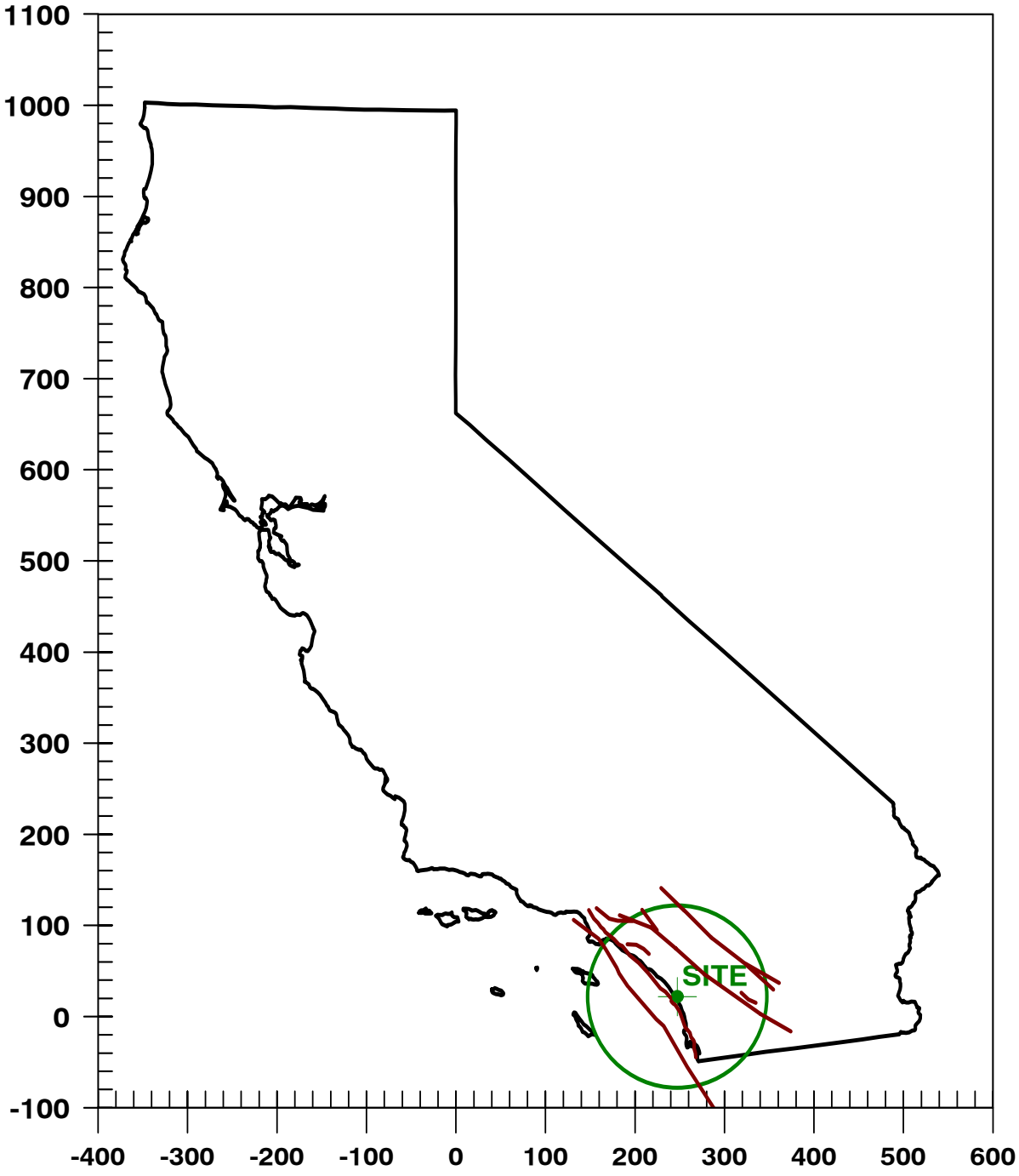
-END OF SEARCH- 18 FAULTS FOUND WITHIN THE SPECIFIED SEARCH RADIUS.

THE NEWPORT-INGLEWOOD (Offshore) FAULT IS CLOSEST TO THE SITE.
IT IS ABOUT 5.1 MILES (8.2 km) AWAY.

LARGEST MAXIMUM-EARTHQUAKE SITE ACCELERATION: 0.6079 g

CALIFORNIA FAULT MAP

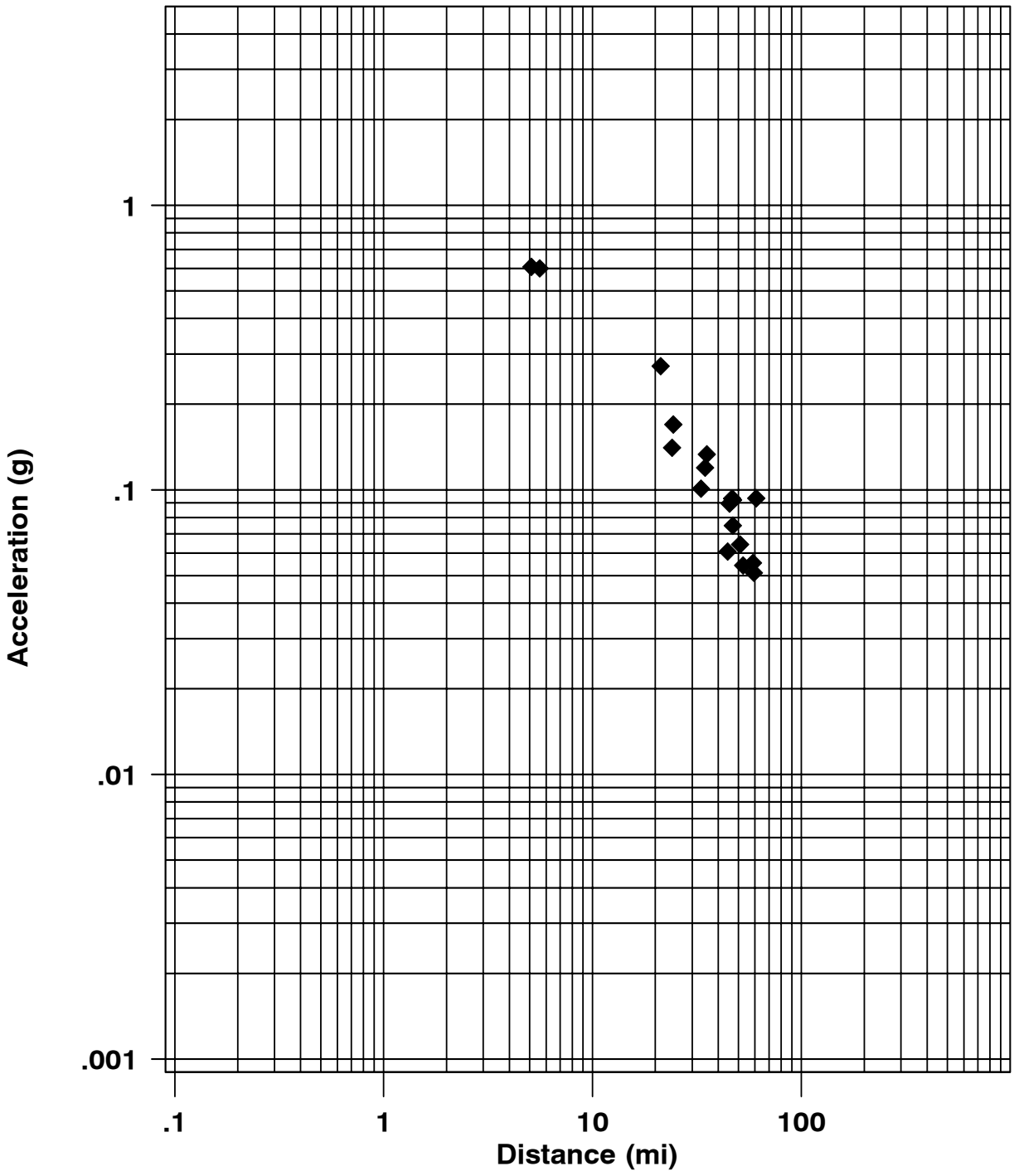
WESTERN MUTUAL DEVELOPMENT CORPORATION



W.O. 8014-A-SC
PLATE D-3

MAXIMUM EARTHQUAKES

WESTERN MUTUAL DEVELOPMENT CORPORATION



W.O. 8014-A-SC
PLATE D-4

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*                        *
*    E Q S E A R C H     *
*                        *
*     Version 3.00       *
*                        *
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      ESTIMATION OF
  PEAK ACCELERATION FROM
CALIFORNIA EARTHQUAKE CATALOGS

JOB NUMBER: 8014-A-SC
                                                DATE: 11-02-2020

JOB NAME: WESTERN MUTUAL DEVELOPMENT CORPORATION

EARTHQUAKE-CATALOG-FILE NAME: ALLQUAKE.DAT


SITE COORDINATES:
   SITE LATITUDE:  33.1642
   SITE LONGITUDE:  117.3476

SEARCH DATES:
           START DATE:   1800
           END DATE:   2020

SEARCH RADIUS:
           62.2 mi
           100.1 km

ATTENUATION RELATION:  11) Bozorgnia Campbell Niazi (1999) Hor.-Pleist. Soil-Cor.
   UNCERTAINTY (M=Median, S=Sigma): S       Number of Sigmas:  1.0
   ASSUMED SOURCE TYPE:  SS [SS=Strike-slip, DS=Reverse-slip, BT=Blind-thrust]
   SCOND:   0  Depth Source:  A
   Basement Depth:  5.00 km     Campbell SSR:  0     Campbell SHR:  0
   COMPUTE PEAK HORIZONTAL ACCELERATION

MINIMUM DEPTH VALUE (km):  3.0
```

EARTHQUAKE SEARCH RESULTS

Page 1

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	33.0000	117.3000	11/22/1800	2130 0.0	0.0	6.50	0.236	IX	11.7(18.8)
MGI	33.0000	117.0000	09/21/1856	730 0.0	0.0	5.00	0.047	VI	23.1(37.1)
MGI	32.8000	117.1000	05/25/1803	0 0 0.0	0.0	5.00	0.038	V	28.9(46.6)
PAS	32.9710	117.8700	07/13/1986	1347 8.2	6.0	5.30	0.039	V	33.0(53.2)
DMG	32.7000	117.2000	05/27/1862	20 0 0.0	0.0	5.90	0.056	VI	33.2(53.4)
T-A	32.6700	117.1700	12/00/1856	0 0 0.0	0.0	5.00	0.030	V	35.6(57.3)
T-A	32.6700	117.1700	05/24/1865	0 0 0.0	0.0	5.00	0.030	V	35.6(57.3)
T-A	32.6700	117.1700	10/21/1862	0 0 0.0	0.0	5.00	0.030	V	35.6(57.3)
DMG	33.7000	117.4000	05/15/1910	1547 0.0	0.0	6.00	0.053	VI	37.1(59.7)
DMG	33.7000	117.4000	05/13/1910	620 0.0	0.0	5.00	0.029	V	37.1(59.7)
DMG	33.7000	117.4000	04/11/1910	757 0.0	0.0	5.00	0.029	V	37.1(59.7)
DMG	33.2000	116.7000	01/01/1920	235 0.0	0.0	5.00	0.029	V	37.5(60.3)
DMG	33.6990	117.5110	05/31/1938	83455.4	10.0	5.50	0.038	V	38.1(61.3)
DMG	32.8000	116.8000	10/23/1894	23 3 0.0	0.0	5.70	0.040	V	40.5(65.1)
MGI	33.2000	116.6000	10/12/1920	1748 0.0	0.0	5.30	0.029	V	43.3(69.6)
DMG	33.7100	116.9250	09/23/1963	144152.6	16.5	5.00	0.024	IV	44.9(72.2)
DMG	33.7500	117.0000	06/06/1918	2232 0.0	0.0	5.00	0.024	IV	45.1(72.6)
DMG	33.7500	117.0000	04/21/1918	223225.0	0.0	6.80	0.073	VII	45.1(72.6)
MGI	33.8000	117.6000	04/22/1918	2115 0.0	0.0	5.00	0.023	IV	46.2(74.4)
DMG	33.5750	117.9830	03/11/1933	518 4.0	0.0	5.20	0.026	V	46.3(74.6)
DMG	33.6170	117.9670	03/11/1933	154 7.8	0.0	6.30	0.050	VI	47.5(76.4)
DMG	33.8000	117.0000	12/25/1899	1225 0.0	0.0	6.40	0.052	VI	48.2(77.6)
DMG	33.6170	118.0170	03/14/1933	19 150.0	0.0	5.10	0.023	IV	49.7(79.9)
GSP	33.5290	116.5720	06/12/2005	154146.5	14.0	5.20	0.023	IV	51.3(82.6)
DMG	33.9000	117.2000	12/19/1880	0 0 0.0	0.0	6.00	0.038	V	51.5(82.9)
GSG	33.4200	116.4890	07/07/2010	235333.5	14.0	5.50	0.027	V	52.6(84.7)
PAS	33.5010	116.5130	02/25/1980	104738.5	13.6	5.50	0.026	V	53.5(86.0)
GSP	33.5080	116.5140	10/31/2001	075616.6	15.0	5.10	0.021	IV	53.6(86.3)
DMG	33.6830	118.0500	03/11/1933	658 3.0	0.0	5.50	0.026	V	54.0(87.0)
DMG	33.0000	116.4330	06/04/1940	1035 8.3	0.0	5.10	0.021	IV	54.1(87.1)
DMG	33.5000	116.5000	09/30/1916	211 0.0	0.0	5.00	0.020	IV	54.1(87.1)
GSP	33.4315	116.4427	06/10/2016	080438.7	12.3	5.19	0.021	IV	55.4(89.1)
DMG	33.7000	118.0670	03/11/1933	85457.0	0.0	5.10	0.020	IV	55.6(89.4)
DMG	33.7000	118.0670	03/11/1933	51022.0	0.0	5.10	0.020	IV	55.6(89.4)
DMG	34.0000	117.2500	07/23/1923	73026.0	0.0	6.25	0.039	V	58.0(93.3)
MGI	34.0000	117.5000	12/16/1858	10 0 0.0	0.0	7.00	0.064	VI	58.4(93.9)
DMG	33.7500	118.0830	03/13/1933	131828.0	0.0	5.30	0.021	IV	58.6(94.2)
DMG	33.7500	118.0830	03/11/1933	323 0.0	0.0	5.00	0.018	IV	58.6(94.2)
DMG	33.7500	118.0830	03/11/1933	230 0.0	0.0	5.10	0.019	IV	58.6(94.2)
DMG	33.7500	118.0830	03/11/1933	2 9 0.0	0.0	5.00	0.018	IV	58.6(94.2)
DMG	33.7500	118.0830	03/11/1933	910 0.0	0.0	5.10	0.019	IV	58.6(94.2)
DMG	33.3430	116.3460	04/28/1969	232042.9	20.0	5.80	0.029	V	59.1(95.2)
GSG	33.9530	117.7610	07/29/2008	184215.7	14.0	5.30	0.021	IV	59.4(95.6)
DMG	33.9500	116.8500	09/28/1946	719 9.0	0.0	5.00	0.017	IV	61.3(98.7)

****

-END OF SEARCH- 44 EARTHQUAKES FOUND WITHIN THE SPECIFIED SEARCH AREA.

TIME PERIOD OF SEARCH: 1800 TO 2020

LENGTH OF SEARCH TIME: 221 years

THE EARTHQUAKE CLOSEST TO THE SITE IS ABOUT 11.7 MILES (18.8 km) AWAY.

LARGEST EARTHQUAKE MAGNITUDE FOUND IN THE SEARCH RADIUS: 7.0

LARGEST EARTHQUAKE SITE ACCELERATION FROM THIS SEARCH: 0.236 g

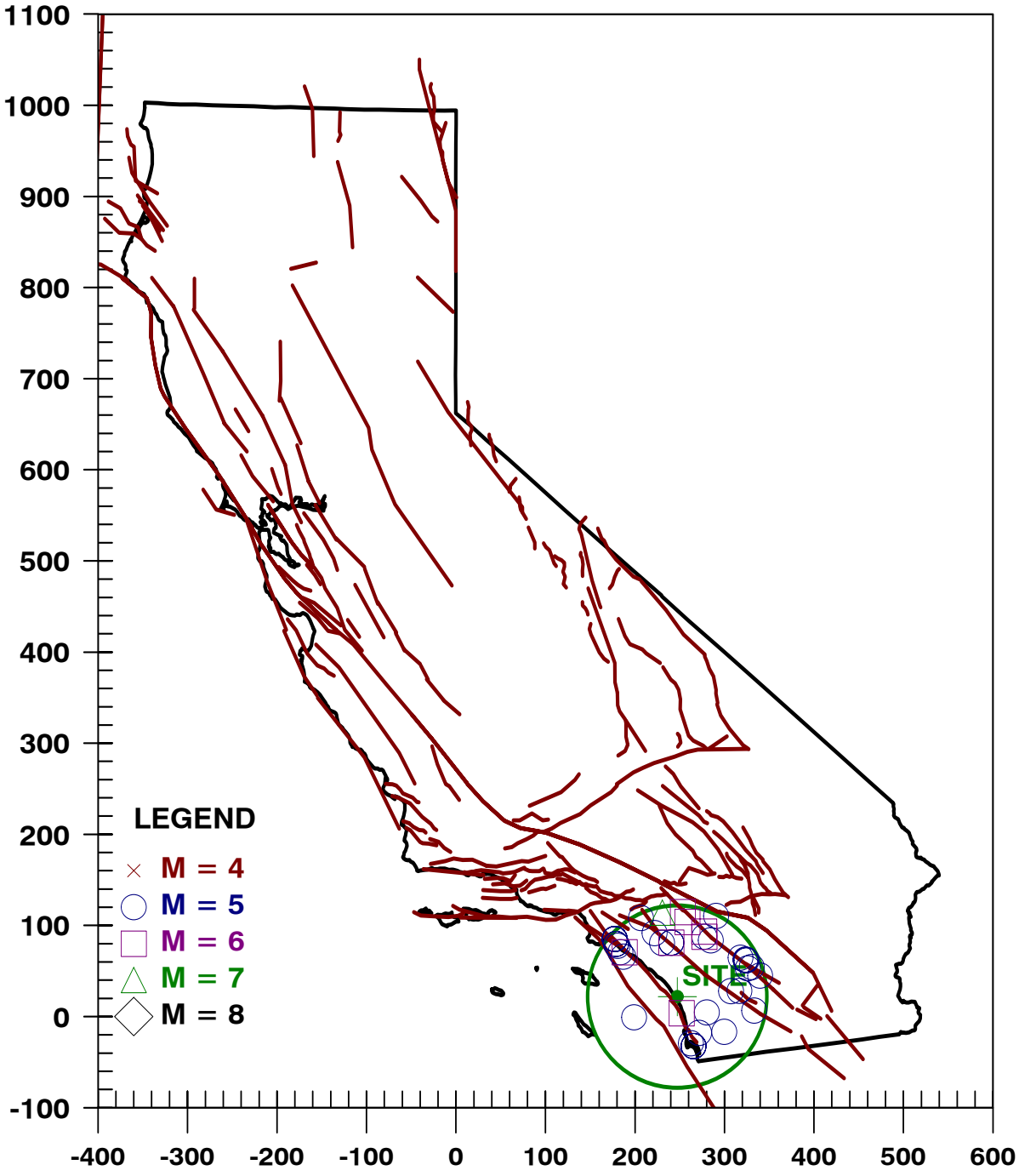
COEFFICIENTS FOR GUTENBERG & RICHTER RECURRENCE RELATION:
  a-value= 1.006
  b-value= 0.390
  beta-value= 0.897

TABLE OF MAGNITUDES AND EXCEEDANCES:

Earthquake Magnitude	Number of Times Exceeded	Cumulative No. / Year
4.0	44	0.20000
4.5	44	0.20000
5.0	44	0.20000
5.5	15	0.06818
6.0	8	0.03636
6.5	3	0.01364
7.0	1	0.00455

EARTHQUAKE EPICENTER MAP

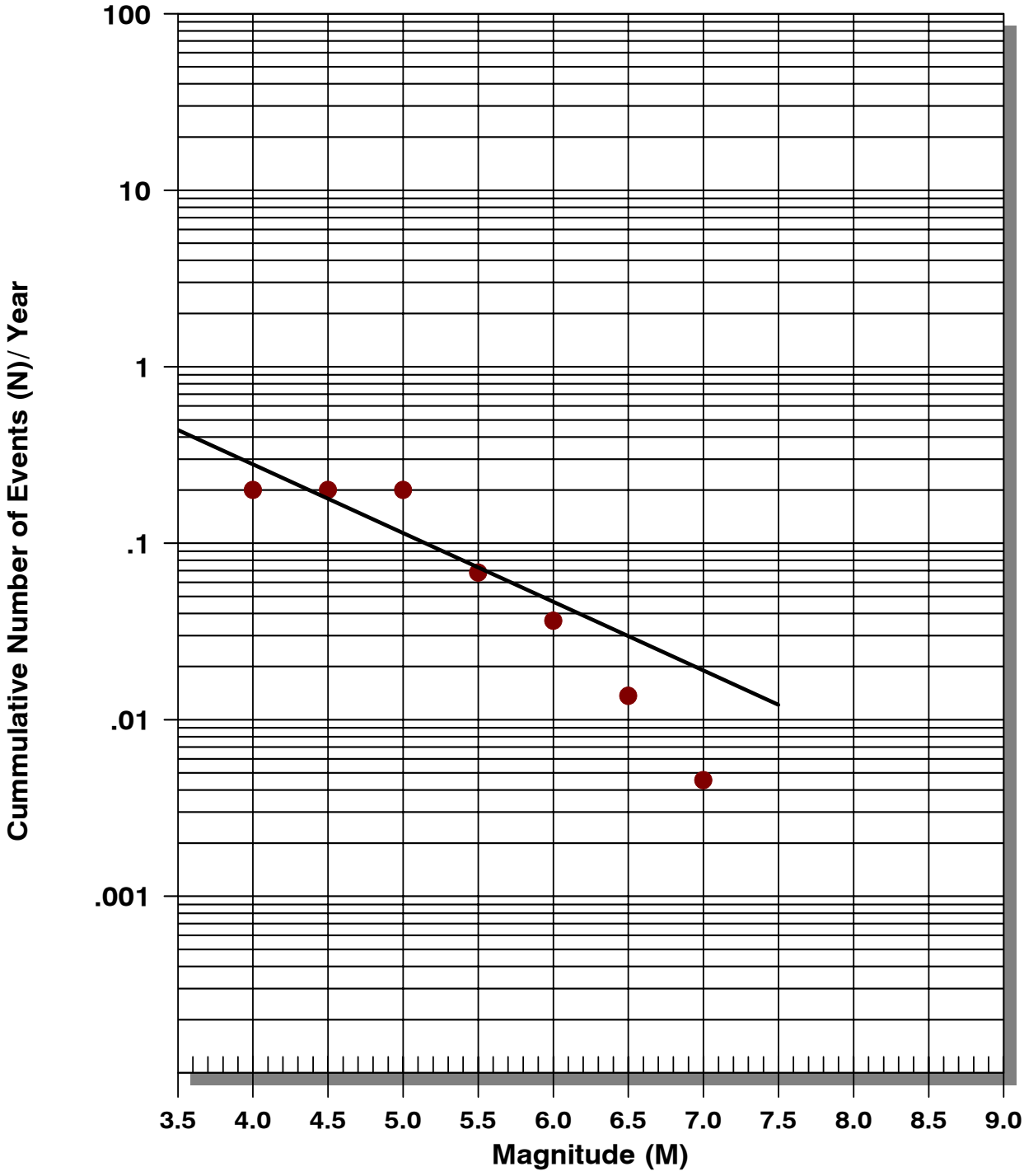
WESTERN MUTUAL DEVELOPMENT CORPORATION



W.O. 8014-A-SC
PLATE D-8

EARTHQUAKE RECURRENCE CURVE

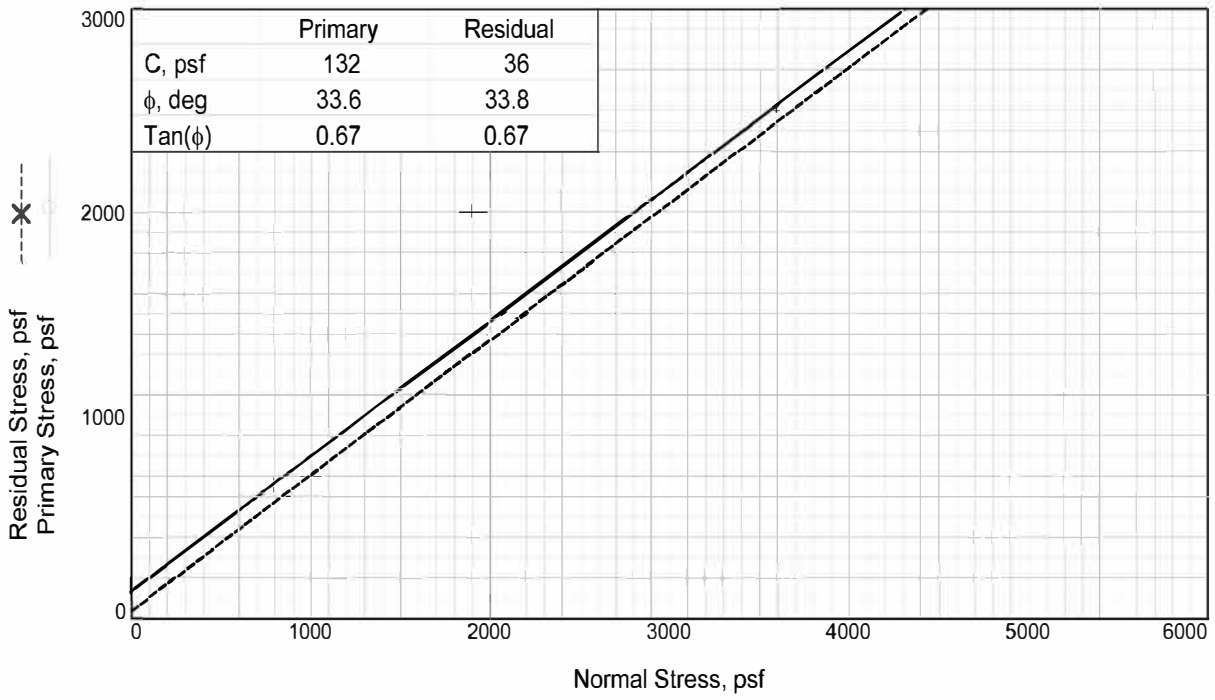
WESTERN MUTUAL DEVELOPMENT CORPORATION



W.O. 8014-A-SC
PLATE D-9

APPENDIX E

LABORATORY DATA



Sample Type: Remolded
Description: Dark Reddish Brown Silty Sand

Specific Gravity= 2.65
Remarks:

Plate E-1

Client: Western Mutual Development Co.

Project: 2754 & 2770 Jefferson St., Carlsbad

Source of Sample: B-1 **Depth:** 0-5
Sample Number: B-1
Proj. No.: 8014-A-SC **Date Sampled:**

GeoSoils, Inc.

Tested By: TR **Checked By:** TR

APPENDIX F

GENERAL EARTHWORK, GRADING GUIDELINES AND PRELIMINARY CRITERIA

GENERAL EARTHWORK, GRADING GUIDELINES, AND PRELIMINARY CRITERIA

General

These guidelines present general procedures and requirements for earthwork and grading as shown on the approved grading plans, including preparation of areas to be filled, placement of fill, installation of subdrains, excavations, and appurtenant structures or flatwork. The recommendations contained in the geotechnical report are part of these earthwork and grading guidelines and would supercede the provisions contained hereafter in the case of conflict. Evaluations performed by the consultant during the course of grading may result in new or revised recommendations which could supercede these guidelines or the recommendations contained in the geotechnical report. Generalized details follow this text.

The contractor is responsible for the satisfactory completion of all earthwork in accordance with provisions of the project plans and specifications and latest adopted code. In the case of conflict, the most onerous provisions shall prevail. The project geotechnical engineer and engineering geologist (geotechnical consultant), and/or their representatives, should provide observation and testing services, and geotechnical consultation during the duration of the project.

EARTHWORK OBSERVATIONS AND TESTING

Geotechnical Consultant

Prior to the commencement of grading, a qualified geotechnical consultant (soil engineer and engineering geologist) should be employed for the purpose of observing earthwork procedures and testing the fills for general conformance with the recommendations of the geotechnical report(s), the approved grading plans, and applicable grading codes and ordinances.

The geotechnical consultant should provide testing and observation so that an evaluation may be made that the work is being accomplished as specified. It is the responsibility of the contractor to assist the consultants and keep them apprised of anticipated work schedules and changes, so that they may schedule their personnel accordingly.

All remedial removals, clean-outs, prepared ground to receive fill, key excavations, and subdrain installation should be observed and documented by the geotechnical consultant prior to placing any fill. It is the contractor's responsibility to notify the geotechnical consultant when such areas are ready for observation.

Laboratory and Field Tests

Maximum dry density tests to determine the degree of compaction should be performed in accordance with American Standard Testing Materials test method ASTM designation D-1557. Random or representative field compaction tests should be performed in

accordance with test methods ASTM designation D-1556, D-2937 or D-2922, and D-3017, at intervals of approximately ±2 feet of fill height or approximately every 1,000 cubic yards placed. These criteria would vary depending on the soil conditions and the size of the project. The location and frequency of testing would be at the discretion of the geotechnical consultant.

Contractor's Responsibility

All clearing, site preparation, and earthwork performed on the project should be conducted by the contractor, with observation by a geotechnical consultant, and staged approval by the governing agencies, as applicable. It is the contractor's responsibility to prepare the ground surface to receive the fill, to the satisfaction of the geotechnical consultant, and to place, spread, moisture condition, mix, and compact the fill in accordance with the recommendations of the geotechnical consultant. The contractor should also remove all non-earth material considered unsatisfactory by the geotechnical consultant.

Notwithstanding the services provided by the geotechnical consultant, it is the sole responsibility of the contractor to provide adequate equipment and methods to accomplish the earthwork in strict accordance with applicable grading guidelines, latest adopted codes or agency ordinances, geotechnical report(s), and approved grading plans. Sufficient watering apparatus and compaction equipment should be provided by the contractor with due consideration for the fill material, rate of placement, and climatic conditions. If, in the opinion of the geotechnical consultant, unsatisfactory conditions such as questionable weather, excessive oversized rock or deleterious material, insufficient support equipment, etc., are resulting in a quality of work that is not acceptable, the consultant will inform the contractor, and the contractor is expected to rectify the conditions, and if necessary, stop work until conditions are satisfactory.

During construction, the contractor shall properly grade all surfaces to maintain good drainage and prevent ponding of water. The contractor shall take remedial measures to control surface water and to prevent erosion of graded areas until such time as permanent drainage and erosion control measures have been installed.

SITE PREPARATION

All major vegetation, including brush, trees, thick grasses, organic debris, and other deleterious material, should be removed and disposed of off-site. These removals must be concluded prior to placing fill. In-place existing fill, soil, alluvium, colluvium, or rock materials, as evaluated by the geotechnical consultant as being unsuitable, should be removed prior to any fill placement. Depending upon the soil conditions, these materials may be reused as compacted fills. Any materials incorporated as part of the compacted fills should be approved by the geotechnical consultant.

Any underground structures 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 recommended by the geotechnical consultant. Soft, dry, spongy, highly fractured, or otherwise unsuitable ground, extending to such a depth that surface processing cannot adequately improve the condition, should be overexcavated down to firm ground and approved by the geotechnical consultant before compaction and filling operations continue. Overexcavated and processed soils, which have been properly mixed and moisture conditioned, should be re-compacted to the minimum relative compaction as specified in these guidelines.

Existing ground, which is determined to be satisfactory for support of the fills, should be scarified (ripped) to a minimum depth of 6 to 8 inches, or as directed by the geotechnical consultant. After the scarified ground is brought to optimum moisture content, or greater and mixed, the materials should be compacted as specified herein. If the scarified zone is greater than 6 to 8 inches in depth, it may be necessary to remove the excess and place the material in lifts restricted to about 6 to 8 inches in compacted thickness.

Existing ground which is not satisfactory to support compacted fill should be overexcavated as required in the geotechnical report, or by the on-site geotechnical consultant. Scarification, disc harrowing, or other acceptable forms of mixing should continue until the soils are broken down and free of large lumps or clods, until the working surface is reasonably uniform and free from ruts, hollows, hummocks, mounds, or other uneven features, which would inhibit compaction as described previously.

Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical [h:v]), the ground should be stepped or benched. The lowest bench, which will act as a key, should be a minimum of 15 feet wide and should be at least 2 feet deep into firm material, and approved by the geotechnical consultant. In fill-over-cut slope conditions, the recommended minimum width of the lowest bench or key is also 15 feet, with the key founded on firm material, as designated by the geotechnical consultant. As a general rule, unless specifically recommended otherwise by the geotechnical consultant, the minimum width of fill keys should be equal to ½ the height of the slope.

Standard benching is generally 4 feet (minimum) vertically, exposing firm, acceptable material. Benching may be used to remove unsuitable materials, although it is understood that the vertical height of the bench may exceed 4 feet. Pre-stripping may be considered for unsuitable materials in excess of 4 feet in thickness.

All areas to receive fill, including processed areas, removal areas, and the toes of fill benches, should be observed and approved by the geotechnical consultant prior to placement of fill. Fills may then be properly placed and compacted until design grades (elevations) are attained.

COMPACTED FILLS

Any earth materials imported or excavated on the property may be utilized in the fill provided that each material has been evaluated to be suitable by the geotechnical consultant. These materials should be free of roots, tree branches, other organic matter, or other deleterious materials. All unsuitable materials should be removed from the fill as directed by the geotechnical consultant. Soils of poor gradation, undesirable expansion potential, or substandard strength characteristics may be designated by the consultant as unsuitable and may require blending with other soils to serve as a satisfactory fill material.

Fill materials derived from benching operations should be dispersed throughout the fill area and blended with other approved material. Benching operations should not result in the benched material being placed only within a single equipment width away from the fill/bedrock contact.

Oversized materials defined as rock, or other irreducible materials, with a maximum dimension greater than 12 inches, should not be buried or placed in fills unless the location of materials and disposal methods are specifically approved by the geotechnical consultant. Oversized material should be taken offsite, or placed in accordance with recommendations of the geotechnical consultant in areas designated as suitable for rock disposal. GSI anticipates that soils to be utilized as fill material for the subject project may contain some rock. Appropriately, the need for rock disposal may be necessary during grading operations on the site. From a geotechnical standpoint, the depth of any rocks, rock fills, or rock blankets, should be a sufficient distance from finish grade. This depth is generally the same as any overexcavation due to cut-fill transitions in hard rock areas, and generally facilitates the excavation of structural footings and substructures. Should deeper excavations be proposed (i.e., deepened footings, utility trenching, swimming pools, spas, etc.), the developer may consider increasing the hold-down depth of any rocky fills to be placed, as appropriate. In addition, some agencies/jurisdictions mandate a specific hold-down depth for oversize materials placed in fills. The hold-down depth, and potential to encounter oversize rock, both within fills, and occurring in cut or natural areas, would need to be disclosed to all interested/affected parties. Once approved by the governing agency, the hold-down depth for oversized rock (i.e., greater than 12 inches) in fills on this project is provided as 10 feet, unless specified differently in the text of this report. The governing agency may require that these materials need to be deeper, crushed, or reduced to less than 12 inches in maximum dimension, at their discretion.

To facilitate future trenching, rock (or oversized material), should not be placed within the hold-down depth feet from finish grade, the range of foundation excavations, future utilities, or underground construction unless specifically approved by the governing agency, the geotechnical consultant, and/or the developer's representative.

If import material is required for grading, representative samples of the materials to be utilized as compacted fill should be analyzed in the laboratory by the geotechnical consultant to evaluate it's physical properties and suitability for use onsite. Such testing

should be performed three (3) days prior to importation. If any material other than that previously tested is encountered during grading, an appropriate analysis of this material should be conducted by the geotechnical consultant as soon as possible.

Approved fill material should be placed in areas prepared to receive fill in near horizontal layers, that when compacted, should not exceed about 6 to 8 inches in thickness. The geotechnical consultant may approve thick lifts if testing indicates the grading procedures are such that adequate compaction is being achieved with lifts of greater thickness. Each layer should be spread evenly and blended to attain uniformity of material and moisture suitable for compaction.

Fill layers at a moisture content less than optimum should be watered and mixed, and wet fill layers should be aerated by scarification, or should be blended with drier material. Moisture conditioning, blending, and mixing of the fill layer should continue until the fill materials have a uniform moisture content at, or above, optimum moisture.

After each layer has been evenly spread, moisture conditioned, and mixed, it should be uniformly compacted to a minimum of 90 percent of the maximum density as evaluated by ASTM test designation D-1557, or as otherwise recommended by the geotechnical consultant. Compaction equipment should be adequately sized and should be specifically designed for soil compaction, or of proven reliability to efficiently achieve the specified degree of compaction.

Where tests indicate that the density of any layer of fill, or portion thereof, is below the required relative compaction, or improper moisture is in evidence, the particular layer or portion shall be re-worked until the required density and/or moisture content has been attained. No additional fill shall be placed in an area until the last placed lift of fill has been tested and found to meet the density and moisture requirements, and is approved by the geotechnical consultant.

In general, per the latest adopted version of the California Building Code (CBC), fill slopes should be designed and constructed at a gradient of 2:1 (h:v), or flatter. Compaction of slopes should be accomplished by over-building a minimum of 3 feet horizontally, and subsequently trimming back to the design slope configuration. Testing shall be performed as the fill is elevated to evaluate compaction as the fill core is being developed. Special efforts may be necessary to attain the specified compaction in the fill slope zone. Final slope shaping should be performed by trimming and removing loose materials with appropriate equipment. A final evaluation of fill slope compaction should be based on observation and/or testing of the finished slope face. Where compacted fill slopes are designed steeper than 2:1 (h:v), prior approval from the governing agency, specific material types, a higher minimum relative compaction, special reinforcement, and special grading procedures will be recommended.

If an alternative to over-building and cutting back the compacted fill slopes is selected, then special effort should be made to achieve the required compaction in the outer 10 feet of each lift of fill by undertaking the following:

1. An extra piece of equipment consisting of a heavy, short-shanked sheepsfoot should be used to roll (horizontal) parallel to the slopes continuously as fill is placed. The sheepsfoot roller should also be used to roll perpendicular to the slopes, and extend out over the slope to provide adequate compaction to the face of the slope.

2. Loose fill should not be spilled out over the face of the slope as each lift is compacted. Any loose fill spilled over a previously completed slope face should be trimmed off or be subject to re-rolling.

3. Field compaction tests will be made in the outer (horizontal) ±2 to ±8 feet of the slope at appropriate vertical intervals, subsequent to compaction operations.

4. After completion of the slope, the slope face should be shaped with a small tractor and then re-rolled with a sheepsfoot to achieve compaction to near the slope face. Subsequent to testing to evaluate compaction, the slopes should be grid-rolled to achieve compaction to the slope face. Final testing should be used to evaluate compaction after grid rolling.

5. Where testing indicates less than adequate compaction, the contractor will be responsible to rip, water, mix, and recompact the slope material as necessary to achieve compaction. Additional testing should be performed to evaluate compaction.

SUBDRAIN INSTALLATION

Subdrains should be installed in approved ground in accordance with the approximate alignment and details indicated by the geotechnical consultant. Subdrain locations or materials should not be changed or modified without approval of the geotechnical consultant. The geotechnical consultant may recommend and direct changes in subdrain line, grade, and drain material in the field, pending exposed conditions. The location of constructed subdrains, especially the outlets, should be recorded/surveyed by the project civil engineer. Drainage at the subdrain outlets should be provided by the project civil engineer.

EXCAVATIONS

Excavations and cut slopes should be examined during grading by the geotechnical consultant. If directed by the geotechnical consultant, further excavations or

overexcavation and refilling of cut areas should be performed, and/or remedial grading of cut slopes should be performed. When fill-over-cut slopes are to be graded, unless otherwise approved, the cut portion of the slope should be observed by the geotechnical consultant prior to placement of materials for construction of the fill portion of the slope. The geotechnical consultant should observe all cut slopes, and should be notified by the contractor when excavation of cut slopes commence.

If, during the course of grading, unforeseen adverse or potentially adverse geologic conditions are encountered, the geotechnical consultant should investigate, evaluate, and make appropriate recommendations for mitigation of these conditions. The need for cut slope buttressing or stabilizing should be based on in-grading evaluation by the geotechnical consultant, whether anticipated or not.

Unless otherwise specified in geotechnical and geological report(s), no cut slopes should be excavated higher or steeper than that allowed by the ordinances of controlling governmental agencies. Additionally, short-term stability of temporary cut slopes is the contractor's responsibility.

Erosion control and drainage devices should be designed by the project civil engineer and should be constructed in compliance with the ordinances of the controlling governmental agencies, and/or in accordance with the recommendations of the geotechnical consultant.

COMPLETION

Observation, testing, and consultation by the geotechnical consultant should be conducted during the grading operations in order to state an opinion that all cut and fill areas are graded in accordance with the approved project specifications. After completion of grading, and after the geotechnical consultant has finished observations of the work, final reports should be submitted, and may be subject to review by the controlling governmental agencies. No further excavation or filling should be undertaken without prior notification of the geotechnical consultant or approved plans.

All finished cut and fill slopes should be protected from erosion and/or be planted in accordance with the project specifications and/or as recommended by a landscape architect. Such protection and/or planning should be undertaken as soon as practical after completion of grading.

PRELIMINARY OUTDOOR POOL/SPA DESIGN RECOMMENDATIONS

The following preliminary recommendations are provided for consideration in pool/spa design and planning. Actual recommendations should be provided by a qualified geotechnical consultant, based on site specific geotechnical conditions, including a

subsurface investigation, differential settlement potential, expansive and corrosive soil potential, proximity of the proposed pool/spa to any slopes with regard to slope creep and lateral fill extension, as well as slope setbacks per Code, and geometry of the proposed improvements. Recommendations for pools/spas and/or deck flatwork underlain by expansive soils, or for areas with differential settlement greater than ¼-inch over 40 feet horizontally, will be more onerous than the preliminary recommendations presented below. The 1:1 (h:v) influence zone of any nearby retaining wall site structures should be delineated on the project civil drawings with the pool/spa. This 1:1 (h:v) zone is defined as a plane up from the lower-most heel of the retaining structure, to the daylight grade of the nearby building pad or slope. If pools/spas or associated pool/spa improvements are constructed within this zone, they should be re-positioned (horizontally or vertically) so that they are supported by earth materials that are outside or below this 1:1 plane. If this is not possible given the area of the building pad, the owner should consider eliminating these improvements or allow for increased potential for lateral/vertical deformations and associated distress that may render these improvements unusable in the future, unless they are periodically repaired and maintained. The conditions and recommendations presented herein should be disclosed to all homeowners and any interested/affected parties.

General

1. The equivalent fluid pressure to be used for the pool/spa design should be 60 pounds per cubic foot (pcf) for pool/spa walls with level backfill, and 75 pcf for a 2:1 sloped backfill condition. In addition, backdrains should be provided behind pool/spa walls subjacent to slopes.

2. Passive earth pressure may be computed as an equivalent fluid having a density of 150 pcf, to a maximum lateral earth pressure of 1,000 pounds per square foot (psf).

3. An allowable coefficient of friction between soil and concrete of 0.30 may be used with the dead load forces.

4. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one-third.

5. Where pools/spas are planned near structures, appropriate surcharge loads need to be incorporated into design and construction by the pool/spa designer. This includes, but is not limited to landscape berms, decorative walls, footings, built-in barbeques, utility poles, etc.

6. All pool/spa walls should be designed as “free standing” and be capable of supporting the water in the pool/spa without soil support. The shape of pool/spa in cross section and plan view may affect the performance of the pool, from a geotechnical standpoint. Pools and spas should also be designed in accordance with the latest adopted Code. Minimally, the bottoms of the pools/spas, should

maintain a distance H/3, where H is the height of the slope (in feet), from the slope face. This distance should not be less than 7 feet, nor need not be greater than 40 feet.

7. The soil beneath the pool/spa bottom should be uniformly moist with the same stiffness throughout. If a fill/cut transition occurs beneath the pool/spa bottom, the cut portion should be overexcavated to a minimum depth of 48 inches, and replaced with compacted fill, such that there is a uniform blanket that is a minimum of 48 inches below the pool/spa shell. If very low expansive soil is used for fill, the fill should be placed at a minimum of 95 percent relative compaction, at optimum moisture conditions. This requirement should be 90 percent relative compaction at over optimum moisture if the pool/spa is constructed within or near expansive soils. The potential for grading and/or re-grading of the pool/spa bottom, and attendant potential for shoring and/or slot excavation, needs to be considered during all aspects of pool/spa planning, design, and construction.

8. If the pool/spa is founded entirely in compacted fill placed during rough grading, the deepest portion of the pool/spa should correspond with the thickest fill on the lot.

9. Hydrostatic pressure relief valves should be incorporated into the pool and spa designs. A pool/spa under-drain system is also recommended, with an appropriate outlet for discharge.

10. All fittings and pipe joints, particularly fittings in the side of the pool or spa, should be properly sealed to prevent water from leaking into the adjacent soils materials, and be fitted with slip or expandible joints between connections transecting varying soil conditions.

11. An elastic expansion joint (flexible waterproof sealant) should be installed to prevent water from seeping into the soil at all deck joints.

12. A reinforced grade beam should be placed around skimmer inlets to provide support and mitigate cracking around the skimmer face.

13. In order to reduce unsightly cracking, deck slabs should minimally be 4 inches thick, and reinforced with No. 3 reinforcing bars at 18 inches on-center. All slab reinforcement should be supported to ensure proper mid-slab positioning during the placement of concrete. Wire mesh reinforcing is specifically not recommended. Deck slabs should not be tied to the pool/spa structure. Pre-moistening and/or pre-soaking of the slab subgrade is recommended, to a depth of 12 inches (optimum moisture content), or 18 inches (120 percent of the soil's optimum moisture content, or 3 percent over optimum moisture content, whichever is greater), for very low to low, and medium expansive soils, respectively. This moisture content should be maintained in the subgrade soils during concrete placement to promote uniform curing of the concrete and minimize the

development of unsightly shrinkage cracks. Slab underlayment should consist of a 1- to 2-inch leveling course of sand (S.E.>30) and a minimum of 4 to 6 inches of Class 2 base compacted to 90 percent. Deck slabs within the H/3 zone, where H is the height of the slope (in feet), will have an increased potential for distress relative to other areas outside of the H/3 zone. If distress is undesirable, improvements, deck slabs or flatwork should not be constructed closer than H/3 or 7 feet (whichever is greater) from the slope face, in order to reduce, but not eliminate, this potential.

14. Pool/spa bottom or deck slabs should be founded entirely on competent bedrock, or properly compacted fill. Fill should be compacted to achieve a minimum 90 percent relative compaction, as discussed above. Prior to pouring concrete, subgrade soils below the pool/spa decking should be throughly watered to achieve a moisture content that is at least 2 percent above optimum moisture content, to a depth of at least 18 inches below the bottom of slabs. This moisture content should be maintained in the subgrade soils during concrete placement to promote uniform curing of the concrete and minimize the development of unsightly shrinkage cracks.

15. In order to reduce unsightly cracking, the outer edges of pool/spa decking to be bordered by landscaping, and the edges immediately adjacent to the pool/spa, should be underlain by an 8-inch wide concrete cutoff shoulder (thickened edge) extending to a depth of at least 12 inches below the bottoms of the slabs to mitigate excessive infiltration of water under the pool/spa deck. These thickened edges should be reinforced with two No. 4 bars, one at the top and one at the bottom. Deck slabs may be minimally reinforced with No. 3 reinforcing bars placed at 18 inches on-center, in both directions. All slab reinforcement should be supported on chairs to ensure proper mid-slab positioning during the placement of concrete.

16. Surface and shrinkage cracking of the finish slab may be reduced if a low slump and water-cement ratio are maintained during concrete placement. Concrete utilized should have a minimum compressive strength of 4,000 psi. Excessive water added to concrete prior to placement is likely to cause shrinkage cracking, and should be avoided. Some concrete shrinkage cracking, however, is unavoidable.

17. Joint and sawcut locations for the pool/spa deck should be determined by the design engineer and/or contractor. However, spacings should not exceed 6 feet on center.

18. Considering the nature of the onsite earth materials, it should be anticipated that caving or sloughing could be a factor in subsurface excavations and trenching. Shoring or excavating the trench walls/backcuts at the angle of repose (typically 25 to 45 degrees), should be anticipated. All excavations should be observed by a representative of the geotechnical consultant, including the project geologist and/or geotechnical engineer, prior to workers entering the excavation or trench, and minimally conform to Cal/OSHA (“Type C” soils may be assumed), state, and local

safety codes. Should adverse conditions exist, appropriate recommendations should be offered at that time by the geotechnical consultant. GSI does not consult in the area of safety engineering and the safety of the construction crew is the responsibility of the pool/spa builder.

19. It is imperative that adequate provisions for surface drainage are incorporated by the homeowners into their overall improvement scheme. Ponding water, ground saturation and flow over slope faces, are all situations which must be avoided to enhance long term performance of the pool/spa and associated improvements, and reduce the likelihood of distress.

20. Regardless of the methods employed, once the pool/spa is filled with water, should it be emptied, there exists some potential that if emptied, significant distress may occur. Accordingly, once filled, the pool/spa should not be emptied unless evaluated by the geotechnical consultant and the pool/spa builder.

21. For pools/spas built within (all or part) of the Code setback and/or geotechnical setback, as indicated in the site geotechnical documents, special foundations are recommended to mitigate the affects of creep, lateral fill extension, expansive soils and settlement on the proposed pool/spa. Most municipalities or County reviewers do not consider these effects in pool/spa plan approvals. As such, where pools/spas are proposed on 20 feet or more of fill, medium or highly expansive soils, or rock fill with limited "cap soils" and built within Code setbacks, or within the influence of the creep zone, or lateral fill extension, the following should be considered during design and construction:

    OPTION A: Shallow foundations with or without overexcavation of the pool/spa "shell," such that the pool/spa is surrounded by 5 feet of very low to low expansive soils (without irreducible particles greater that 6 inches), and the pool/spa walls closer to the slope(s) are designed to be free standing. GSI recommends a pool/spa under-drain or blanket system (see attached Typical Pool/Spa Detail). The pool/spa builders and owner in this optional construction technique should be generally satisfied with pool/spa performance under this scenario; however, some settlement, tilting, cracking, and leakage of the pool/spa is likely over the life of the project.

    OPTION B: Pier supported pool/spa foundations with or without overexcavation of the pool/spa shell such that the pool/spa is surrounded by 5 feet of very low to low expansive soils (without irreducible particles greater than 6 inches), and the pool/spa walls closer to the slope(s) are designed to be free standing. The need for a pool/spa under-drain system may be installed for leak detection purposes. Piers that support the pool/spa should be a minimum of 12 inches in diameter and at a spacing to provide vertical and lateral support of the pool/spa, in accordance with the pool/spa

designers recommendations current applicable Codes. The pool/spa builder and owner in this second scenario construction technique should be more satisfied with pool/spa performance. This construction will reduce settlement and creep effects on the pool/spa; however, it will not eliminate these potentials, nor make the pool/spa "leak-free."

22. The temperature of the water lines for spas and pools may affect the corrosion properties of site soils, thus, a corrosion specialist should be retained to review all spa and pool plans, and provide mitigative recommendations, as warranted. Concrete mix design should be reviewed by a qualified corrosion consultant and materials engineer.

23. All pool/spa utility trenches should be compacted to 90 percent of the laboratory standard, under the full-time observation and testing of a qualified geotechnical consultant. Utility trench bottoms should be sloped away from the primary structure on the property (typically the residence).

24. Pool and spa utility lines should not cross the primary structure's utility lines (i.e., not stacked, or sharing of trenches, etc.).

25. The pool/spa or associated utilities should not intercept, interrupt, or otherwise adversely impact any area drain, roof drain, or other drainage conveyances. If it is necessary to modify, move, or disrupt existing area drains, subdrains, or tightlines, then the design civil engineer should be consulted, and mitigative measures provided. Such measures should be further reviewed and approved by the geotechnical consultant, prior to proceeding with any further construction.

26. The geotechnical consultant should review and approve all aspects of pool/spa and flatwork design prior to construction. A design civil engineer should review all aspects of such design, including drainage and setback conditions. Prior to acceptance of the pool/spa construction, the project builder, geotechnical consultant and civil designer should evaluate the performance of the area drains and other site drainage pipes, following pool/spa construction.

27. All aspects of construction should be reviewed and approved by the geotechnical consultant, including during excavation, prior to the placement of any additional fill, prior to the placement of any reinforcement or pouring of any concrete.

28. Any changes in design or location of the pool/spa should be reviewed and approved by the geotechnical and design civil engineer prior to construction. Field adjustments should not be allowed until written approval of the proposed field changes are obtained from the geotechnical and design civil engineer.

29. Disclosure should be made to homeowners and builders, contractors, and any interested/affected parties, that pools/spas built within about 15 feet of the top of a

slope, and/or H/3, where H is the height of the slope (in feet), will experience some movement or tilting. While the pool/spa shell or coping may not necessarily crack, the levelness of the pool/spa will likely tilt toward the slope, and may not be esthetically pleasing. The same is true with decking, flatwork and other improvements in this zone.

30. Failure to adhere to the above recommendations will significantly increase the potential for distress to the pool/spa, flatwork, etc.

31. Local seismicity and/or the design earthquake will cause some distress to the pool/spa and decking or flatwork, possibly including total functional and economic loss.

32. The information and recommendations discussed above should be provided to any contractors and/or subcontractors, or homeowners, interested/affected parties, etc., that may perform or may be affected by such work.

JOB SAFETY

General

At GSI, getting the job done safely is of primary concern. The following is the company's safety considerations for use by all employees on multi-employer construction sites. On-ground personnel are at highest risk of injury, and possible fatality, on grading and construction projects. GSI recognizes that construction activities will vary on each site, and that site safety is the prime responsibility of the contractor; however, everyone must be safety conscious and responsible at all times. To achieve our goal of avoiding accidents, cooperation between the client, the contractor, and GSI personnel must be maintained.

In an effort to minimize risks associated with geotechnical testing and observation, the following precautions are to be implemented for the safety of field personnel on grading and construction projects:

Safety Meetings: GSI field personnel are directed to attend contractor's regularly scheduled and documented safety meetings.

Safety Vests: Safety vests are provided for, and are to be worn by GSI personnel, at all times, when they are working in the field.

Safety Flags: Two safety flags are provided to GSI field technicians; one is to be affixed to the vehicle when on site, the other is to be placed atop the spoil pile on all test pits.

Flashing Lights: All vehicles stationary in the grading area shall use rotating or flashing amber beacons, or strobe lights, on the vehicle during all field testing. While operating a vehicle in the grading area, the emergency flasher on the vehicle shall be activated.

In the event that the contractor's representative observes any of our personnel not following the above, we request that it be brought to the attention of our office.

Test Pits Location, Orientation, and Clearance

The technician is responsible for selecting test pit locations. A primary concern should be the technician's safety. Efforts will be made to coordinate locations with the grading contractor's authorized representative, and to select locations following or behind the established traffic pattern, preferably outside of current traffic. The contractor's authorized representative (supervisor, grade checker, dump man, operator, etc.) should direct excavation of the pit and safety during the test period. Of paramount concern should be the soil technician's safety, and obtaining enough tests to represent the fill.

Test pits should be excavated so that the spoil pile is placed away from oncoming traffic, whenever possible. The technician's vehicle is to be placed next to the test pit, opposite the spoil pile. This necessitates the fill be maintained in a driveable condition. Alternatively, the contractor may wish to park a piece of equipment in front of the test holes, particularly in small fill areas or those with limited access.

A zone of non-encroachment should be established for all test pits. No grading equipment should enter this zone during the testing procedure. The zone should extend approximately 50 feet outward from the center of the test pit. This zone is established for safety and to avoid excessive ground vibration, which typically decreases test results.

When taking slope tests, the technician should park the vehicle directly above or below the test location. If this is not possible, a prominent flag should be placed at the top of the slope. The contractor's representative should effectively keep all equipment at a safe operational distance (e.g., 50 feet) away from the slope during this testing.

The technician is directed to withdraw from the active portion of the fill as soon as possible following testing. The technician's vehicle should be parked at the perimeter of the fill in a highly visible location, well away from the equipment traffic pattern. The contractor should inform our personnel of all changes to haul roads, cut and fill areas or other factors that may affect site access and site safety.

In the event that the technician's safety is jeopardized or compromised as a result of the contractor's failure to comply with any of the above, the technician is required, by company policy, to immediately withdraw and notify his/her supervisor. The grading contractor's representative will be contacted in an effort to affect a solution. However, in the interim, no further testing will be performed until the situation is rectified. Any fill placed can be considered unacceptable and subject to reprocessing, recompaction, or removal.

In the event that the soil technician does not comply with the above or other established safety guidelines, we request that the contractor bring this to the technician's attention and notify this office. Effective communication and coordination between the contractor's representative and the soil technician is strongly encouraged in order to implement the above safety plan.

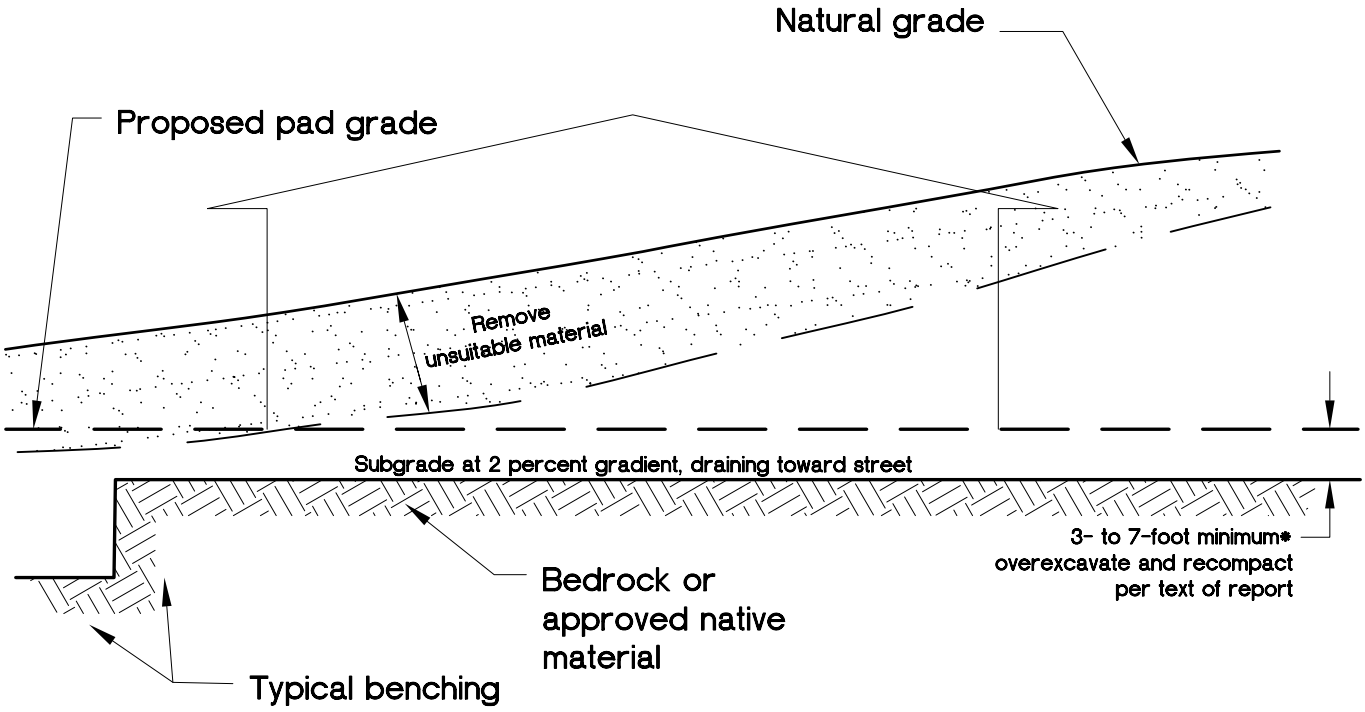
Trench and Vertical Excavation

It is the contractor's responsibility to provide safe access into trenches where compaction testing is needed. Our personnel are directed not to enter any excavation or vertical cut which: 1) is 5 feet or deeper unless shored or laid back; 2) displays any evidence of instability, has any loose rock or other debris which could fall into the trench; or 3) displays any other evidence of any unsafe conditions regardless of depth.

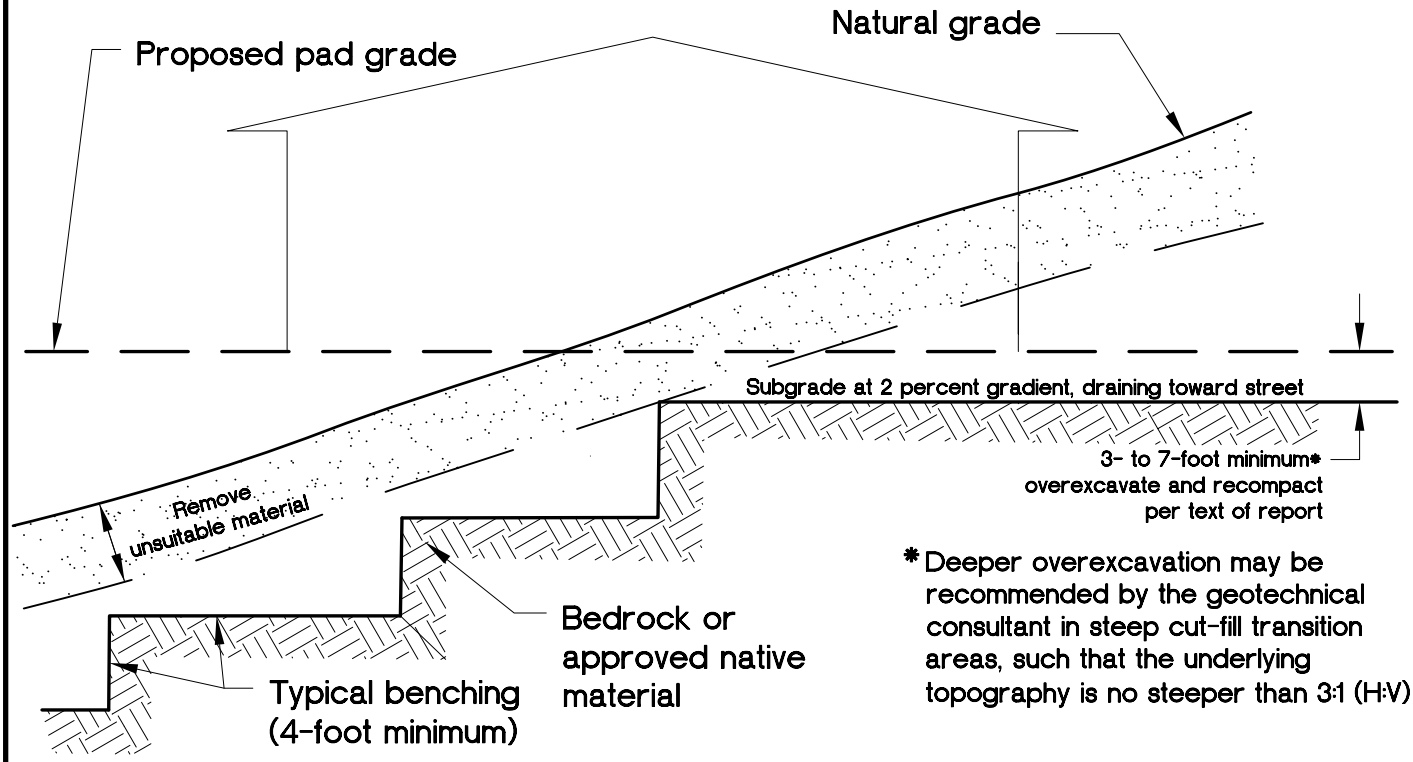
All trench excavations or vertical cuts in excess of 5 feet deep, which any person enters, should be shored or laid back. Trench access should be provided in accordance with Cal/OSHA and/or state and local standards. Our personnel are directed not to enter any trench by being lowered or "riding down" on the equipment.

If the contractor fails to provide safe access to trenches for compaction testing, our company policy requires that the soil technician withdraw and notify his/her supervisor. The contractor's representative will be contacted in an effort to affect a solution. All backfill not tested due to safety concerns or other reasons could be subject to reprocessing and/or removal.

If GSI personnel become aware of anyone working beneath an unsafe trench wall or vertical excavation, we have a legal obligation to put the contractor and owner/developer on notice to immediately correct the situation. If corrective steps are not taken, GSI then has an obligation to notify Cal/OSHA and/or the proper controlling authorities.

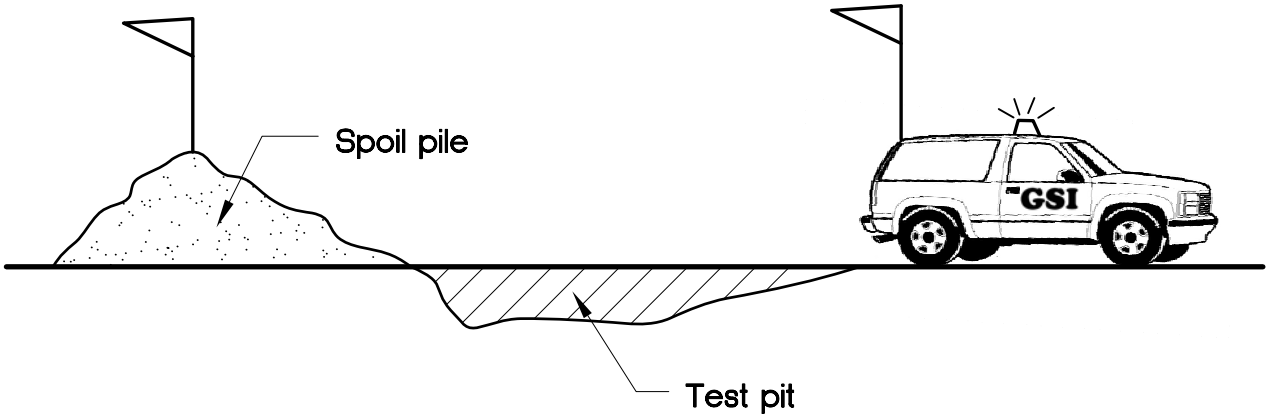


CUT LOT OR MATERIAL-TYPE TRANSITION

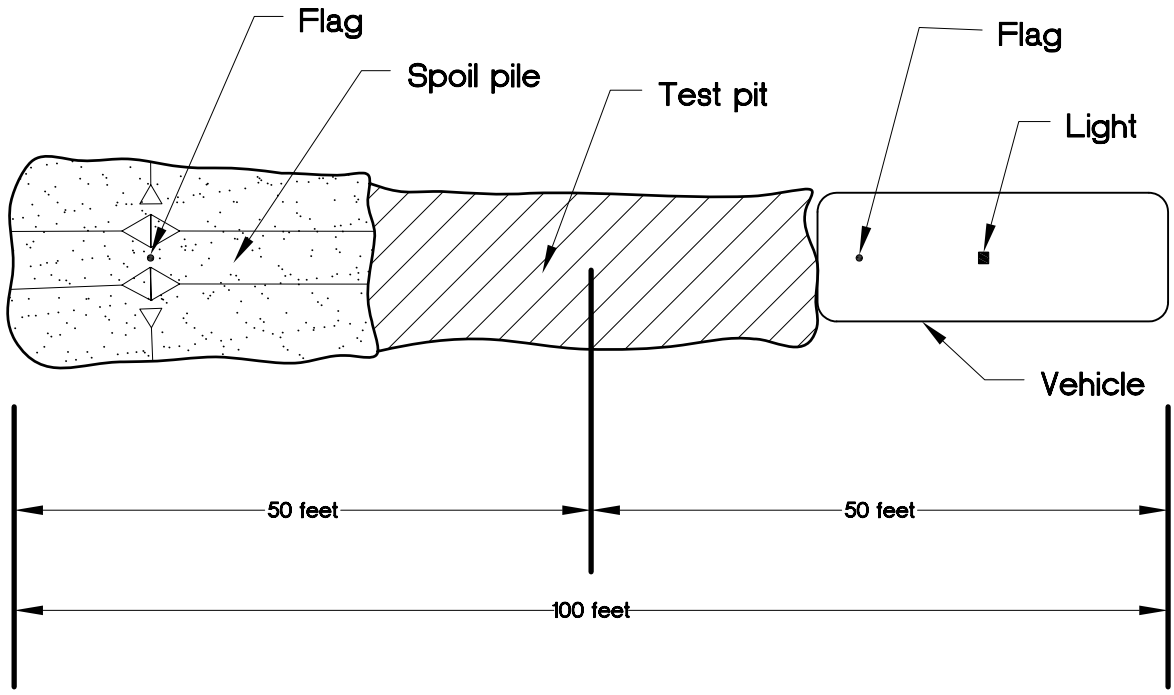


CUT-FILL LOT (DAYLIGHT TRANSITION)

SIDE VIEW



TOP VIEW



GeoSoils, Inc. | TEST PIT SAFETY DIAGRAM | Plate F-20

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Appendix C

CAP Checklist

Rincon Consultants, Inc.
2215 Faraday Avenue, Suite A
Carlsbad, California 92008

760 918 9444 OFFICE AND FAX

info@rinconconsultants.com
www.rinconconsultants.com

January 26, 2021
Project No. 20-10776

Robert Richardson
Karnak Planning & Design
381 Christiansen Way
Carlsbad, California 92008

Subject: **City of Carlsbad Climate Action Plan (CAP) Checklist Consistency for the Ed and Laura Scarpelli Townhome Condos and Professional Office Space Mixed Use Project**

Dear Mr. Richardson:

Rincon Consultants, Inc. (Rincon) has reviewed the Ed and Laura Scarpelli Townhome Condos and Professional Office Space Mixed Use Project's (Project's) consistency with the City of Carlsbad (City) Climate Action Plan's (CAP's) Consistency Checklist (Checklist). This memorandum summarizes the findings of the attached Checklist.

Project Description

The project is located at 2754 and 2770 Jefferson Street. The project is an infill project and would involve the demolition of the two single family rental units and a lot consolidation into one 0.33 acre lot to be developed with four condominium ownership units and a stand-alone professional office building. The project would include parking garages for each residential unit and a carport containing three parking spaces for the proposed office space. The square footage for the proposed units include:

- Unit 1: 1,907 square feet (sf)
- Unit 2: 1,858 sf
- Unit 3: 1,836 sf
- Unit 4: 2,191 sf
- Professional Office: 751 sf
- Carport: 817 sf

The existing General Plan land use designations of 2754 Jefferson Street and 2770 Jefferson Street are R-15 (Residential 8-15 du/ac) and R-15/0 (Residential 8-15 du/ac/Office); respectively; the existing zoning designations of 2754 Jefferson Street and 2770 Jefferson Street are RD-M (Residential Density-Multiple) and R-P-Q (Residential Professional with a Qualified Overlay Zone); respectively. To accommodate the proposed mixed-use project on a consolidated single lot, the proposed General Plan designation is RP (Residential Professional) and the proposed Zoning designation is R-P-Q (Residential Professional with a Qualified Overlay Zone). This will allow for the proposed mixed use project and combined residential and professional office land uses subject to the development standards of the RP zoning district

(Chapter 21.18 of the Carlsbad Zoning Ordinance) and the corresponding processing of a Site Development Plan per the Q (Qualified) Overlay Zone.

CAP and Checklist Overview

In September 2015, the City adopted a CAP that outlines actions that the city will undertake to achieve its proportional share of State greenhouse gas (GHG) emissions reductions. The Checklist for the CAP contains measures that are required to be implemented on a project-by-project basis to ensure that the specified emissions targets identified in the CAP are achieved. The Checklist was last updated in February 2020. Implementation of these measures will ensure that new development is consistent with the CAP's assumption for relevant CAP strategies toward achieving the identified GHG reduction targets.

Project Consistency with Checklist

Step 1: Land Use Consistency

The proposed project was analyzed for consistency with the CAP's Checklist (see Attachment A for the Checklist). Step 1 of the Checklist is to determine land use consistency of a project. If a project is consistent the existing General Plan land use and specific/master plan or zoning designations, then the project proceeds to Step 2 of the Checklist.

As described under Project Description, to accommodate the lot consolidation of the site, the existing zoning of 2770 Jefferson Street, R-P-Q (Residential Professional with a Qualified Overlay Zone), would be applied to the consolidated lot to accommodate the proposed uses. In addition, the more applicable RP (Residential Professional) land use, consistent with 2770 Jefferson Street's existing land use of R-15/0 (Residential 8-15 du/ac/Office), would be applied to the consolidated lot. This would be consistent with the previous land use and zoning of the lots, which would be consistent with the checklist's intention of not requiring a full analysis of existing and proposed uses when the existing and proposed land use and zoning are similar. Therefore, the project would move to Step 2 of the checklist.

Step 2: CAP Ordinance Compliance Requirements

After determining consistency with Step 1, Step 2 of the Checklist determines a project's consistency with CAP ordinances, and in turn, demonstrate consistency with the applicable measures and actions of the CAP. The ordinances applicable depend on if a project is a residential or nonresidential project, if the project is new construction or alterations, and if the project is alterations, what the building permit valuation of the permit is. As the project is a new construction mixed use residential and nonresidential project that involves demolition of two existing single-family residences, Sections 2A, 3A, and 4A of the Checklist would be applicable to the residential portion of the project, while Sections 1B, 2B, 3B, 4B and 5 of the Checklist would be applicable to the nonresidential portion of the project.

Section 1B: Energy Efficiency for Nonresidential

A5.203.1.1.1 – Outdoor Lighting: .90 Allowed Outdoor Lighting Power

A5.203.1.1.1 is included in Appendix A5 – Nonresidential Voluntary Measures of the of the 2019 California Green (CALGreen) Building Standards Code (CCR, Title 24, Part 11- CALGreen). A5.203.1.1.1 states:

> *Newly installed outdoor lighting power shall be no greater than 90 percent of the Allowed Outdoor Lighting Power. The Allowed Outdoor Lighting Power calculation is specified in Title 24, Part 6, Section 140.7 "Requirements For Outdoor Lighting."*

As the project is in an urban area, it would fall under Lighting Zone 3 in Section 140.7, which has an area wattage allowance of 0.025 watt per square foot for asphalt and 0.03 watt per square foot for concrete. The project would achieve this through light emitting diode (LED) lighting in the outdoors areas of the project site. Therefore, the project is consistent with this ordinance.

A5.203.1.1.2 – Restaurant service water heating

The project would not have restaurant service; therefore, this ordinance is not applicable to the project.

A5.203.1.2.1 – .95 Energy Budget or .90 Energy Budget

A5.203.1.2.1 is included in Appendix A5 – Nonresidential Voluntary Measures of the of the 2019 CALGreen Building Standards Code (CCR, Title 24, Part 11- CALGreen). A5.203.1.2.1 states:

> *Buildings complying with the first level of advanced energy efficiency shall have an Energy Budget that is no greater than indicated below, depending on the type of energy systems included in the building project. If the newly constructed building or addition does not include indoor lighting or mechanical systems, then no additional performance requirements above Title 24, Part 6 are required.*
>
> *For building projects that include indoor lighting or mechanical systems, but not both: No greater than 95 percent of the Title 24, Part 6, Energy Budget for the Standard Design Building as calculated by compliance software certified by the Energy Commission.*
>
> *For building projects that include indoor lighting and mechanical systems: No greater than 90 percent of the Title 24, Part 6 Energy Budget for the Standard Design Building as calculated by compliance software certified by the Energy Commission.*

The project would include indoor lighting and mechanical systems, and therefore the 90 percent energy budget would be applicable to the nonresidential portion of the project. The project would be consistent with this measure by not exceeding 90 percent of the energy budget per Title 24, Part 6 Energy Budget for the Standard Design Building.

A5.211.1. – On-site renewable energy**

The Checklist requires on-site renewable energy in the form of photovoltaic systems (Section 2B) if the project is new construction or, if alteration, has a building permit valuation of $1,000,000 or new roof of addition of 2,000 sf or greater. The project is new construction and therefore this ordinance is applicable to the project. The project would comply with this ordinance through solar power; see Section 2A and 2B for solar system calculations.

A5.211.3. – Green power (if offered by local utility provider, 50 percent minimum renewable sources)**

The project would receive energy from San Diego Gas & Electric (SDG&E). As an electric provider, SDG&E must comply with the requirement of Senate Bill 100, which requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045. As of the end of 2018, SDG&E was already at 45 percent renewable energy (SDG&E 2019). While more updated information is not available at the time of this memorandum, SDG&E is expected to continue to obtain a greater share of its energy from renewable sources and is at 50 percent renewable sources or would be in the near future. Therefore, the project would achieve 50 percent renewable energy through SDG&E by operation or at a future date and would achieve great than that number with up to 100 percent renewable by 2045. The City of Carlsbad is in the process of setting up a Community Choice Energy program with the cities of Del Mar and Solana Beach that would allow electricity customers to obtain greater percentage of renewable sources (City of Carlsbad n.d.). However, this program is not operational at the time of this submittal. Therefore, this ordinance is not applicable to the project.

A5.212.1 – Elevators and escalators

The project would not build elevators or escalators; therefore, this ordinance is not applicable to the project.

A5.213.1– Steel framing

A5.213.1 is included in Appendix A5 – Nonresidential Voluntary Measures of the of the 2019 CALGreen Building Standards Code (CCR, Title 24, Part 11- CALGreen). A5.213.1 states:

Design steel framing for maximum energy efficiency. Techniques for avoiding thermal bridging in the envelope include:

- *Exterior rigid insulation;*
- *Punching large holes in the stud web without affecting the structural integrity of the stud;*
- *Spacing the studs as far as possible while maintaining the structural integrity of the structure; and*
- *Detailed design of intersections of wall openings and building intersections of floors, walls and roofs.*

The project proposes new construction; therefore, this ordinance is applicable to the project. The nonresidential space of the project would use steel framing and would be consistent with this ordinance.

Section 2A: Energy Efficiency for Residential

In accordance with Section 150.1(c)14 of the 2019 Building Energy Efficiency Standards, all new residential uses under three stories must install photovoltaic (PV) solar panels that generate an amount of electricity equal to or greater than the dwelling's annual electrical usage. This is determined using the following Equation 150.1-C:

EQUATION 150.1-C ANNUAL PHOTOVOLTAIC ELECTRICAL OUTPUT

$$\mathbf{kW_{PV} = (CFA \times A)/1000 + (NDwell \times B)}$$

WHERE:

kW_{PV} = kWdc size of the PV system

CFA = Conditioned floor area

NDwell = Number of dwelling units

A = Adjustment factor from Table 150.1-C

B = Dwelling adjustment factor from Table 150.1-C

Therefore, based on the calculation method contained in Section 150.1(c)14, the residential portion of the project would be required to include 9.06 kW of PV solar panels.

Section 2B: Energy Efficiency for Nonresidential

The City of Carlsbad adopted Section 120.10 in ordinance CS-347 for cost-effective renewable energy generation (photovoltaic systems) for nonresidential buildings. The project must comply with Section 120.10 if the description meets one of the following:

- *All new nonresidential construction projects.*
- *Additions made to existing nonresidential construction where the total roof area is increased by at least 2,000 square feet. This threshold aligns with the California Energy Code (Title 24, Part 6) threshold for requiring solar zone.*
- *Building alterations with a permit valuation of $1,000,000 or above, that affects 75 percent or more, of the existing building floor area.*

The project is a nonresidential new construction; therefore, the ordinance is applicable to this project. To determine the minimum system size, the Time-Dependent Valuation (TDV) Method will be used. At this stage of planning, TDV calculations have not been completed, but will be completed a later date. The minimum solar system size for the nonresidential use will be determined at that time.

Section 3A: Water Heating Residential

City Ordinance CS- 348 consists of Section 150.1(c)8A of the California Energy Code, which includes requirements for domestic water-heating systems for systems serving individual dwelling units. Section 150.1(c)8A states the following:

For systems serving individual dwelling units, the water heating system shall meet the requirement of either i, ii, or iii:

- *i. A single heat pump water heater. The storage tank shall be located in the garage or conditioned space. In addition, one of the following:*
    - *a. A compact hot water distribution system as specified in the Reference Appendix RA4.4.6 and a drain water heat recovery system that is field verified as specified in the Reference Appendix RA3.6.9; or*
    - *b. A photovoltaic system capacity of 0.3 kWdc larger than the requirement specified in Section 150.l(c)14.*
- *Ii. A single heat pump water heater that meets the requirements of NEEA Advanced Water Heater Specification Tier 3 or higher. The storage tank shall be located in the garage·or conditioned space.*
- *Iii. A solar water-heating system meeting the installation criteria specified in Reference Residential Appendix RA4 and either a minimum solar savings fraction of 0.60 or a minimum 40 square feet of collectors.*

The project would install individual systems for each unit, which would be consistent with the requirements under Section 150.1(c)8A, therefore, the ordinance is applicable to this project.

Section 3B: Water Heating Nonresidential

Section 120.11 of the California Energy Code (as listed in CS-347) states the following:

- *Any newly constructed nonresidential building shall derive its service water heating from a system that provides at least 40 percent of the energy needed for service water heating from on-site solar energy or recovered energy. Solar energy includes solar photovoltaics and solar-water heating systems.*

The project would consist of a newly constructed professional office building; therefore, the ordinance would be applicable to this project. The project would achieve this through the solar system described under Section 2B.

Section 4A: Electric Vehicle Charging – Residential New Construction and Major Alterations

Per CS-349, each one- and two-family residential dwelling or townhouses with attached garages are required to install an electric vehicle charging system (Level II) in each residential garage. The project would install a system in each garage and would be consistent with this ordinance.

Section 4B: Electric Vehicle Charging – Nonresidential New Construction

Section 18.21.150 (B) of the Municipal Code adopted Section 5.106.5.3 of the California Green Building Standards Code. Section 5.106.5.3 states the following:

5.106.5.3.1 Single charging space requirements. [N] *When only a single charging space is required per Table 5.106.5.3.3, one EVSE Installed space shall be installed in accordance with the California Electrical Code.*

This project would consist of three employee parking spaces and would be consistent with Section 18.21.150 (B) of the Municipal Code through the provision of one electric vehicle charging system (Level II).

Section 5: Transportation Demand Management (TDM) Plan

The CAP Checklist lastly requires that a Transportation Demand Management (TDM) Plan be provided if employee average daily trips (ADT) exceed 110 per 1,000 sf of building area (per Ordinance CS-350). The City's Employee ADT Table lists 8 ADT for the first 1,000 sf of retail space, and 4.5 ADT per 1,000 sf of retail space beyond the initial 1,000 sf. Therefore, with a total square footage of 751 sf the project is expected to generate 8 employee ADT and the project applicant is not required submit at TDM Plan following the City TDM Handbook guidelines.

Conclusion

As described above, the project would implement and be consistent with applicable CAP ordinances identified in Section 1B, 2A, 2B, 3A, 3B, 4A, 4B, and 5 of the Checklist. Given the aforementioned, the proposed project would be consistent with the Checklist and, therefore, the CAP.

Sincerely,
Rincon Consultants, Inc.

Bill Vosti
Senior Environmental Planner/ Project Manager

Deanna Hansen
Principal

Attachment A: Climate Action Plan Consistency Checklist

References

California Department of General Services. 2020. CALGreen. Effective January 1. Available at: https://www.dgs.ca.gov/BSC/Resources/Page-Content/Building-Standards-Commission-Resources-List-Folder/CALGreen

Carlsbad, City of. 2015. Climate Action Plan. September.

_____. 2020. Climate Action Plan Consistency Checklist P-30. Revised February.

_____. n.d. Clean Energy Alliance. Available at: https://www.carlsbadca.gov/residents/energy.asp#:~:text=The%20City%20of%20Carlsbad%20has,renewable%20sources%20starting%20in%202021.

San Diego Gas & Electric (SDG&E). 2019. A Look Back at 2018. Available at: http://www.sdgenews.com/article/look-back-2018

Attachment A

Climate Action Plan Consistency Checklist

Development Services
Planning Division
1635 Faraday Avenue
760-602-4610
www.carlsbadca.gov

CLIMATE ACTION PLAN CONSISTENCY CHECKLIST P-30

PURPOSE

In September 2015, the City of Carlsbad adopted a Climate Action Plan (CAP) that outlines actions that the city will undertake to achieve its proportional share of state greenhouse gas (GHG) emissions reductions. This checklist contains measures that are required to be implemented on a project-by-project basis to ensure that the specified emissions targets identified in the Climate Action Plan (CAP) are achieved. Implementation of these measures will ensure that new development is consistent with the CAP's assumption for relevant CAP strategies toward achieving the identified greenhouse gas (GHG) reduction targets. In this manner, a project's incremental contribution to a cumulative GHG emissions effect may be determined not to be cumulatively considerable if it complies with the requirements of the CAP, in accordance with CEQA Guidelines Sections 15064(h)(3), 15130(d), and 15183(b).*

*City staff are currently not assessing the greenhouse gas impacts of California Environmental Quality Act projects by using the Climate Action Plan as a qualified GHG reduction plan under CEQA section 15183.5(b). Please consult with the Planning Department for further guidance. Additional information may be found on the Climate Action Plan Update and Vehicle Miles Traveled calculations staff report.

This checklist is intended to assist project applicants in identifying CAP ordinance requirements and demonstrate how their project fulfills those requirements. This checklist is to be completed and included in applications for new development projects that are subject to discretionary review or require a building permit.

APPLICATION SUBMITTAL REQUIREMENTS

- The completed checklist must be included in the project submittal package or building permit application. Application submittal procedures can be found on the City of Carlsbad website. This checklist is designed to assist the applicant in identifying the minimum CAP-related requirements specific to their project. However, it may be necessary to supplement the completed checklist with supporting materials, calculations or certifications, to demonstrate full compliance with CAP requirements. For example, projects that propose or require a performance approach to comply with energy-related measures will need to attach to this checklist separate calculations and documentation as specified by the ordinances.

- If an item in the checklist is deemed to be not applicable to a project, or is less than the minimum required by ordinance, an explanation must be provided to the satisfaction of the Planning Division or building official.

- The requirements in the checklist will be included in the project's conditions of approval or issuance of building permit.

- Details on CAP ordinance requirements are available on the city's website.

STEP 1: LAND USE CONSISTENCY

The first step in determining CAP consistency for discretionary development is to assess the project's consistency with the growth projections used in the development of the CAP. This section allows the city to determine a project's consistency with the land use assumptions used in the CAP. Projects found not to be consistent with the CAP's land use assumptions and that are projected to emit at or above the CAP screening threshold of 900 metric tons of CO_2 equivalent ($MTCO_2e$) GHG will be subject to a project-specific analysis of GHG emissions' impact on the environment in accordance with the requirements of the California Environmental Quality Act (CEQA). This may result in GHG-reducing mitigation measures applied as a condition of project approval in addition to compliance with the CAP ordinance requirements identified in Step 2 of this checklist.

STEP 1	**Land Use Consistency**	
Checklist Item (Check the appropriate box and provide an explanation and supporting documentation for your answer)	**Yes**	**No**
A. Is the proposed project consistent with the existing General Plan land use and specific/master plan or zoning designations? OR, If the proposed project is not consistent with the existing land use plan and zoning designations, does the project include a land use plan and/or specific plan, master plan or zoning designation amendment that would result in an equivalent or less GHG-intensive project when compared to the existing designations?	☒	☐
If **"Yes"**, proceed to Step 2 of the checklist. For the second option under Question A above, provide estimated project-related GHG emissions under both existing and proposed designation(s) for comparison. GHG emissions must be estimated in accordance with the City of Carlsbad Guidance to Demonstrating Consistency with the Climate Action Plan. If **"No"**, proceed to Question B.		
B. The CAP established a screening threshold of 900 $MTCO_2e$/year for new development projects to assist in determining consistency with the CAP. The types and sizes of typical projects listed below have been determined to correspond to the CAP screening threshold. Will the proposed land use change result in the construction of less than any one of the following? • Single-Family Housing: 50 dwelling units • Multi-Family Housing: 70 dwelling units • Office: 35,000 square feet • Retail Store: 11,000 square feet • Grocery Store: 6,300 square feet • Other: If the proposed project is not one of the above types, provide a project-specific GHG emissions analysis to determine whether it is below the 900 $MTCO_2e$/year screening threshold.	☒	☐
If **"Yes"**, proceed to Step 2 of the checklist. If **"No"**, the project's GHG impact is potentially significant and must be analyzed in accordance with CEQA. Applicant must prepare a Self-developed GHG emissions reduction program in accordance with the City of Carlsbad Guidance to Demonstrating Consistency with the Climate Action Plan to demonstrate how it would offset the increase in emissions over the existing designations. The project must incorporate each of the applicable measures identified in Step 2 to mitigate cumulative GHG emissions impacts unless the decision maker finds that a measure is infeasible in accordance with California Environmental Quality Act Guidelines Section 15091. Mitigation in lieu of or in addition to the measures in Step 2 may be required, depending on the results of the project-specific GHG impact analysis. Proceed and complete a project-specific Self-developed GHG emissions reduction program and Step 2 of the Checklist.		

STEP 2: CAP ORDINANCE COMPLIANCE REQUIREMENTS

Completion of this checklist will document a project's compliance with CAP ordinances, and in turn, demonstrate consistency with the applicable measures and actions of the CAP. The compliance requirements in this Step 2 apply to development projects that require a building permit. All other development projects shall implement all emissions-related mitigation measures from the General Plan Update EIR.

Application Information			
Project No./Name:	20-10776 Ed and Laura Scarpelli Townhome Condos and Professional Office Space Mixed Use Project		
Property Address/APN:	2754 & 2770 Jefferson Street, Carlsbad CA 92008	203-201-01, -02	
Applicant Name/Co.:	Karnak Planning & Design		
Applicant Address:	381 Christiansen Way, Carlsbad, CA 92008		
Contact Phone:	(760) 434-8400	Contact Email:	karnakdesign@gmail.com

Contact information of person completing this checklist (if different than above):

Name:	Bill Vosti	Contact Phone:	805-459-2142
Company name/address:	Rincon Consultants, Inc.	Contact Email:	bvosti@rinconconsultants.com
	2215 Faraday Ave., Suite A, Carlsbad, CA 92008		

Use the table below to determine which sections of the Ordinance Compliance checklist are applicable to your project. If your project includes alterations or additions to an existing building, please contact the Carlsbad Building Division for assistance in estimating building permit valuation, by phone at 760-602-2719 or by email at building@carlsbadca.gov.

Estimated Building Permit Valuation (BPV): $_____

Construction Type	Complete Section(s)	Notes:
[X] Residential		
☒ New construction	2A, 3A and 4A	
☐ Alterations:		
☐ BPV ≥ $60,000	1A	All residential alterations
☐ BPV ≥ $60,000 ☐ Electrical service panel upgrade	1A and 4A 4A	1-2 family dwellings and townhouses with attached garages only
☐ BPV ≥ $200,000	1A and 4A	Multi-family dwellings only where interior finishes are removed and significant site work and upgrades to structural and mechanical, electrical, and/or plumbing systems are proposed
[X] Nonresidential		
☒ New construction	1B, 2B, 3B, 4B and 5	
☐ Alterations:		

☐ BPV ≥ $200,000 or additions ≥ 1,000 square feet	1B, 5	
☐ BPV ≥ $1,000,000	1B, 2B and 5	Building alterations of ≥ 75% existing gross floor area
☐ ≥ 2,000 sq. ft. new roof addition	2B and 5	1B also applies if BPV ≥ $200,000

CAP Ordinance Compliance

Checklist Item

Check the appropriate boxes, explain all not applicable and exception items, and provide supporting calculations and documentation as necessary.

1. Energy Efficiency

Please refer to Carlsbad Ordinance No. CS-347 and the California Green Building Standards Code (CALGreen) for more information when completing this section.

A. ☐ **Residential addition or alteration ≥ $60,000 building permit valuation. See Ord. CS-347, Section 8.**

☐ N/A _____

☐ Exception: Home energy score ≥ 7 (attach certification)

Year Built	Single-family Requirements	Multi-family Requirements
☐ Before 1978	Select one: ☐ Duct sealing ☐ Attic insulation ☐ Cool roof	☐ Attic insulation
☐ 1978 and later	Select one: ☐ Lighting package ☐ Water heating package	
☐ Between 1978 and 1990		Select one: ☐ Attic insulation ☐ Duct Sealing ☐ Cool roof
☐ 1991 and later		Select one: ☐ Lighting package ☐ Water heating package

B. ☒ **Nonresidential* new construction or alterations ≥ $200,000 building permit valuation, or additions ≥ 1,000 square feet. See CALGreen Appendix A5, Discussion A5.2, as amended in CS-347, Section 3.**

☐ N/A _____

A5.203.1.1.1

☒ Outdoor lighting: .90 Allowed Outdoor Lighting Power

☐ N/A _____

A5.203.1.1.2

☐ Restaurant service water heating (comply with California Energy Code Section 140.5, as amended)

☒ N/A Office use

A5.203.1.2.1

Choose one as applicable: ☐ .95 Energy budget ☒ .90 Energy budget

☐ N/A _____

A5.211.1.**

☒ On-site renewable energy

☐ N/A _____

A5.211.3**

☐ Green power (if offered by local utility provider, 50% minimum renewable sources)

☒ N/A SDG&E Energy Mix

A5.212.1

☐ Elevators and escalators

☒ N/A Zero Elevators and Escalators

A5.213.1

☒ Steel framing

☐ N/A _____

* Includes hotels/motels and high-rise residential buildings
** For alterations ≥ $1,000,000 BPV and affecting > 75% existing gross floor area, or alterations that add 2,000 square feet of new roof addition: comply with California Energy Code section 120.10 instead.

2. Photovoltaic Systems

A. ☒ **Residential new construction (for building permit applications submitted after 1/1/20). Refer to 2019 California Energy Code section 150.1(c) 14 for requirements. Note: if project includes installation of an electric heat pump water heater pursuant to Carlsbad ordinance CS-348, increase system size by .3kWdc if PV offset option is selected.**

Floor Plan ID (use additional sheets if necessary)	CFA	#d.u.	Calculated kWdc*	Exception
	7,792	4	9.06	☐ _____
				☐ _____
				☐ _____
				☐ _____
		Total System Size:	9.06 kWdc	

kWdc = (CFAx.572) / 1,000 + (1.15 x #d.u.)

*Formula calculation where CFA = conditional floor area, #du = number of dwellings per plan type
If proposed system size is less than calculated size, please explain.

B. ☒ **Nonresidential new construction or alterations ≥$1,000,000 BPV and affecting ≥75% existing floor area, or addition that increases roof area by ≥2,000 square feet. Please refer to Carlsbad Ordinance CS-347, Section 6 when completing this section.**

Choose one of the following methods:

☐ **Gross Floor Area (GFA) Method**

GFA: _____ Min. System Size: _____ kWdc

☐ If < 10,000s.f. Enter: 5 kWdc

☐ If ≥ 10,000s.f. calculate: 15 kWdc x (GFA/10,000) **

**Round building size factor to nearest tenth, and round system size to nearest whole number.

☒ **Time- Dependent Valuation Method**

Annual TDV Energy use:*** TBD x .80= Min. system size: TBD kWdc

***Attach calculation documentation using modeling software approved by the California Energy Commission.

3. Water Heating

A. ☒ **Residential and hotel/motel new construction**

Please refer to Carlsbad Ordinance CS-347 and CS-348 when completing this section.

☒ For systems serving **individual dwelling units** choose one:

- ☒ Heat pump water heater AND compact hot water distribution AND drain water heat recovery (low-rise residential only)
- ☐ Heat pump water heater AND PV system .3 kWdc larger than required in CA Energy Code Section 120.10 (for high rise residential hotel/motel) or 150.1(c) 14 (for low-rise residential)
- ☐ Heat pump water heater meeting Tier 3 or higher NEEA Advanced Water Heating Specification
- ☐ Solar water heating system that is either .60 solar savings fraction or 40 s.f. solar collectors

☐ Exception: _____

☐ For systems serving **multiple dwelling** units, install a central water-heating system with all of the following:

- ☐ Gas or propane water heating system
- ☐ Recirculation system per CS-347 (high-rise residential, hotel/motel) or CS-348 (low-rise residential)
- ☐ Solar water heating system that is either:
  - ☐ .60 solar savings fraction or 40 s.f. solar collectors
  - ☐ .40 solar savings fraction, plus drain water heat recovery

☐ Exception: _____

B. ☒ **Nonresidential new construction**

Please refer to Carlsbad Ordinance CS-347 when completing this section.

☒ Water heating system derives at least 40% of its energy from one of the following (attach documentation):

☐ Solar-thermal ☒ Photovoltaics ☐ Recovered energy

☒ Water heating system is (choose one):

- ☐ Heat pump water heater
- ☒ Electric resistance water heater(s)
- ☐ Solar water heating system with .40 solar savings fraction

☐ Exception: _____

4. Electric Vehicle Charging

A. ☒ **Residential New construction and major alterations***

Please refer to Carlsbad Ordinance CS-349 when completing this section.

☒ One and two-family residential dwelling or townhouse with attached garage:

☒ One EVSE ready parking space required ☐ Exception :_____

☐ Multi-family residential: ☐ Exception :_____

Total Parking Spaces Proposed	EVSE Spaces			
	Capable	Ready	Installed	Total

Calculations: Total EVSE spaces = .10 x Total parking (rounded up to nearest whole number)
EVSE Installed = Total EVSE Spaces x .50 (rounded up to nearest whole number)
EVSE other= Total EVSE spaces – EVSE Installed
(EVSE other may be "Capable," "Ready" or "Installed.")

*Major alterations are: (1) for one and two-family dwellings and townhouses with attached garages, alterations have a building permit valuation ≥ $60,000 or include an electrical service panel upgrade; (2) for multifamily dwellings (three units or more without attached garages), alterations have a building permit valuation ≥ $200,000, interior finishes are removed and significant site work and upgrades to structural and mechanical, electrical, and/or plumbing systems are proposed.

B. ☒ **Nonresidential new construction (includes hotels/motels)** ☐ Exception :_____

Total Parking Spaces Proposed	EVSE Spaces			
	Capable	Ready	Installed	Total
3	1	1	1	1

Calculation: Refer to the table below:

Total Number of Parking Spaces provided		Number of required EV Spaces	Number of required EVSE Installed Spaces
☒	0-9	1	1
☐	10-25	2	1
☐	26-50	4	2
☐	51-75	6	3
☐	76-100	9	5
☐	101-150	12	6
☐	151-200	17	9
☐	201 and over	10 percent of total	50 percent of Required EV Spaces

5. ☒ Transportation Demand Management (TDM)

A. List each proposed nonresidential use and gross floor area (GFA) allocated to each use.
B. Employee ADT/1,000 square feet is selected from the City of Carlsbad Employee ADT Table.

Use	GFA	Employee ADT/1,000 S.F.	Total Employee ADT
Professional Office	751 sf	8 for first 1,000 S.F.	8
		Total	8

If total employee ADT is greater than or equal to 110 employee ADT, a TDM plan is required.

***NOTE:** Notwithstanding the 110 employee ADT threshold above, General Plan Mobility Element Policy 3-P.11 requires new development that adds vehicle traffic to vehicle LOS-exempt street facilities to implement TDM and transportation system management strategies. Please consult with City of Carlsbad Land Development Engineering (LDE) staff to determine whether this policy applies to your project.

TDM plan required: Yes ☐ No ☒

LDE Staff Verification: ☐_____ (staff initials)

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Appendix D

Stormwater Standards Questionnaire (Form E-34)

STORM WATER STANDARDS QUESTIONNAIRE E-34

Development Services
Land Development Engineering
1635 Faraday Avenue
(760) 602-2750
www.carlsbadca.gov

INSTRUCTIONS:

To address post-development pollutants that may be generated from development projects, the city requires that new development and significant redevelopment priority projects incorporate Permanent Storm Water Best Management Practices (BMPs) into the project design per Carlsbad BMP Design Manual (BMP Manual). To view the BMP Manual, refer to the Engineering Standards (Volume 5).

This questionnaire must be completed by the applicant in advance of submitting for a development application (subdivision, discretionary permits and/or construction permits). The results of the questionnaire determine the level of storm water standards that must be applied to a proposed development or redevelopment project. Depending on the outcome, your project will either be subject to '**STANDARD PROJECT'** requirements, **'STANDARD PROJECT' with TRASH CAPTURE REQUIREMENTS**, or be subject to '**PRIORITY DEVELOPMENT PROJECT' (PDP)** requirements.

Your responses to the questionnaire represent an initial assessment of the proposed project conditions and impacts. City staff has responsibility for making the final assessment after submission of the development application. If staff determines that the questionnaire was incorrectly filled out and is subject to more stringent storm water standards than initially assessed by you, this will result in the return of the development application as incomplete. In this case, please make the changes to the questionnaire and resubmit to the city.

If you are unsure about the meaning of a question or need help in determining how to respond to one or more of the questions, please seek assistance from Land Development Engineering staff.

A completed and signed questionnaire must be submitted with each development project application. Only one completed and signed questionnaire is required when multiple development applications for the same project are submitted concurrently.

PROJECT INFORMATION

PROJECT NAME: 2754 & 2770 Jefferson Street, Carlsbad, CA	APN: 203-201-01 & 02
ADDRESS: 2754 & 2770 Jefferson Street, Carlsbad, CA	

The project is (check one): ☐ New Development ☑ Redevelopment

The total proposed disturbed area is: 13,374 ft² (0.32) acres

The total proposed newly created and/or replaced impervious area is: 7,170 ft² (0.16) acres

If your project is covered by an approved SWQMP as part of a larger development project, provide the project ID and the SWQMP # of the larger development project:

Project ID_____ SWQMP #: _____

Then, go to Step 1 and follow the instructions. When completed, sign the form at the end and submit this with your application to the city.

This Box for City Use Only

City Concurrence:	YES	NO	Date:	Project ID:
	☐	☐	By:	

STEP 1
TO BE COMPLETED FOR ALL PROJECTS

To determine if your project is a "development project", please answer the following question:

	YES	NO
Is your project LIMITED TO routine maintenance activity and/or repair/improvements to an existing building or structure that do not alter the size (See Section 1.3 of the BMP Design Manual for guidance)?	☐	☑

If you answered "yes" to the above question, provide justification below then **go to Step 6**, mark the box stating "my project is **not a 'development project'** and not subject to the requirements of the BMP manual" and complete applicant information.

Justification/discussion: (e.g. the project includes only interior remodels within an existing building):

If you answered "no" to the above question, the project is a '**development project**', **go to Step 2**.

STEP 2
TO BE COMPLETED FOR ALL DEVELOPMENT PROJECTS

To determine if your project is exempt from PDP requirements pursuant to MS4 Permit Provision E.3.b.(3), please answer the following questions:

Is your project LIMITED to one or more of the following:

	YES	NO
1. Constructing new or retrofitting paved sidewalks, bicycle lanes or trails that meet the following criteria: a) Designed and constructed to direct storm water runoff to adjacent vegetated areas, or other non-erodible permeable areas; OR b) Designed and constructed to be hydraulically disconnected from paved streets or roads; OR c) Designed and constructed with permeable pavements or surfaces in accordance with USEPA Green Streets guidance?	☐	☑
2. Retrofitting or redeveloping existing paved alleys, streets, or roads that are designed and constructed in accordance with the USEPA Green Streets guidance?	☐	☑
3. Ground Mounted Solar Array that meets the criteria provided in section 1.4.2 of the BMP manual?	☐	☑

If you answered "yes" to one or more of the above questions, provide discussion/justification below, then **go to Step 6**, mark the second box stating "my project is **EXEMPT** from PDP …" and complete applicant information.

Discussion to justify exemption (e.g. the project redeveloping existing road designed and constructed in accordance with the USEPA Green Street guidance):

If you answered "no" to the above questions, your project is not exempt from PDP, **go to Step 3**.

STEP 3 TO BE COMPLETED FOR ALL NEW OR REDEVELOPMENT PROJECTS		
To determine if your project is a PDP, please answer the following questions (MS4 Permit Provision E.3.b.(1)):		
	YES	NO
1. Is your project a new development that creates 10,000 square feet or more of impervious surfaces collectively over the entire project site? *This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.*	☐	☑
2. Is your project a redevelopment project creating and/or replacing 5,000 square feet or more of impervious surface collectively over the entire project site on an existing site of 10,000 square feet or more of impervious surface? *This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.*	☐	☑
3. Is your project a new or redevelopment project that creates and/or replaces 5,000 square feet or more of impervious surface collectively over the entire project site and supports a restaurant? A restaurant is a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (Standard Industrial Classification (SIC) code 5812).	☐	☑
4. Is your project a new or redevelopment project that creates 5,000 square feet or more of impervious surface collectively over the entire project site and supports a hillside development project? A hillside development project includes development on any natural slope that is twenty-five percent or greater.	☐	☑
5. Is your project a new or redevelopment project that creates and/or replaces 5,000 square feet or more of impervious surface collectively over the entire project site and supports a parking lot? A parking lot is a land area or facility for the temporary parking or storage of motor vehicles used personally for business or for commerce.	☐	☑
6. Is your project a new or redevelopment project that creates and/or replaces 5,000 square feet or more of impervious street, road, highway, freeway or driveway surface collectively over the entire project site? *A street, road, highway, freeway or driveway is any paved impervious surface used for the transportation of automobiles, trucks, motorcycles, and other vehicles.*	☐	☑
7. Is your project a new or redevelopment project that creates and/or replaces 2,500 square feet or more of impervious surface collectively over the entire site, and discharges directly to an Environmentally Sensitive Area (ESA)? *"Discharging Directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the ESA, or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands).**	☐	☑
8. Is your project a new development or redevelopment project that creates and/or replaces 5,000 square feet or more of impervious surface that supports an automotive repair shop? *An automotive repair shop is a facility that is categorized in any one of the following Standard Industrial Classification (SIC) codes: 5013, 5014, 5541, 7532-7534, or 7536-7539.*	☐	☑
9. Is your project a new development or redevelopment project that creates and/or replaces 5,000 square feet or more of impervious area that supports a retail gasoline outlet (RGO)? *This category includes RGO's that meet the following criteria: (a) 5,000 square feet or more or (b) a project Average Daily Traffic (ADT) of 100 or more vehicles per day.*	☐	☑
10. Is your project a new or redevelopment project that results in the disturbance of one or more acres of land and are expected to generate pollutants post construction?	☐	☑
11. Is your project located within 200 feet of the Pacific Ocean and (1) creates 2,500 square feet or more of impervious surface or (2) increases impervious surface on the property by more than 10%? (CMC 21.203.040)	☐	☑
If you answered "yes" to one or more of the above questions, your project is a **PDP**. If your project is a redevelopment project, **go to step 4**. If your project is a new project, **go to step 6,** check the first box stating, "My project is a **PDP** …" and complete applicant information. If you answered "no" to all of the above questions, your project is a '**STANDARD PROJECT'. Go to step 5**, complete the trash capture questions..		

* Environmentally Sensitive Areas include but are not limited to all Clean Water Act Section 303(d) impaired water bodies; areas designated as Areas of Special Biological Significance by the State Water Resources Control Board (Water Quality Control Plan for the San Diego Basin (1994) and amendments); water bodies designated with the RARE beneficial use by the State Water Resources Control Board (Water Quality Control Plan for the San Diego Basin (1994) and amendments); areas designated as preserves or their equivalent under the Multi Species Conservation Program within the Cities and County of San Diego; Habitat Management Plan; and any other equivalent environmentally sensitive areas which have been identified by the City.

STEP 4
TO BE COMPLETED FOR REDEVELOPMENT PROJECTS THAT ARE PRIORITY DEVELOPMENT PROJECTS (PDP) ONLY

Complete the questions below regarding your redevelopment project (MS4 Permit Provision E.3.b.(2)):

	YES	NO
Does the redevelopment project result in the creation or replacement of impervious surface in an amount of less than 50% of the surface area of the previously existing development? Complete the percent impervious calculation below: Existing impervious area (A) =_____sq. ft. Total proposed newly created or replaced impervious area (B) =_____sq. ft. Percent impervious area created or replaced (B/A)*100 =_____%	☐	☐

If you answered "yes", the structural BMPs required for PDP apply only to the creation or replacement of impervious surface and not the entire development. **Go to step 6,** check the first box stating, "My project is a **PDP** …" and complete applicant information.

If you answered "no," the structural BMP's required for PDP apply to the entire development. **Go to step 6**, check the first box stating, "My project is a **PDP** …" and complete applicant information.

STEP 5
TO BE COMPLETED FOR STANDARD PROJECTS

Complete the question below regarding your Standard Project (SDRWQCB Order No. 2017-0077):

	YES	NO
Is the Standard Project within any of the following Priority Land Use (PLU) categories? R-23 (15-23 du/ac), R-30 (23-30 du/ac), PI (Planned Industrial), CF (Community Facilities), GC (General Commercial), L (Local Shopping Center), R (Regional Commercial), V-B (Village-Barrio), VC (Visitor Commercial), O (Office), VC/OS (Visitor Commercial/Open Space), PI/O (Planned Industrial/Office), or Public Transportation Station	☑	☐

If you answered "yes", the 'STANDARD PROJECT' is subject to **TRASH CAPTURE REQUIREMENTS**. **Go to step 6,** check the third box stating, "My project **is a 'STANDARD PROJECT' subject to TRASH CAPTURE REQUIREMENTS** …" and complete applicant information.

If you answered "no", your project is a 'STANDARD PROJECT'. Go to step 6, check the second box stating, "My project is a 'STANDARD PROJECT'…" and complete applicant information.

STEP 6
CHECK THE APPROPRIATE BOX AND COMPLETE APPLICANT INFORMATION

☐ My project **is a PDP** and must comply with **PDP** stormwater requirements of the BMP Manual. I understand I must prepare a Storm Water Quality Management Plan **(SWQMP)** per **E-35 template** for submittal at time of application.

☐ My project **is a 'STANDARD PROJECT'** OR **EXEMPT** from PDP and must only comply with '**STANDARD PROJECT'** stormwater requirements of the BMP Manual. As part of these requirements, I will submit a "*Standard Project Requirement Checklist Form E-36*" and incorporate low impact development strategies throughout my project.

☑ My project **is a 'STANDARD PROJECT' subject to TRASH CAPTURE REQUIREMENTS** and must comply with **TRASH CAPTURE REQUIREMENTS** of the BMP Manual. I understand I must prepare a **TRASH CAPTURE Storm Water Quality Management Plan (SWQMP)** per **E-35A template** for submittal at time of application.

Note: For projects that are close to meeting the PDP threshold, staff may require detailed impervious area calculations and exhibits to verify if 'STANDARD PROJECT' stormwater requirements apply.

☐ My project is **NOT a 'development project**' and is not subject to the requirements of the BMP Manual.

Applicant Information and Signature Box

Applicant Name: Spear & Associates,Inc. ~ Josh Zeigler Applicant Title: Civil Engineer/Agent

Applicant Signature: Josh Zeigler Date: 12/6/2021

City of Carlsbad

STANDARD PROJECT REQUIREMENT CHECKLIST E-36

Development Services
Land Development Engineering
1635 Faraday Avenue
(760) 602-2750
www.carlsbadca.gov

Project Information	
Project Name: 2754 & 2770 Jefferson Street, Carlsbad, CA	
Plan ID: PUD 2021-0004/SDP 2021-0014	Permit No.
DWG No.	

Baseline BMPs for Existing and Proposed Site Features

Complete the **Table 1 - Site Design Requirement** to document existing and proposed site features and the BMPs to be implemented for them. All BMPs must be implemented ***where applicable and feasible***. Applicability is generally assumed if a feature exists or is proposed.

BMPs must be implemented for **site design** features ***where feasible***. Leaving the box for a BMP unchecked means it will not be implemented (either partially or fully) either because it is inapplicable or infeasible. Explanations must be provided in the **area below**. The table provides specific instructions on when explanations are required.

Table 1 - Site Design Requirement

A. Existing Natural Site Features (see Fact Sheet BL-1)

1. Check the boxes below for each existing feature on the site.	1. *Select the BMPs to be implemented for each identified feature. Explain why any BMP not selected is infeasible in the area below.*	
	SD-G Conserve natural features	**SD-H** Provide buffers around waterbodies
☐ Natural waterbodies	☐	☐
☐ Natural storage reservoirs & drainage corridors	☐	--
☐ Natural areas, soils, & vegetation (incl. trees)	☐	--

B. BMPs for Common Impervious Outdoor Site Features (see Fact Sheet BL-2)

1. Check the boxes below for each proposed feature.	2. *Select the BMPs to be implemented for each proposed feature. If neither BMP **SD-B** nor **SD-I** is selected for a feature, explain why both BMPs are infeasible in the area below.*		
	SD-B Direct runoff to pervious areas	**SD-I** Construct surfaces from permeable materials	Minimize size of impervious areas
☐ Streets and roads	☐	☐	☑ *Check this box to confirm that all impervious areas on the site will be minimized where feasible.*
☑ Sidewalks & walkways	☑	☐	
☑ Parking areas & lots	☐	☑	
☑ Driveways	☐	☑	*If this box is not checked, identify the surfaces that cannot be minimized in area below, and explain why it is infeasible to do so.*
☑ Patios, decks, & courtyards	☐	☑	
☐ Hardcourt recreation areas	☐	☐	
☐ Other: _____	☐	☐	

C. ☑ BMPs for Rooftop Areas: *Check this box if rooftop areas are proposed and select at least one BMP below.* **(see Fact Sheet BL-3)**

If no BMPs are selected, explain why they are infeasible in the area below.

☑ **SD-B** Direct runoff to pervious areas	☐ **SD-C** Install green roofs	☐ **SD-E** Install rain barrels

D. ☑ **BMPs for Landscaped Areas:** *Check this box if landscaping is proposed and select the BMP below* ☑ **SD-K Sustainable Landscaping** *If SD-K is not selected, explain why it is infeasible in the area below.*	**(see Fact Sheet BL-4)**

*Provide discussion/justification for site design BMPs that will **not** be implemented (either partially or fully):*

Baseline BMPs for Pollutant-generating Sources

All development projects must complete **Table 2 - Source Control Requirement** to identify applicable requirements for documenting pollutant-generating sources/ features and source control BMPs.

BMPs must be implemented for **source control** features ***where feasible***. Leaving the box for a BMP unchecked means it will not be implemented (either partially or fully) either because it is inapplicable or infeasible. Explanations must be provided in the **area below**. The table provides specific instructions on when explanations are required.

Table 2 - Source Control Requirement

A. Management of Storm Water Discharges

1. Identify all proposed outdoor work areas below ☐ *Check here if none are proposed*	**2. Which BMPs will be used to prevent materials from contacting rainfall or runoff?** (See Fact Sheet BL-5) *Select all feasible BMPs for each work area*			**3. Where will runoff from the work area be routed?** (See Fact Sheet BL-6) *Select one or more option for each work area*		
	SC-A Overhead covering	**SC-B** Separation flows from adjacent areas	**SC-C** Wind protection	**SC-D** Sanitary sewer	**SC-E** Containment system	Other
☑ Trash & Refuse Storage	☑	☐	☑	☐	☐	☑
☐ Materials & Equipment Storage	☐	☐	☐	☐	☐	☐
☐ Loading & Unloading	☐	☐	☐	☐	☐	☐
☐ Fueling	☐	☐	☐	☐	☐	☐
☐ Maintenance & Repair	☐	☐	☐	☐	☐	☐
☐ Vehicle & Equipment Cleaning	☐	☐	☐	☐	☐	☐
☐ Other: _____	☐	☐	☐	☐	☐	☐

B. Management of Storm Water Discharges (see Fact Sheet BL-7)

Select one option for each feature below:

• Storm drain inlets and catch basins …	☐ are not proposed	☐ will be labeled with stenciling or signage to discourage dumping **(SC-F)**
• Interior work surfaces, floor drains & sumps …	☐ are not proposed	☑ will not discharge directly or indirectly to the MS4 or receiving waters
• Drain lines (e.g. air conditioning, boiler, etc.) …	☐ are not proposed	☑ will not discharge directly or indirectly to the MS4 or receiving waters
• Fire sprinkler test water …	☐ are not proposed	☑ will not discharge directly or indirectly to the MS4 or receiving waters

*Provide discussion/justification for source control BMPs that will **not** be implemented (either partially or fully):*

Strom Drain Inlets are small landscape drains and project is residential/office. SC-F should not be required.

Form Certification	
This E-36 Form is intended to comply with applicable requirements of the city's BMP Design Manual. I certify that it has been completed to the best of my ability and accurately reflects the project being proposed and the applicable BMPs proposed to minimize the potentially negative impacts of this project's land development activities on water quality. I understand and acknowledge that the review of this form by City staff is confined to a review and does not relieve me as the person in charge of overseeing the selection and design of storm water BMPs for this project, of my responsibilities for project design.	
Preparer Signature: 	Date: 12/6/2021
Print preparer name: Josh Zeigler ~ Spear & Associates, Inc. ~ Project Civil Engineer	

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Appendix E

Noise Impact Analysis

Eilar Associates, Inc.
Acoustical and Environmental Consulting Services

Acoustical Analysis Report for Townhouse Duplexes and Professional Office Mixed Use

Prepared for:
Western Mutual Development
Attention: Edward J. Scarpelli
929 Orchid Way
Carlsbad, California 92011
Phone: 760-685-0947

Prepared by:
Eilar Associates, Inc.
210 South Juniper Street, Suite 100
Escondido, California 92025
Phone: 760-738-5570
info@eilarassociates.com

Job # S201109

December 10, 2020

Table of Contents

Figures

Appendices

1.0 Executive Summary

The proposed project, Townhouse Duplexes and Professional Office Mixed Use, consists of the demolition of existing on-site structures and the construction of a new two-story residential townhome project with four attached multi-family dwelling units. A detached commercial unit is also proposed. The project site is located at 2754 and 2770 Jefferson Street in the City of Carlsbad, California.

The current and future noise environment primarily consists of traffic noise from Jefferson Street, Arbuckle Place, and Interstate 5. As per City of Carlsbad noise standards, noise levels at outdoor use areas of mixed use projects are required to be 65 CNEL or less. Worst-case traffic noise impacts were calculated at private outdoor use areas to determine compliance with this requirement. It was determined that, as designed, all private outdoor use areas will have noise impacts of 65 CNEL or less, in compliance with City of Carlsbad noise standards. No project design features are therefore deemed necessary for the attenuation of exterior noise impacts.

The City of Carlsbad and the State of California require interior noise levels not exceeding 45 CNEL in habitable space. Calculations show that worst-case traffic noise levels at the west and south facades of Unit 1 exceed 60 CNEL; therefore, interior noise levels may exceed 45 CNEL within units without appropriate design features in place at Unit 1. Calculations show, with the proposed exterior wall assembly, exterior glazing with an STC rating of 25, and mechanical ventilation in Unit 1, all interior residential space is expected to comply with City of Carlsbad and State of California noise requirements. Units 2, 3, and 4 are expected to meet interior noise limits with typical construction methods, and therefore, no specific project design features are required for interior noise control in these units.

The State of California requires that developments containing occupied nonresidential space demonstrate compliance with the requirements of the California Green Building Standards Code (known as CALGreen). CALGreen requires that where occupied nonresidential spaces are exposed to peak-hour exterior noise levels of greater than 65 dBA, the project must demonstrate building features necessary to reduce interior noise levels to 50 dBA or less in occupied areas during any hour of operation. Noise impacts at non-residential building facades are not anticipated to exceed 65 CNEL. Therefore, all non-residential spaces on site are expected to comply with City of Carlsbad and State of California interior noise regulations of 50 CNEL or less with typical building construction, and therefore, no detailed interior noise analysis would be required for these spaces. No special design features, such as enhanced exterior wall or STC-rated glazing, are required for meeting interior noise limits at non-residential spaces.

Common wall assemblies are expected to meet the minimum required ratings dictated by the State of California Building Code for sound transmission class (STC), assuming walls are constructed as detailed herein with no contact between stud rows in the double stud assembly configuration.

2.0 Introduction

This acoustical analysis report is submitted to satisfy the acoustical requirements of the State of California and City of Carlsbad for permit approval. This analysis addresses noise impacts from roadway traffic to determine project features necessary to achieve compliance with the City of Carlsbad noise regulations, which require exterior noise levels of 65 CNEL or less at outdoor use areas of mixed-use developments, and interior noise levels of 45 CNEL or less in residential spaces.

All noise level or sound level values presented herein are expressed in terms of decibels, with A-weighting to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol L_{EQ}, for a specified duration. The Community Noise Equivalent Level (CNEL) is a calculated 24-hour weighted

average, where sound levels during evening hours of 7 p.m. to 10 p.m. have an added 5 dB weighting, and sound levels during nighttime hours of 10 p.m. to 7 a.m. have an added 10 dB weighting. This is similar to the Day-Night sound level, DNL, which is a 24-hour average with an added 10 dB weighting on the same nighttime hours but no added weighting on the evening hours. Sound levels expressed in CNEL are always based on A-weighted decibels.

2.1 Project Description

The proposed project, Townhouse Duplexes and Professional Office Mixed Use, consists of the demolition of existing on-site structures and the construction of a new two-story residential townhome project with four attached multi-family dwelling units. A detached commercial unit is also proposed. Private balconies are proposed for each residential unit. For additional information, please refer to project plans provided in Appendix A.

2.2 Project Location

The project site is located at 2754 and 2770 Jefferson Street in the City of Carlsbad, California. The Assessor's Parcel Numbers (APNs) for the property are 203-201-01-00 and -02-00. The project location is shown on the Vicinity Map, Figure 1, following this report. An Assessor's Parcel Map, Satellite Aerial Photograph, and Topographic Map are also provided as Figures 2 through 4, respectively.

2.3 Applicable Noise Regulations

This acoustical analysis report is submitted to satisfy the acoustical requirements of the City of Carlsbad. The City of Carlsbad Noise Element to the General Plan requires that at a mixed-use property, noise levels at residential outdoor use areas do not exceed 65 CNEL. Additionally, the State of California and City of Carlsbad Noise Guidelines Manual and Noise Element to the General Plan require that residential uses maintain interior noise levels of 45 CNEL or less in habitable space.

The State of California requires that nonresidential developments demonstrate compliance with the requirements of the California Green Building Standards Code (known as CALGreen). CALGreen states that, if noise level readings of 65 dBA L_{EQ} or greater are documented at the proposed project site, the project must either (a) incorporate wall and roof/ceiling assemblies with a composite STC rating of at least 50 and exterior windows with an STC 40, or (b) provide an acoustical analysis documenting interior noise levels do not exceed 50 dBA in occupied areas during any hour of operation. This report provides the performance method analysis described in Item (b).

Please refer to Appendix B for pertinent sections of the City of Carlsbad Noise Guidelines Manual, Noise Element to the General Plan, California Building Code, and CALGreen.

3.0 Environmental Setting

3.1 Existing Noise Environment

3.1.1 Roadway Traffic Sources

The primary noise source in the vicinity of the project site is traffic noise from Jefferson Street, Arbuckle Place, and Interstate 5 (I-5). No other noise source is considered significant.

Current traffic volumes for Jefferson Street and Arbuckle Place are given based on information from the San Diego Association of Governments (SANDAG) Transportation Data (see reference), which provides 24-hour traffic counts for segments in the vicinity of the project site and SANDAG Series 14 Transportation Forecast Information Center (TFIC), respectively. The current traffic volume for I-5 was provided by the Caltrans Traffic Census Program (see reference).

Jefferson Street is a two-lane, two-way Local (non-circulation element) Road running generally north-south along the west boundary of the project site. The posted speed limit is 35 mph. SANDAG year 2013 traffic counts show a volume of approximately 8,700 Average Daily Trips (ADT).

Arbuckle Place is a two-lane, two-way Local (non-circulation element) Road running generally east-west to the southwest of the project site. The posted speed limit is 25 mph. SANDAG traffic counts were not available for Arbuckle Place; therefore, current traffic volumes were taken from the Series 14 forecasts for the year 2016, which show a volume of approximately 1,600 ADT.

I-5 is an eight-lane (including HOV lanes), two-way Freeway running generally north-south approximately 1,250 feet to the east of the project site. The posted speed limit is 65 mph. According to Caltrans traffic count data, I-5 carries a traffic volume of approximately 196,000 Average Daily Trips (ADT) as of the year 2016.

No current or future truck percentages were available for the surrounding roadways with the exception of I-5; however, based on neighboring and surrounding land use, roadway classification, professional experience, and on-site observations, a truck percentage mix of 1.00% medium and 1.00% heavy trucks was used for Jefferson Street and a truck percentage mix of 0.50% medium and 0.50% heavy trucks was used for Arbuckle Place. According to Caltrans, I-5 currently carries a truck percentage mix of 1.89% medium and 2.92% heavy trucks.

Traffic volumes for the roadway sections near the project site are shown in Table 1. For further roadway details and projected future ADT traffic volumes, please refer to Appendix C: CadnaA Analysis Data and Results.

Table 1. Overall Roadway Traffic Information

Roadway Name	Speed Limit (mph)	Vehicle Mix (%)		Current ADT (Year)	Future ADT (2035)
		Medium Trucks	Heavy Trucks		
Jefferson Street	35	1.00	1.00	8,700 (2013)	5,800
Arbuckle Place	25	0.50	0.50	1,600 (2016)	2,100
I-5	65	1.89	2.92	196,000 (2016)	212,700

Considering the shielding provided by structures surrounding the project site and without the shielding provided by proposed on-site structures, the current traffic noise contours calculated at ground level show that

traffic noise impacts to the project site are between 57 and 68 CNEL. Current traffic noise contours are shown in Figure 5.

3.1.2 Measured Noise Level

An on-site inspection and a traffic noise measurement were made on the afternoon of Monday, November 30, 2020. A noise measurement was made to the west of the project site, approximately 30 feet east of the Jefferson Street centerline and approximately 12 feet south of the northern property line of the project site. The primary source of noise during the measurement was traffic noise. The microphone was placed at approximately five feet above the existing grade. Traffic volumes for Jefferson Street were recorded for automobiles, medium-size trucks, and large trucks during the measurement period. After a 15-minute sound level measurement (paused for non-traffic noise sources such as aircraft), no changes in the L_{EQ} were observable and results were recorded. The measured noise level and related weather conditions are shown in Table 2, and the noise measurement location is shown graphically in Figures 5 through 7.

Table 2. On-Site Noise Measurement Conditions and Results	
Date	November 30, 2020
Time	3:15 p.m. – 3:40 p.m.
Conditions	Clear skies, no wind, temperature in the mid 60s, with moderate humidity
Measured Noise Level	66.2 dBA L_{EQ}

3.1.3 Calculated Noise Level

Noise levels were calculated for the site using the methodology described in Section 4.1.2. The calculated noise levels (L_{EQ}) were compared with the measured traffic noise level to determine if adjustments or corrections (calibration) should be applied to the traffic noise prediction model. Adjustments are intended to account for site-specific differences, such as reflection and absorption, which may be greater or lesser than accounted for in the model.

The measured noise level of 66.2 dBA L_{EQ} at approximately 30 feet east of the Jefferson Street centerline and approximately 12 feet south of the northern property line of the project site was compared to the calculated (modeled) noise level of 67.1 dBA L_{EQ} for the same anticipated traffic flow. According to the Federal Highway Administration's Highway Traffic Noise: Analysis and Abatement Guide (see reference), a traffic noise model is considered validated if the measured and calculated noise impacts differ by three decibels or less. No adjustment was deemed necessary to model future noise levels for this location as the difference between the measured and calculated levels was found to be less than three decibels. The traffic noise model is assumed to be representative of actual traffic noise that is experienced on site. This information is shown in Table 3. Please refer to Appendix C for additional information.

Table 3. Calculated versus Measured Traffic Noise Data				
Location	**Calculated**	**Measured**	**Difference**	**Correction**
30' east of Jefferson Street C.L. and 12' south of northern P.L. of the project site	67.1 dBA L_{EQ}	66.2 dBA L_{EQ}	0.9 dB	None Applied

3.2 Future Noise Environment

The future on-site noise environment will be the result of the same traffic noise sources. The future (year 2035) traffic volumes for surrounding roadways were obtained from the SANDAG Series 14 Transportation Forecast Information Center (TFIC).

According to SANDAG, by the year 2035, the traffic volume of Jefferson Street is estimated to decrease to 5,800 ADT. By the year 2035, the traffic volume of Arbuckle Place is expected to increase to 2,100 ADT. The traffic volume of I-5 is expected to increase to 212,700 ADT by the year 2035.

The same truck percentages from the existing traffic volumes were used for future traffic volume modeling. For further roadway details and projected future ADT traffic volumes, please refer to Appendix C: CadnaA Analysis Data and Results.

Considering the shielding provided by structures surrounding the project site and without the shielding provided by proposed on-site structures, the future traffic noise contours calculated at ground level show that traffic noise impacts to the project site are expected to be between 56 and 66 CNEL. As the traffic volumes on Jefferson are expected to decrease in the future environment, worst-case noise contours were evaluated using the worst-case traffic volumes for each roadway. The worst-case traffic noise contours calculated at ground level show that traffic noise impacts to the project site are expected to be between 58 and 68 CNEL. Please refer to Figures 6 and 7 for future and worst-case contours, respectively.

4.0 Methodology and Equipment

4.1 Methodology

4.1.1 Field Measurement

Typically, a "one-hour" equivalent sound level measurement (L_{EQ}, A-Weighted) is recorded for at least one noise-sensitive location on the site. During the on-site noise measurement, start and end times are recorded and vehicle counts are made for cars, medium trucks (double-tires/two axles), and heavy trucks (three or more axles) for the corresponding road segment(s). Supplemental sound measurements of one hour or less in duration are often made to further describe the noise environment of the site.

For measurements of less than one hour in duration, the measurement time is long enough for a representative traffic volume to occur and the noise level (L_{EQ}) to stabilize. The vehicle counts are then converted to one-hour equivalent volumes by applying an appropriate factor. Other field data gathered include measuring or estimating distances, angles-of-view, slopes, elevations, roadway grades, and vehicle speeds. This information is subsequently verified using available maps and records.

4.1.2 Roadway Noise Calculation

The Traffic Noise Model (TNM) calculation protocol in CadnaA Version 2020 (based on the methodology used in TNM Version 2.5, released in February 2004 by the U.S. Department of Transportation) was used for all traffic modeling in the preparation of this report. Using the TNM protocol, the CNEL is calculated as 9.2 percent of the ADT for surrounding roadways, based on the studies made by Wyle Laboratories (see reference). Future CNEL is calculated for desired receptor locations using future road alignment, elevations, lane configurations, projected traffic volumes, estimated truck mixes, and vehicle speeds. Noise attenuation methods may be analyzed, tested, and planned with TNM, as required.

In order to determine the estimated traffic volumes of roadways during the traffic noise measurement made on site for model calibration, the approximate percentage of the Average Daily Trips (ADT) value for the time period in which the measurement is made is incorporated into the traffic model. These percentages have been established in a study performed by Katz-Okitsu and Associates, Traffic Engineers (see reference). For purposes of calibrating the CadnaA TNM, 8.0% of the ADT values for the current environment were used in calculations (for roadways that were not manually counted) to account for traffic between the hours of 3 p.m. and 4 p.m. in the vicinity of the project site.

4.1.3 Exterior-to-Interior Noise Analysis

The State of California and the City of Carlsbad require buildings to be designed in order to attenuate, control, and maintain average interior noise levels not greater than 45 CNEL in residential space, as formulated in the California Building Code, Section 1206.4 and the City of Carlsbad Noise Guidelines. Contemporary exterior building construction is expected to achieve at least 15 decibels of exterior-to-interior noise attenuation with windows opened, according to the U.S. Environmental Protection Agency Office of Noise Abatement and Control (see reference). As a result, exterior noise levels of more than 60 CNEL often result in interior conditions that fail to meet the 45 CNEL requirements for habitable space.

Analysis for the interior noise levels requires consideration of:

- Number of unique assemblies in the wall (doors, window/wall mount air conditioners, sliding glass doors, and windows)
- Size, number of units, and sound transmission data for each assembly type
- Length of sound impacted wall(s)
- Depth of sound impacted room
- Height of exterior wall of sound impacted room
- Exterior noise level at wall assembly or assemblies of sound impacted room

The Composite Sound Transmission data is developed for the exterior wall(s) and the calculated noise exposure is converted to octave band sound pressure levels (SPL) for a typical traffic type noise. The reduction in room noise due to absorption is calculated and subtracted from the interior octave noise levels, and the octave band noise levels are logarithmically summed to yield the overall interior room noise level. When interior noise levels exceed 45 CNEL, the noise reduction achieved by each element is reviewed to determine which changes will achieve the most cost-effective compliance. Windows are usually the first to be reviewed, followed by exterior doors, and then exterior walls.

4.1.4 Sound Transmission Class (STC) and Impact Insulation Class (IIC) Ratings

Sound Transmission Class (STC) is a single number rating calculated in accordance with ASTM E413, using third-octave values of sound transmission loss. It provides an estimate of the sound performance of a partition, window, or door in sound insulation problems. Likewise, Impact Insulation Class (IIC) is a single number rating calculated in accordance with ASTM E989 that is used to describe the transmission of impact noise through floor/ceiling assemblies, caused primarily by footsteps from one space to another.

Modeling of wall and floor/ceiling assemblies is accomplished using INSUL Version 9.0, which is a model-based computer program, developed by Marshall Day Acoustics for predicting the sound insulation of walls, floors, ceilings, and windows. It is acoustically based on theoretical models that require only minimal material information that can make reasonable estimates of the sound transmission loss (TL), STC and IIC for use in sound insulation calculations; such as the design of common party walls and multiple family floor-ceiling assemblies, etc. INSUL can be used to quickly evaluate new materials or systems or investigate the effects of changes to existing designs. It models individual materials using the simple mass law and coincidence frequency

approach and can model more complex assembly partitions, as well. It has evolved over several versions into an easy to use tool and has refined the theoretical models by continued comparison with laboratory tests to provide acceptable accuracy for a wide range of constructions. INSUL model performance comparisons with laboratory test data show that the model generally predicts the performance of a given assembly within 3 STC points. IIC predictions are generally made based on laboratory tests from a number of resources, including third-party test data provided by product manufacturers and National Research Council of Canada test results.

4.2 Measurement Equipment

Some or all of the following equipment was used at the site to measure existing noise levels:

- Larson Davis Model 824 Type 1 Sound Level Meter, Serial # 3044
- Larson Davis Model CA250 Type 1 Calibrator, Serial # 2106

The sound level meter was field-calibrated immediately prior to the noise measurement and checked afterward to ensure accuracy. All sound level measurements conducted and presented in this report, in accordance with the regulations, were made with a sound level meter that conforms to the American National Standards Institute specifications for sound level meters (ANSI S1.4). All instruments are maintained with National Bureau of Standards traceable calibration, per the manufacturers' standards.

5.0 Impacts and Mitigation

5.1 Exterior

5.1.1 Noise Impacts to Outdoor Use Areas

The City of Carlsbad requires mixed-use projects to maintain noise levels of 65 CNEL or less at residential outdoor use areas. The project proposes private balconies for each unit. Worst-case traffic noise impacts were calculated at each of these outdoor use areas using CadnaA to determine whether noise impacts are expected to exceed the 65 CNEL threshold. Calculations assume shielding provided by the proposed building on site in addition to off-site buildings. Results of this analysis are shown in Table 4 below. Additional information is provided in Appendix C, and a graphical representation of outdoor use receiver locations is provided as Figure 8.

Table 4. Worst-Case Traffic Noise Levels at Outdoor Use Areas			
Receiver	**Location**	**Noise Limit (CNEL)**	**Exterior Noise Level (CNEL)**
OU1	Unit 1 Balcony – Kitchen/Living/Dining	65	60
OU2	Unit 1 Balcony – Master Bedroom	65	59
OU3	Unit 2 Balcony – Bedroom	65	55
OU4	Unit 2 Balcony – Master Bedroom	65	57
OU5	Unit 3 Balcony – Bedroom	65	55
OU6	Unit 3 Balcony – Kitchen/Living/Dining	65	54
OU7	Unit 3 Balcony – Kitchen/Living/Dining	65	53
OU8	Unit 3 Balcony – Master Bedroom	65	55
OU9	Unit 4 Balcony – Bedroom	65	56
OU10	Unit 4 Balcony – Kitchen/Living/Dining	65	51
OU11	Unit 4 Balcony – Master Bedroom	65	58

As shown above, worst-case traffic noise impacts at the project site are not expected to exceed 65 CNEL at private outdoor use areas of the project. No project design features are required for the attenuation of exterior noise impacts at the project site.

5.1.2 Noise Impacts to Building Facades

Worst-case traffic noise impacts were also calculated at building facades and were found to range from 46 CNEL at the east facade of the commercial building to 65 CNEL at the west facade of Unit 1. A complete listing of calculated noise impacts is shown in Table 5, and a graphical representation of building facade receiver locations is shown in Figure 9.

Table 5. Worst-Case Traffic Noise Levels at Building Facades			
Receiver	**Location**	**Exterior Noise Level (CNEL)**	
		First Floor	**Second Floor**
F1	Unit 1 – West	65	65
F2	Unit 1 – North	58	59
F3	Unit 2 – North	54	56
F4	Unit 3 – North	54	55
F5	Unit 4 – East	50	51
F6	Unit 4 – South	56	58
F7	Unit 4 – West	55	57
F8	Unit 2 / Unit 3 – South	55	57
F9	Unit 1 – South	59	61
F10	Commercial – North	61	63
F11	Commercial – West	64	65
F12	Commercial – South	61	63
F13	Commercial – East	46	49

5.2 Interior

5.2.1 Transportation Noise Sources

Dwelling Units

The State of California and the City of Carlsbad require buildings to be designed in order to attenuate, control, and maintain interior noise levels not greater than 45 CNEL in habitable space, as formulated in the City of Carlsbad Noise Guidelines and the California Building Code, Section 1206.4. According to the U.S. EPA (see reference), current exterior building construction is generally expected to achieve at least 15 decibels of exterior-to-interior noise attenuation with windows opened. Therefore, proposed project building structures exposed to exterior noise levels greater than 60 CNEL could be subject to interior noise levels exceeding the 45 CNEL noise limit for residential habitable space.

Calculations show that worst-case traffic noise levels at the west and south facades of Unit 1 exceed 60 CNEL; therefore, interior noise levels may exceed 45 CNEL with windows open at Unit 1. Due to high noise levels at the Unit 1 facades, an exterior-to-interior noise analysis was performed for Unit 1 interior spaces to determine design considerations required to maintain compliant interior noise levels. Facade noise impacts at Units 2, 3, and 4 are not expected to exceed 60 CNEL; therefore they are expected to meet the 45 CNEL limit as designed and were not evaluated further.

The exterior wall is proposed to be constructed as stucco over plywood sheathing over 2x6 wood-studs, with a single layer of gypsum board on the interior. This assembly was evaluated using INSUL and was incorporated into the interior noise analysis for all spaces. Please refer to Appendix D for additional information.

The results of the exterior-to-interior noise analysis for habitable spaces within Unit 1 are shown in Table 6, with acoustical recommendations made therein. For more information, please refer to Appendix E: Exterior-to-Interior Noise Analysis.

Table 6. Worst-Case Interior Noise Levels of Worst-Case/Representative Dwelling Units

Room	Maximum Exterior Facade Impact (CNEL)	STC Rating for Glazing	Interior Noise Level (CNEL)	
			Windows Open	Windows Closed
Living / Kitchen / Dining	65	25	**52**	35
Master Bedroom	61	25	**48**	32
First-Floor Bedroom	65	25	**54**	38
Second-Floor Bedroom	65	25	**53**	37

As shown above, with the proposed exterior wall and exterior windows and glass doors with a minimum STC rating of 25 in place, interior noise levels are expected to remain below 45 CNEL in all units in Unit 1 with windows and exterior doors closed. A sound rating of STC 25 is easily achievable with standard dual glazing; however, the sound rating of exterior windows and glass doors should be confirmed with the manufacturer prior to installation, to confirm the windows and doors meet this STC rating requirement.

Mechanical ventilation is required for all habitable spaces within Unit 1. In instances where interior habitable space is exposed to noise levels greater than 45 CNEL with all windows and patio doors in the open position, appropriate means of air circulation and provision of fresh air must be present to allow windows to remain closed for extended intervals of time so that acceptable levels of noise can be maintained on the interior. The proposed mechanical ventilation system must meet the criteria of the California Mechanical Code, including the capability to provide appropriate ventilation rates. The ventilation system shall not compromise the sound insulation capability of the exterior wall or be dependent on ventilation through windows.

Exterior door installation should include all-around weather-tight door stop seals and an improved threshold closure system. The additional hardware will improve the doors' overall sound reduction properties. The transmission loss (TL) of an exterior door without weather-tight seals is largely a factor of sound leakage, particularly at the bottom of the door if excessive clearance is allowed for air transfer. By equipping exterior doors with all-around weather-tight seals and an airtight threshold closure at the bottom, a loss of up to 10 STC points can be prevented.

Additionally, it is imperative to seal and caulk between the rough opening and the finished door frame for all doors by applying an acoustically resilient, non-skinning, butyl caulking compound. Sealant application should be as generous as needed to ensure effective sound barrier isolation. The same recommendation applies to any other penetrations, cracks, or gaps through the assembly. The OSI SC175 and the Pecora AC-20 FTR acoustic sound sealants are products specifically designed for this purpose. For additional information on these products, please refer to Appendix F: Recommended Products.

The proposed residential units were analyzed for future traffic noise impacts. With the proposed exterior wall assembly, exterior glazing with an STC rating of 25, and mechanical ventilation in Unit 1, all interior residential

space is expected to comply with City of Carlsbad and State of California noise requirements. Units 2, 3, and 4 are expected to meet interior noise limits with typical construction methods, and therefore, no specific project design features are required for interior noise control in these units.

Nonresidential Spaces (CALGreen)

CALGreen requires that nonresidential structures that are exposed to greater than 65 dBA during any hour of operation must control interior noise levels to be 50 dBA or less. Contemporary exterior building construction is expected to achieve at least 15 decibels of exterior-to-interior noise attenuation with windows open. As a result, exterior noise levels of more than 65 dBA can result in interior conditions that fail to meet the 50 dBA requirement for nonresidential space. According to the California Department of Transportation's Technical Noise Supplement to the Traffic Noise Analysis Protocol (see reference), peak hour traffic noise levels are typically found to be close to predicted CNEL values. Therefore, CNEL values calculated in the traffic noise analysis for this project (shown in Appendix C) were considered to be representative of peak hour noise impacts that would be experienced at on-site nonresidential suites.

As shown in Table 5, noise impacts at non-residential building facades are not anticipated to exceed 65 dBA. Therefore, all non-residential spaces on site are expected to comply with State of California interior noise regulations of 50 dBA or less with typical building construction, and therefore, no detailed interior noise analysis would be required for these spaces. No special design features, such as enhanced exterior wall or STC-rated glazing, are required for meeting interior noise limits at non-residential spaces.

5.2.2 Unit-to-Unit Noise Transmission

Another source of noise that may affect residential units in multi-family buildings is unit-to-unit noise transmission. The California State Building Code requires that the Sound Transmission Class (STC) rating of common wall assemblies separating residential units or separating residential units from common areas have a minimum laboratory rating of STC 50. The same STC requirement applies for floor/ceiling assemblies, and an added requirement dictates that the Impact Insulation Class (IIC) rating of the floor/ceiling assembly is a minimum laboratory rating of IIC 50. However, as there are no stacked units in the proposed project, the floor/ceiling assemblies are not required to meet the STC or IIC 50 ratings.

Demising Wall

The demising wall between units is proposed to be constructed as follows:

- Single layer of 5/8-inch thick Type X gypsum board
- Double row of 4-inch wood, spaced at 16 inches on center, with 1/4-inch air gap between stud rows
- Batt insulation in each stud cavity
- Single layer of 5/8-inch thick Type X gypsum board

Although it is generally recommended that a minimum 1-inch air gap is used between rows of studs in a double stud wall, the 1/4-inch gap between the rows of studs should be sufficient assuming there is no contact between the stud rows. If possible, the demising wall should be revised to have a slightly wider air gap to ensure this separation is maintained.

The demising wall assembly was tested by Riverbank Acoustical Labs (California Office of Noise Control Catalog Section 1.2.4.1.5.4 [see reference]) and was shown to achieve an STC rating of 57, which complies with the California Building Code requirement as designed. Please refer to Appendix D for additional information.

Limitations

Actual achieved STC ratings are determined by the quality of construction and attention to details in the installation of assemblies. Please be advised that this endorsement is strictly contingent upon observance of proper installation procedures. Additionally, all cracks or gaps must be sealed with an acoustical sealant, such as the OSI SC175 or Pecora sealants (see Appendix F). With these conditions met and the recommendations listed above, the assemblies detailed above should meet minimum building code standards for controlling sound transmission.

It should also be noted that placing outlet boxes back to back in the same stud cavity should be avoided. A sound deadening fire-stop putty pad system should be installed around the back of all outlet boxes in the common wall to provide additional acoustical privacy. Pads are sized to fit a typical 1-1/2-inch deep 4S box with no cutting or piercing required. The pads have tested and proven fire resistance and sound-deadening acoustical properties.

The above recommendations should be considered as much as possible in the construction of the common wall assemblies for this project.

6.0 Conclusion

As per City of Carlsbad noise standards, noise levels at outdoor use areas of mixed use projects are required to be 65 CNEL or less. Worst-case traffic noise impacts were calculated at private outdoor use areas to determine compliance with this requirement. It was determined that, as designed, all private outdoor use areas will have noise impacts of 65 CNEL or less, in compliance with City of Carlsbad noise standards. No project design features are therefore deemed necessary for the attenuation of exterior noise impacts.

The City of Carlsbad and the State of California require interior noise levels not exceeding 45 CNEL in habitable space. Calculations show that worst-case traffic noise levels at the west and south facades of Unit 1 exceed 60 CNEL; therefore, interior noise levels may exceed 45 CNEL within units without appropriate design features in place at Unit 1. Calculations show, with the proposed exterior wall assembly, exterior glazing with an STC rating of 25, and mechanical ventilation in Unit 1, all interior residential space is expected to comply with City of Carlsbad and State of California noise requirements. Units 2, 3, and 4 are expected to meet interior noise limits with typical construction methods, and therefore, no specific project design features are required for interior noise control in these units.

The State of California requires that developments containing occupied nonresidential space demonstrate compliance with the requirements of the California Green Building Standards Code (known as CALGreen). CALGreen requires that where occupied nonresidential spaces are exposed to peak-hour exterior noise levels of greater than 65 dBA, the project must demonstrate building features necessary to reduce interior noise levels to 50 dBA or less in occupied areas during any hour of operation. Noise impacts at non-residential building facades are not anticipated to exceed 65 CNEL. Therefore, all non-residential spaces on site are expected to comply with City of Carlsbad and State of California interior noise regulations of 50 CNEL or less with typical building construction, and therefore, no detailed interior noise analysis would be required for these spaces. No special design features, such as enhanced exterior wall or STC-rated glazing, are required for meeting interior noise limits at non-residential spaces.

Common wall assemblies are expected to meet the minimum required ratings dictated by the State of California Building Code for sound transmission class (STC), assuming walls are constructed as detailed herein with no contact between stud rows in the double stud assembly configuration.

7.0 Certification

All recommendations for noise control are based on the best information available at the time our consulting services are provided. However, as there are many factors involved in sound transmission, and Eilar Associates has no control over the construction, workmanship or materials, Eilar Associates is specifically not liable for final results of any recommendations or implementation of the recommendations.

The findings and recommendations of this acoustical analysis report are based on the information available and are a true and factual analysis of the potential acoustical issues associated with the Townhouse Duplexes and Professional Office Mixed Use project, located at 2754 and 2770 Jefferson Street in the City of Carlsbad, California. This report was prepared by Mo Ouwenga, Jonathan Brothers, and Amy Hool.

Mo Ouwenga, INCE
Acoustical Consultant

Amy Hool, INCE
President/CEO

8.0 References

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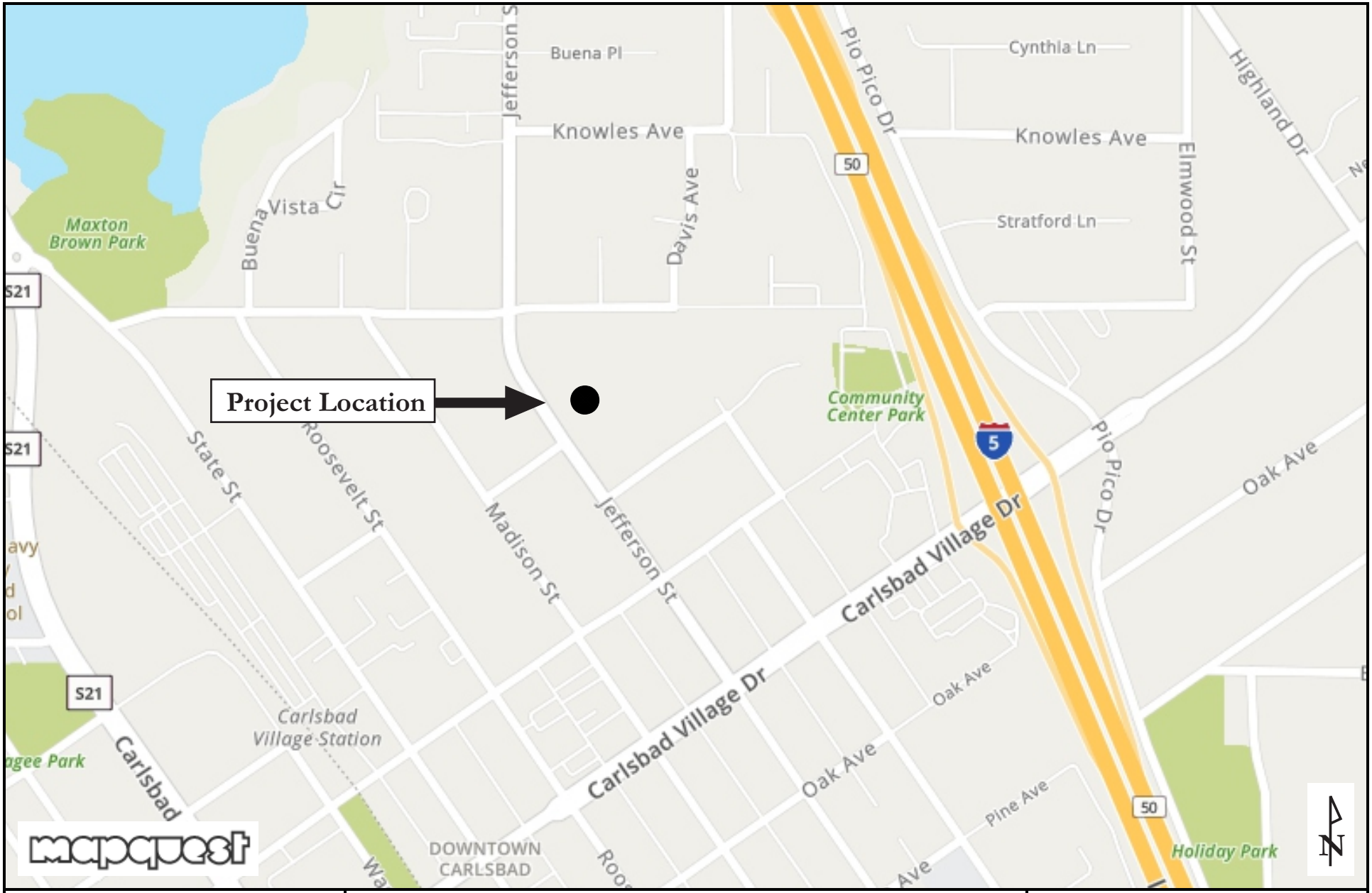
Figures



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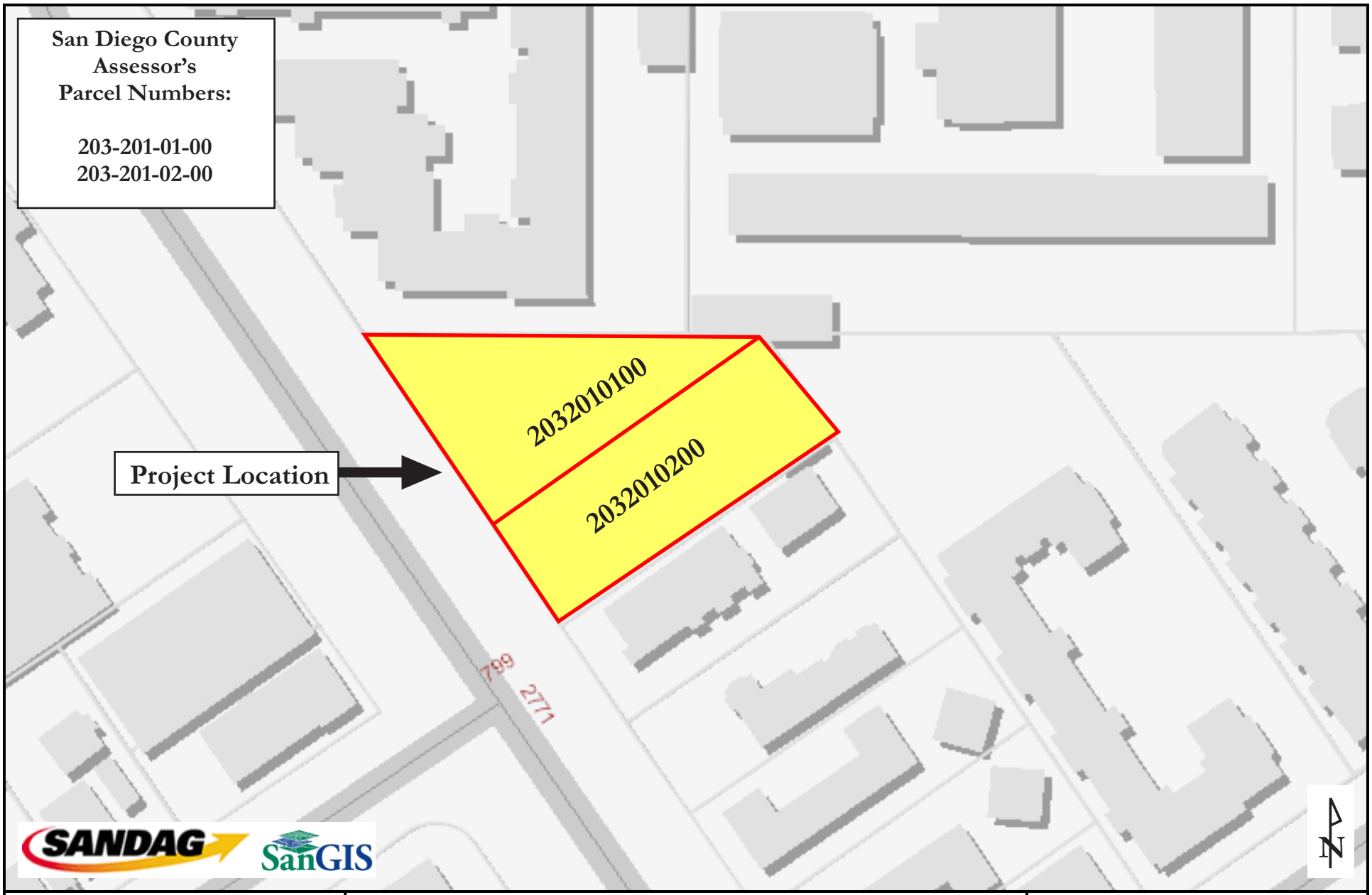
Vicinity Map
Job # S201109

Figure 1



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Assessor's Parcel Map
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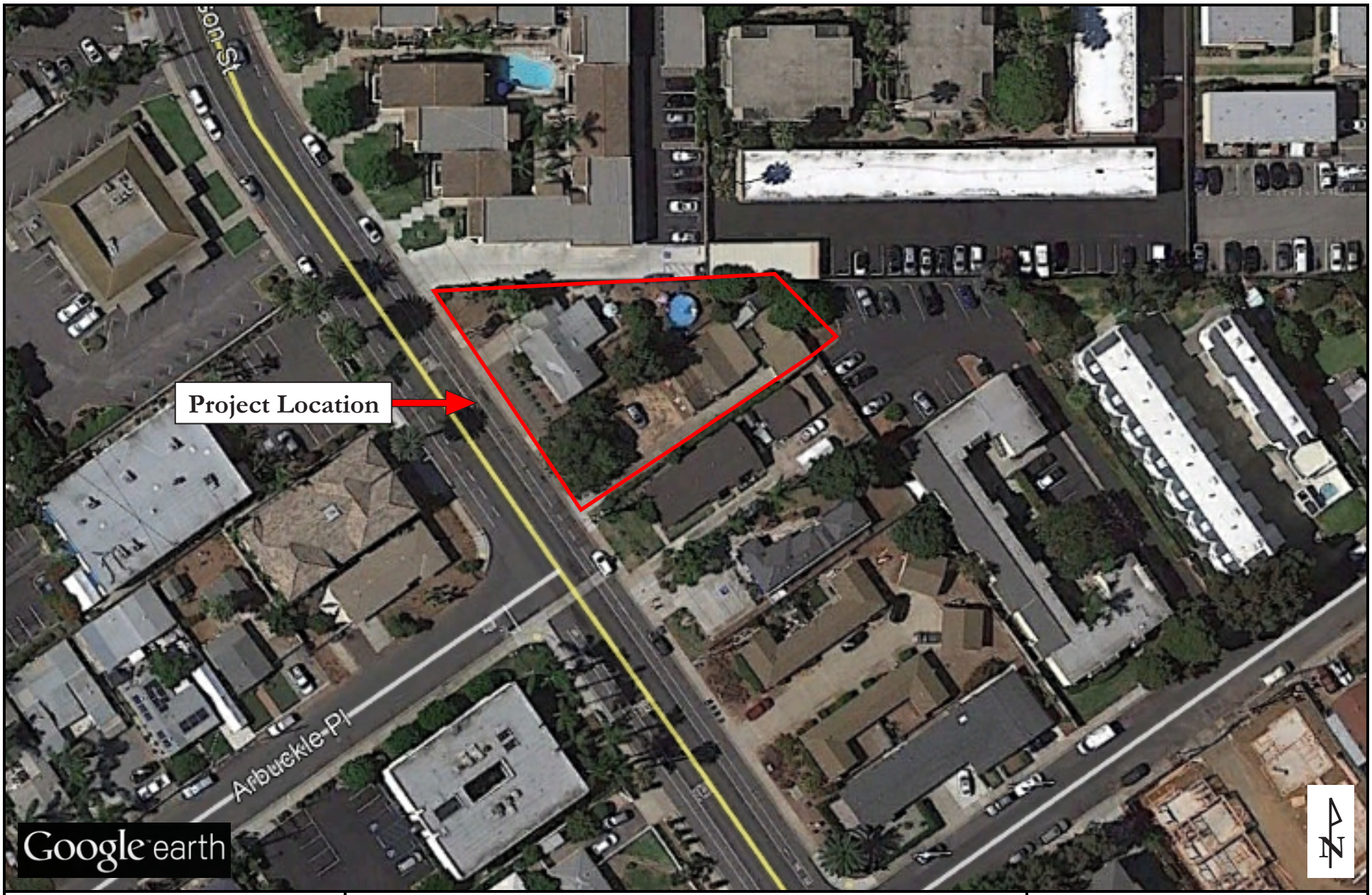
Figure 2



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Satellite Aerial Photograph
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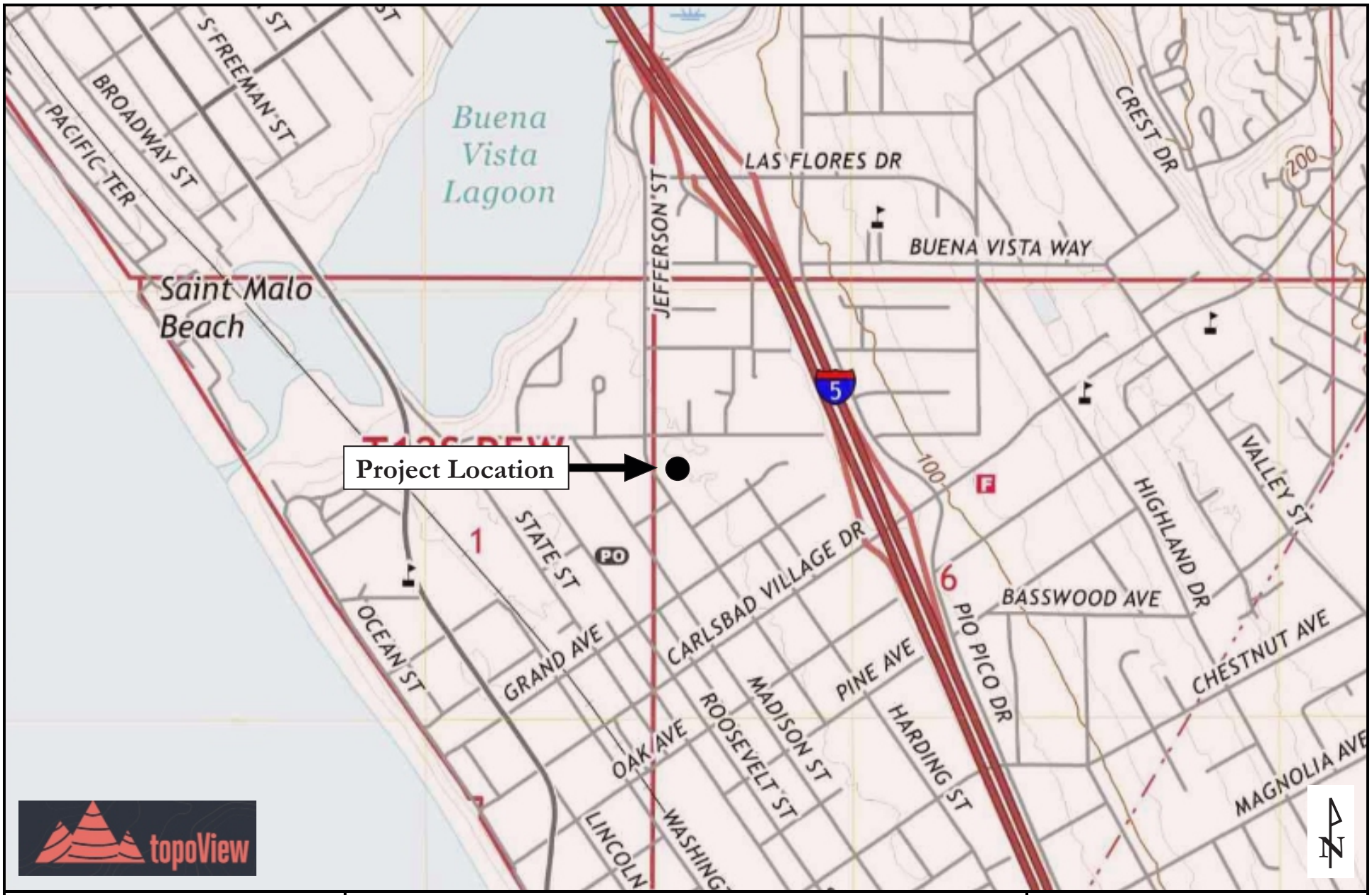
Figure 3



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Topographic Map
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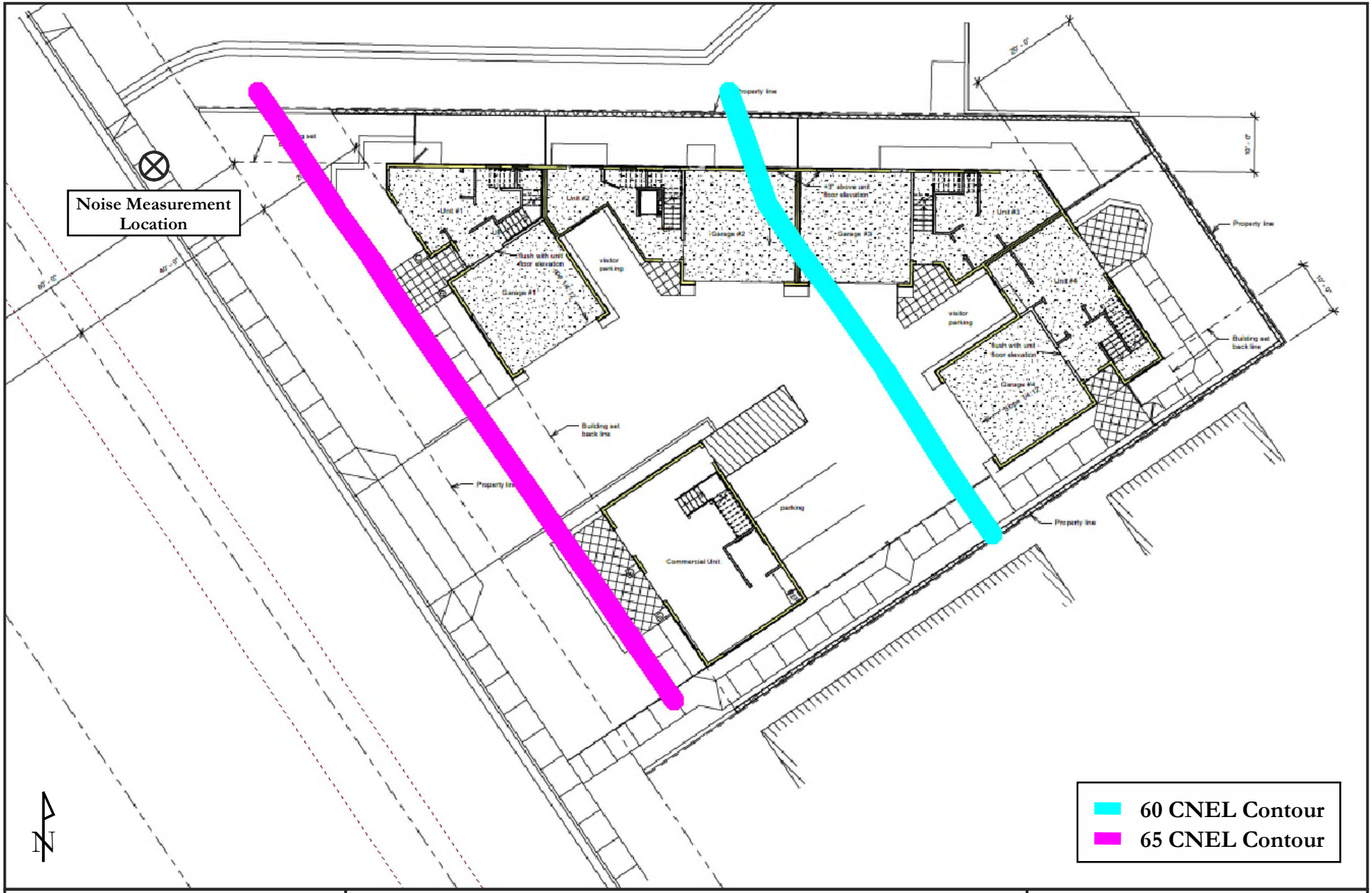
Figure 4



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Site Plan Showing Current Traffic CNEL Contours and Noise Measurement Location
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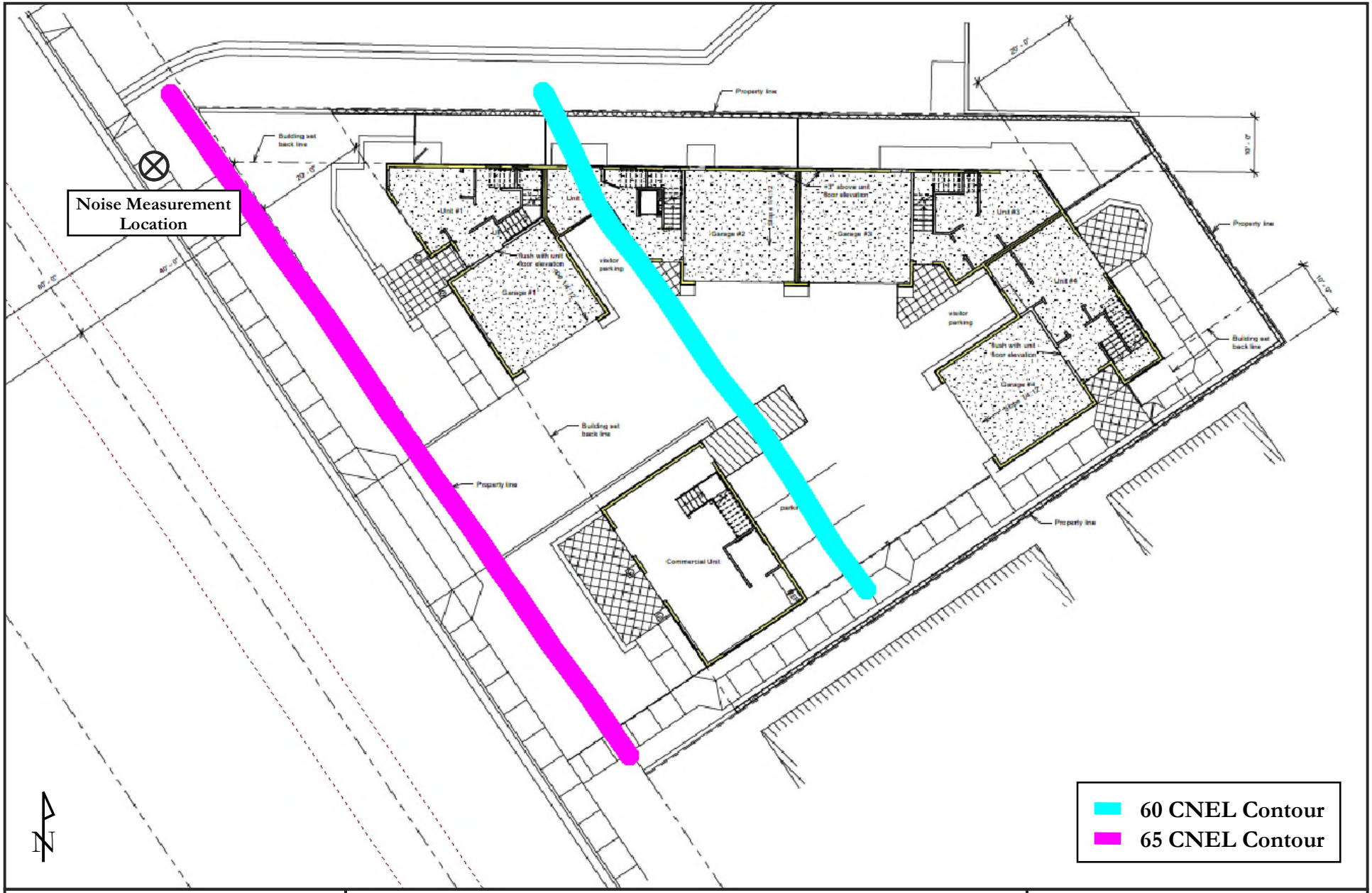
Figure 5



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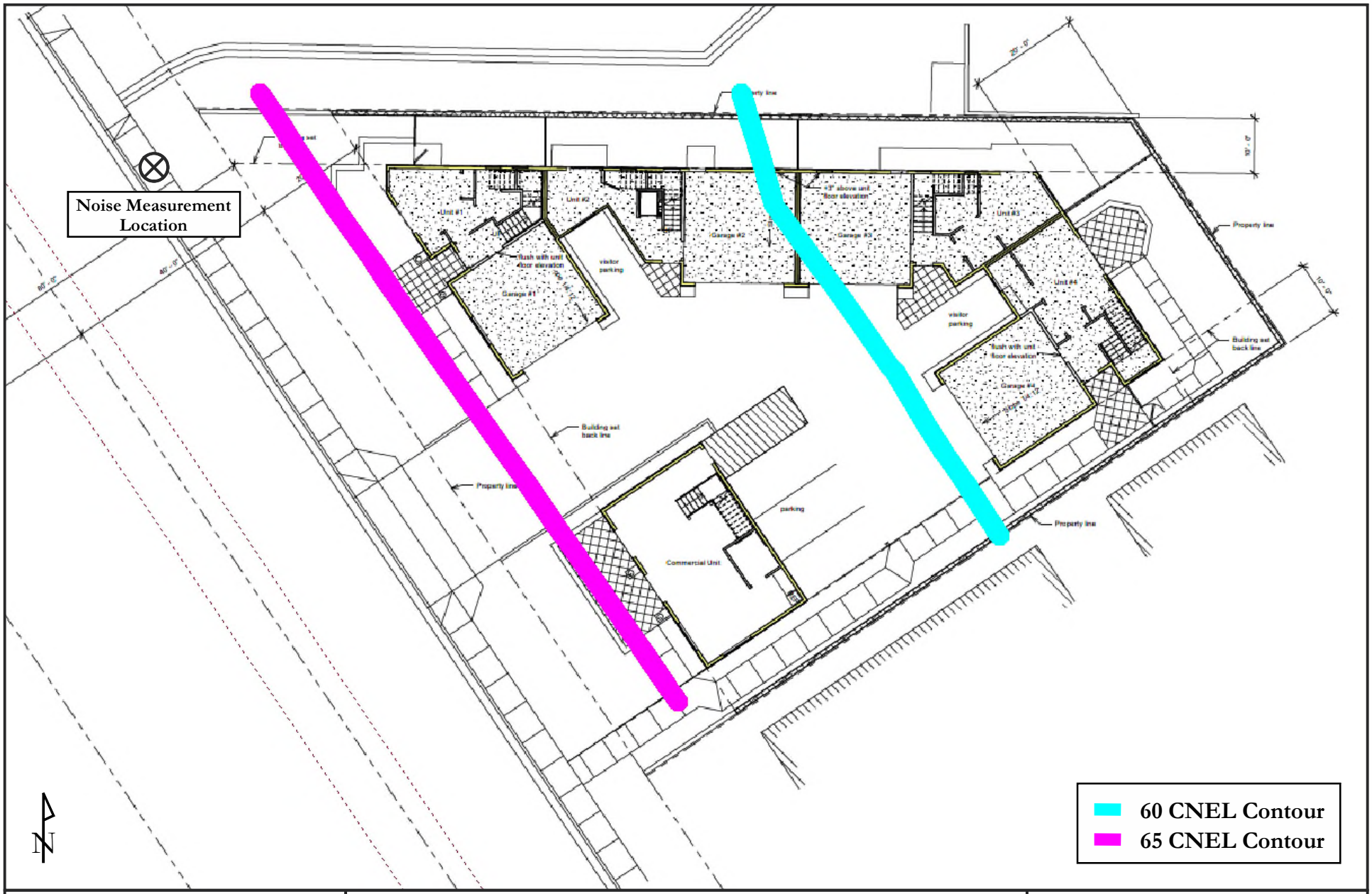
Site Plan Showing Future Traffic CNEL Contours and Noise Measurement Location
Job # S201109

Figure 6



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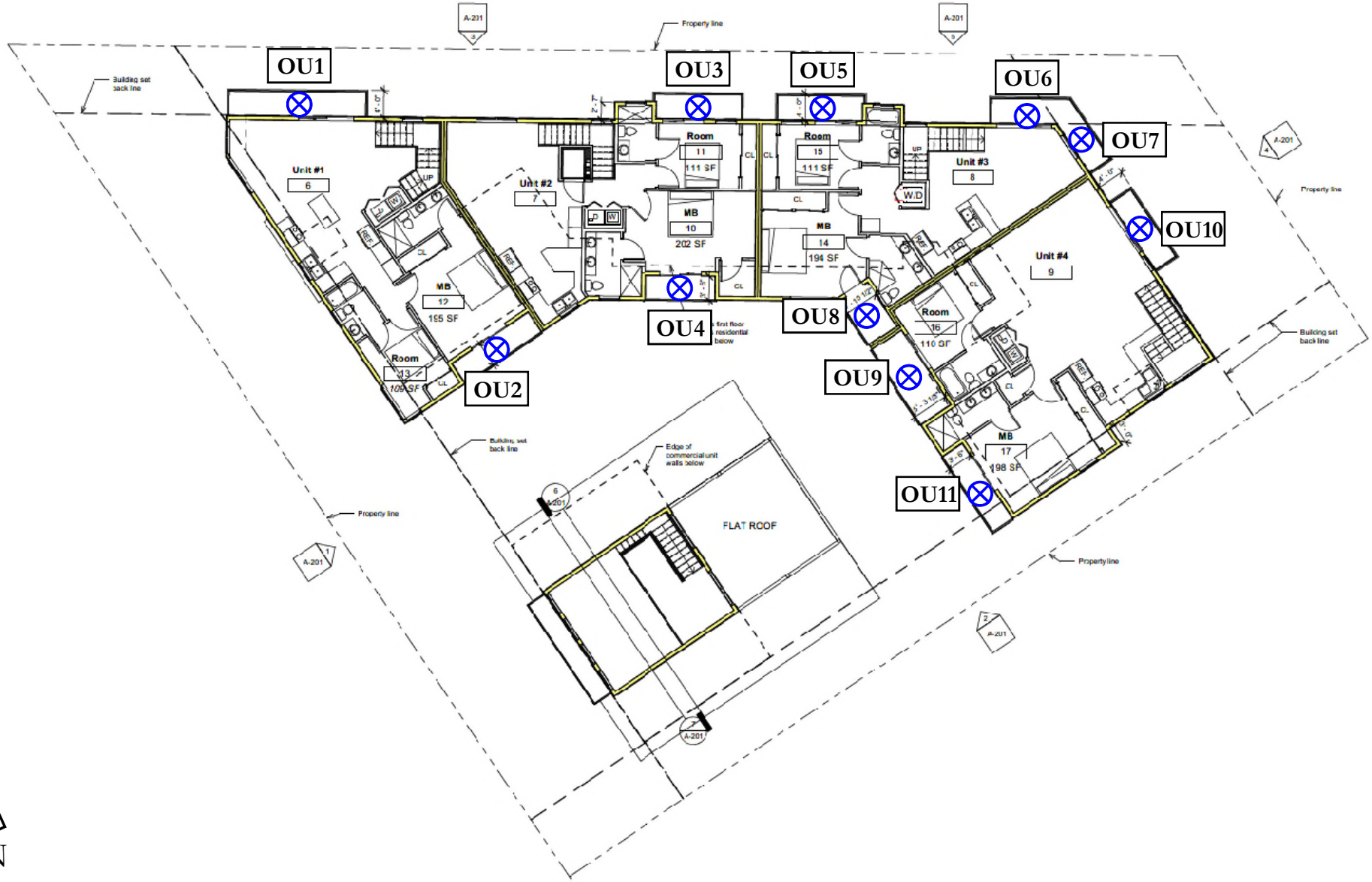
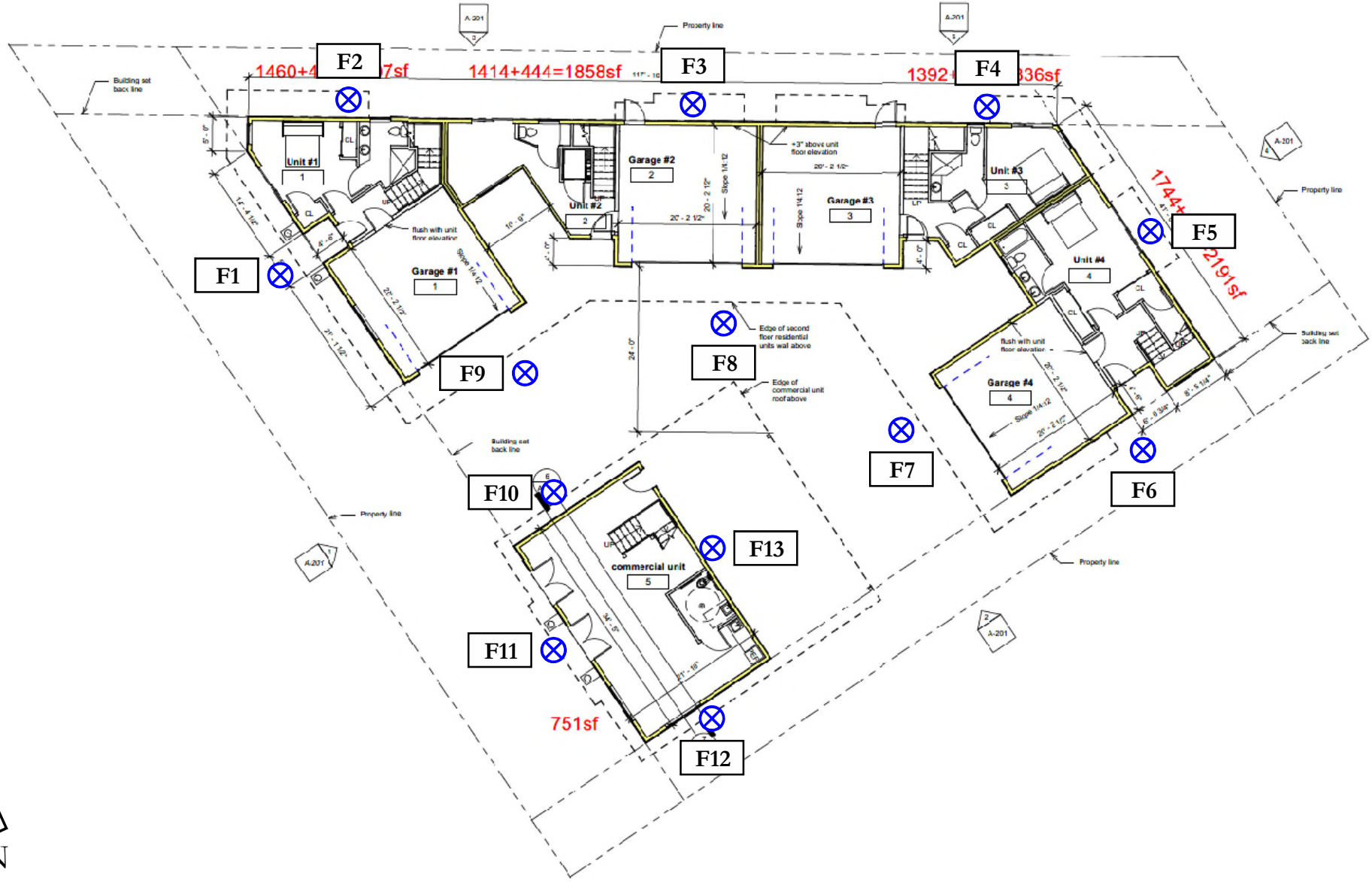
Site Plan Showing Worst-Case Traffic CNEL Contours and Noise Measurement Location
Job # S201109

Figure 7



Eilar Associates, Inc. 210 South Juniper Street, Suite 100 Escondido, California 92025 760-738-5570	**Second Floor Plan Showing Outdoor Use Receiver Locations** **Job # S201109**	**Figure 8**



Eilar Associates, Inc.
210 South Juniper Street, Suite 100
Escondido, California 92025
760-738-5570

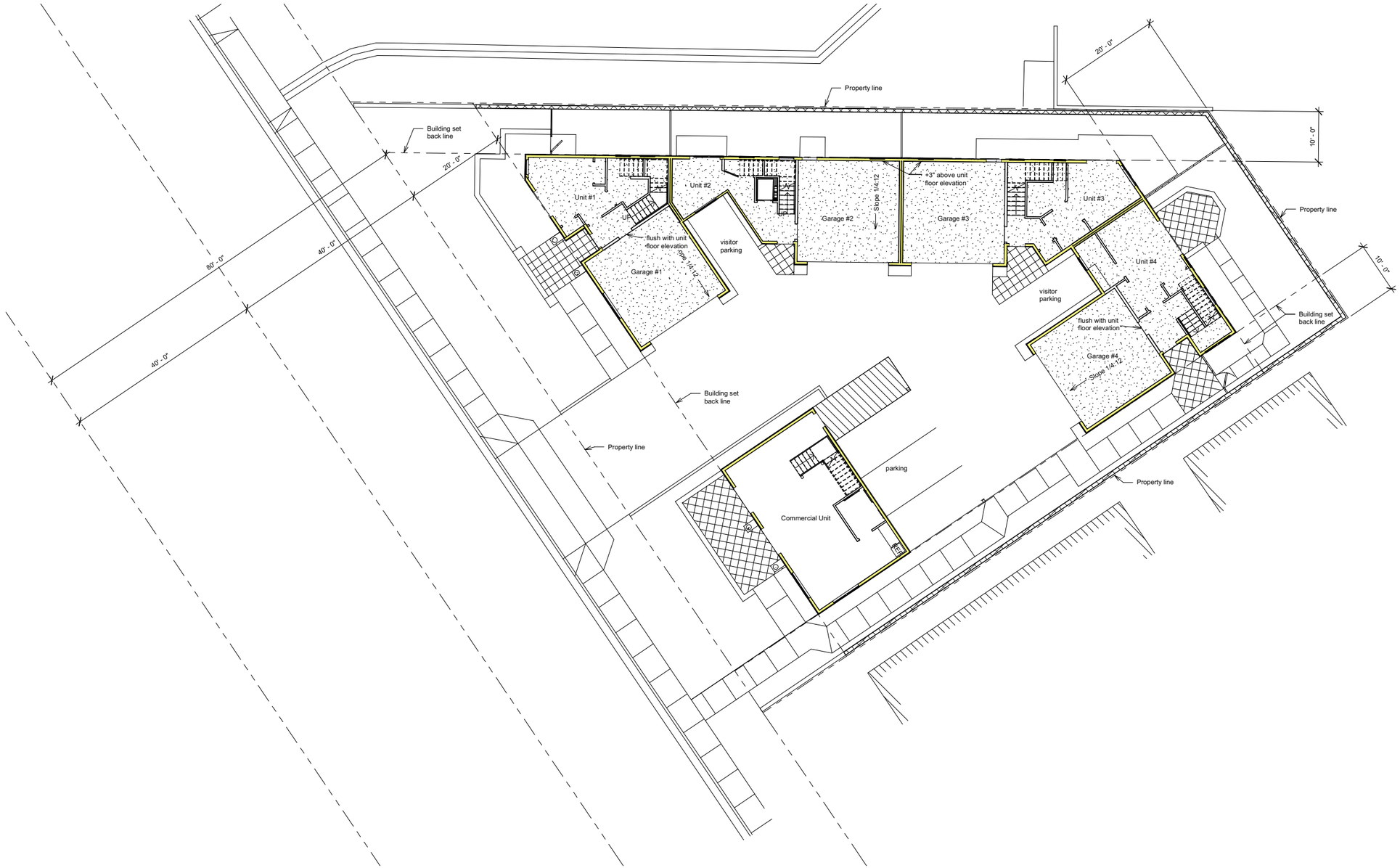
Second Floor Plans Showing Facade Receiver Locations
Job # S201109

Figure 9

Eilar Associates, Inc.
Acoustical and Environmental Consulting Services

Appendix A
Project Plans

CT 00-00 / PUD 00-00 / CDP 00-00



1 **Site Plan**
1" = 10'-0"

Graphic Scale: 1 inch = 10 feet
0 10' 20'

PLANNING / ARCHITECTURAL:

Karnak Planning & Design
614 Calle Vicente, San Clemente, CA 92673
Phone: 760-434-8400, Cell: 760-828-0653
E-mail: karnakdesign@gmail.com

No.	Description	Date

CLIENT:

Ed & Laura Scarpelli

929 Orchid Way
Carlsbad, CA 92011

PROJECT:

Townhouse Duplexes & Prof. office Mix Use

2754 & 2770 Jefferson St.
Calrsbad, CA 92011

SHEET TITLE:

Site Plan

NOT FOR CONSTRUCTION

Project number: 20200401_m

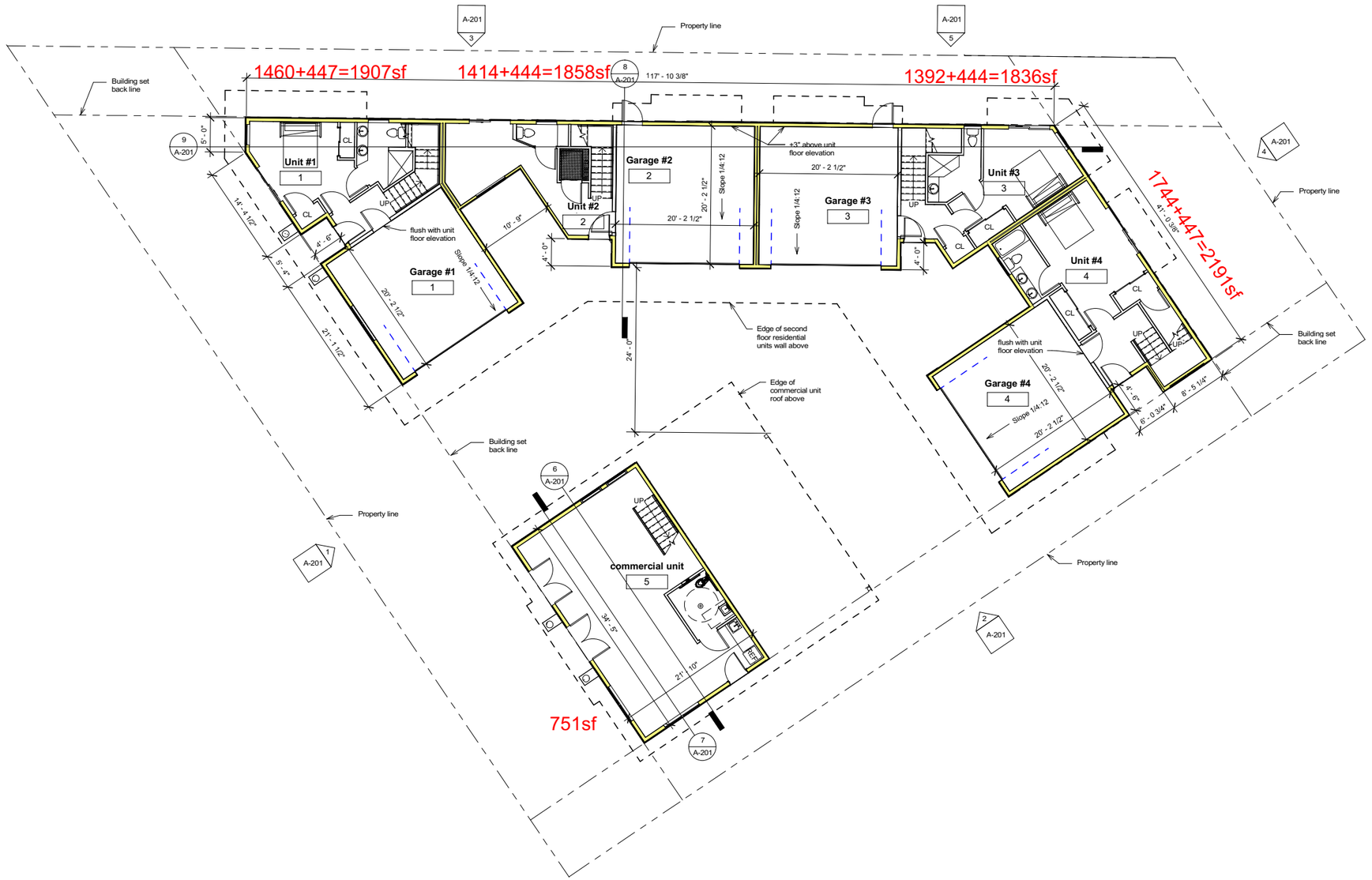
Date: **10/01/2020**

A-001

Scale: 1" = 10'-0"

10/1/2020 3:42:19 PM

CT 00-00 / PUD 00-00 / CDP 00-00



1 **Main Level**
1/8" = 1'-0"

Graphic Scale: 1 inch = 8 feet
0 8' 16'

PLANNING / ARCHITECTURAL:

Karnak Planning & Design
614 Calle Vicente, San Clemente, CA 92673
Phone: 760-434-8400, Cell: 760-828-0653
E-mail: karnakdesign@gmail.com

No.	Description	Date

CLIENT:

Ed & Laura Scarpelli

929 Orchid Way
Carlsbad, CA 92011

PROJECT:

Townhouse Duplexes & Prof. office Mix Use

2754 & 2770 Jefferson St.
Calrsbad, CA 92011

SHEET TITLE:

Main Level Plan

NOT FOR CONSTRUCTION

Project number: 20200401_u

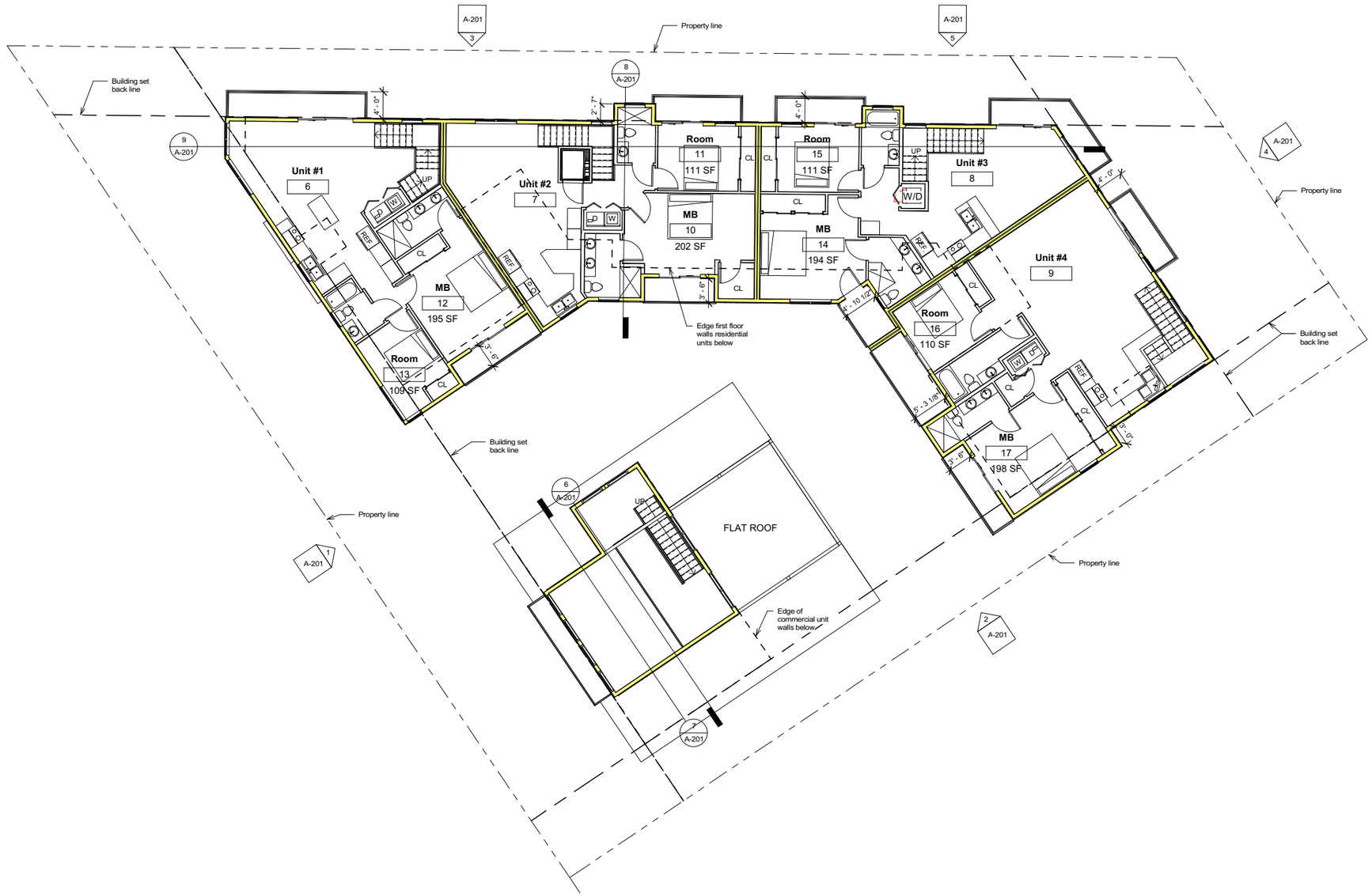
Date: **11/23/2020**

A-101

Scale: 1/8" = 1'-0"

12/7/2020 3:09:45 PM

CT 00-00 / PUD 00-00 / CDP 00-00



1 Level 2
1/8" = 1'-0"

Graphic Scale: 1 inch = 8 feet
0 8' 16'

PLANNING / ARCHITECTURAL:

Karnak Planning & Design

614 Calle Vicente, San Clemente, CA 92673
Phone: 760-434-8400, Cell: 760-828-0653
E-mail: karnakdesign@gmail.com

No.	Description	Date

CLIENT:

Ed & Laura Scarpelli

929 Orchid Way
Carlsbad, CA 92011

PROJECT:

Townhouse Duplexes & Prof. office Mix Use

2754 & 2770 Jefferson St.
Calrsbad, CA 92011

SHEET TITLE:

Second Floor Plan

NOT FOR CONSTRUCTION

Project number: 20200401_u

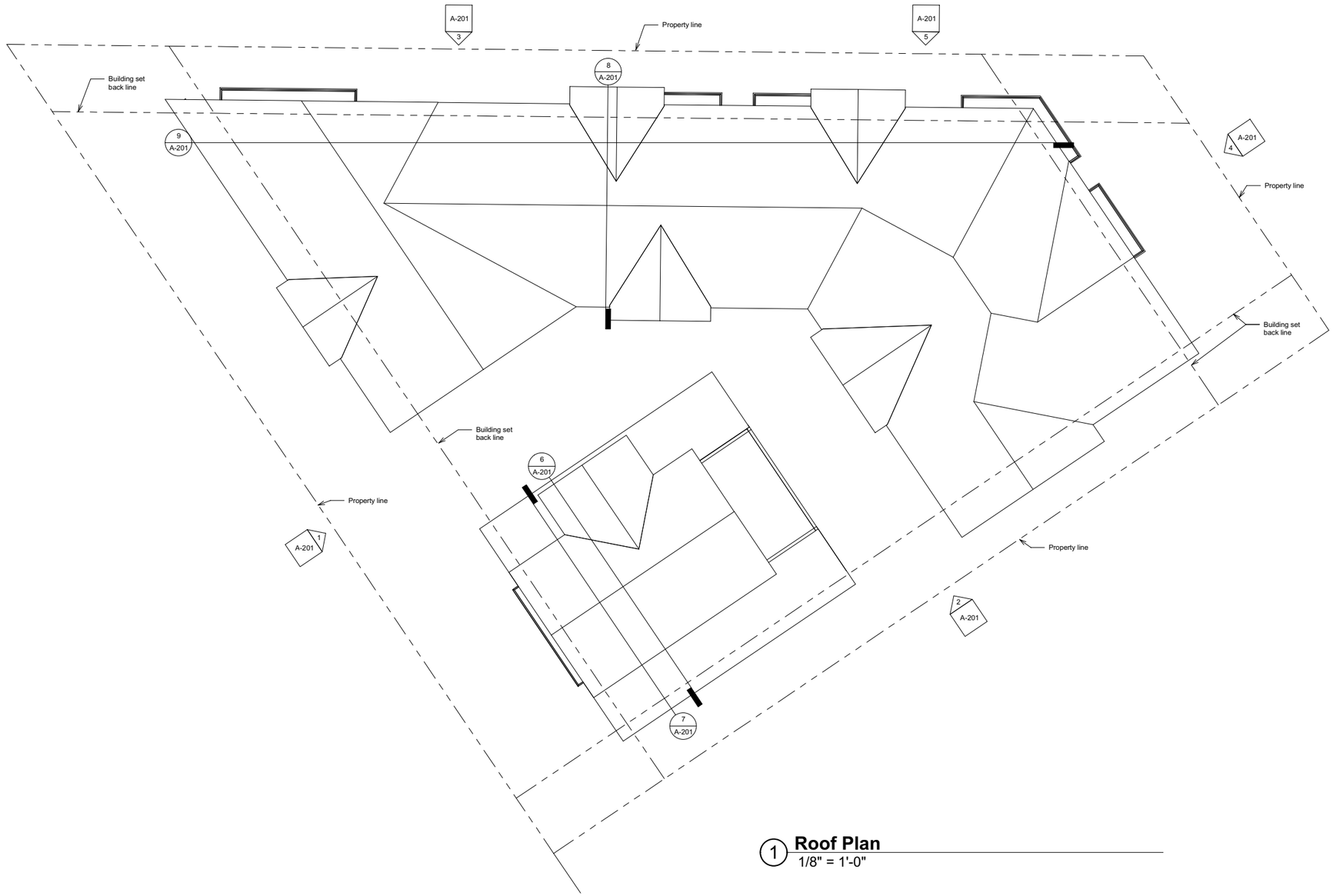
Date: **11/23/2020**

A-102

Scale: 1/8" = 1'-0"

12/7/2020 3:11:22 PM

CT 00-00 / PUD 00-00 / CDP 00-00



1 **Roof Plan**
1/8" = 1'-0"

PLANNING / ARCHITECTURAL:

Karnak Planning & Design

614 Calle Vicente, San Clemente, CA 92673
Phone: 760-434-8400, Cell: 760-828-0653
E-mail: karnakdesign@gmail.com

No.	Description	Date

CLIENT:

Ed & Laura Scarpelli

929 Orchid Way
Carlsbad, CA 92011

PROJECT:

Townhouse Duplexes & Prof. office Mix Use

2754 & 2770 Jefferson St.
Calrsbad, CA 92011

SHEET TITLE:

Roof Plan

NOT FOR CONSTRUCTION

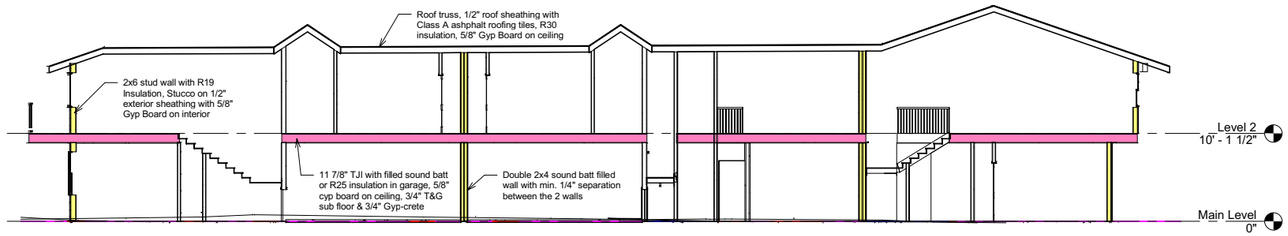
Project number: 20200401_u

Date: **11/23/2020**

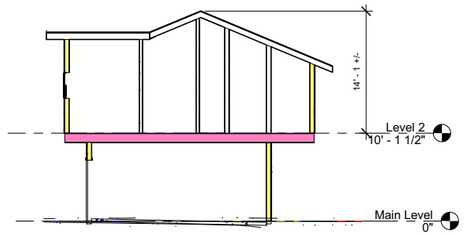
A-103

Scale: 1/8" = 1'-0"

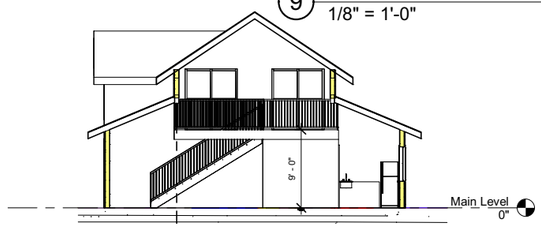
12/7/2020 3:11:35 PM



9 Residential Unit Section B
1/8" = 1'-0"



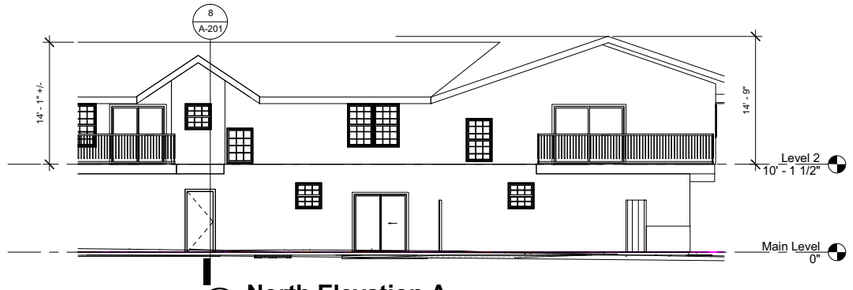
8 Residential Unit Section A
1/8" = 1'-0"



7 Office Space Section/Elevation viewing back
1/8" = 1'-0"

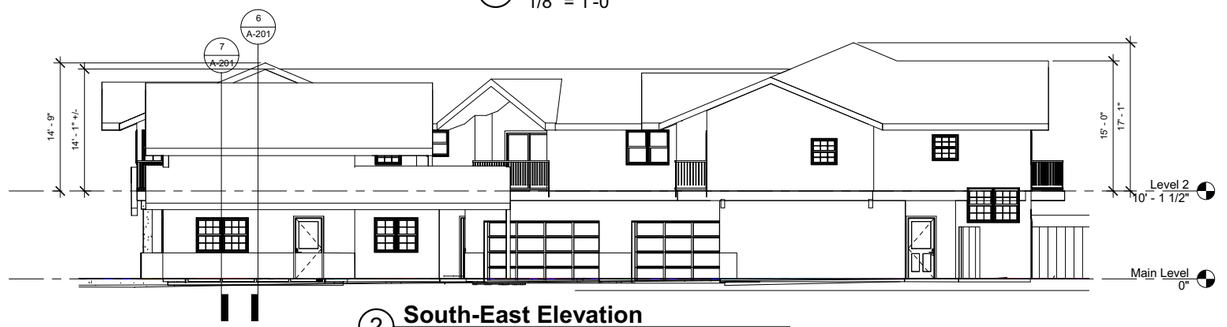
6 Office Space Section/Elevation viewing front
1/8" = 1'-0"

5 North Elevation B
1/8" = 1'-0"



3 North Elevation A
1/8" = 1'-0"

4 North-East Elevation
1/8" = 1'-0"



2 South-East Elevation
1/8" = 1'-0"

1 South-West Elevation
1/8" = 1'-0"

PLANNING / ARCHITECTURAL:
Karnak Planning & Design
614 Calle Vicente, San Clemente, CA 92673
Phone: 760-434-8400, Cell: 760-828-0653
E-mail: karnakdesign@gmail.com

No.	Description	Date

CLIENT:
Ed & Laura Scarpelli
929 Orchid Way
Carlsbad, CA 92011

PROJECT:
Townhouse Duplexes & Prof. office Mix Use
2754 & 2770 Jefferson St.
Calrsbad, CA 92011

SHEET TITLE:
Exterior Elevations & Sections

NOT FOR CONSTRUCTION

Project number: 20200401_u

Date: **11/23/2020**

A-201

Scale: 1/8" = 1'-0"

12/7/2020 3:11:51 PM

CT 00-00 / PUD 00-00 / CDP 00-00

2 **3D Model View #2**

1 **3D Model View #1**

PLANNING / ARCHITECTURAL:

Karnak Planning & Design

614 Calle Vicente, San Clemente, CA 92673
Phone: 760-434-8400, Cell: 760-828-0653
E-mail: karnakdesign@gmail.com

ARCHITECT:

No.	Description	Date

CLIENT:

Ed & Laura Scarpelli

929 Orchid Way
Carlsbad, CA 92011

PROJECT:

Townhouse Duplexes & Prof. office Mix Use

2754 & 2770 Jefferson St.
Calrsbad, CA 92011

SHEET TITLE:

3D Model View

NOT FOR CONSTRUCTION

Project number: 20200401_m

Date: **10/01/2020**

A-901

Scale:

10/1/2020 3:44:07 PM

CT 00-00 / PUD 00-00 / CDP 00-00

1 **3D Model View #3**

PLANNING / ARCHITECTURAL:

Karnak Planning & Design

614 Calle Vicente, San Clemente, CA 92673
Phone: 760-434-8400, Cell: 760-828-0653
E-mail: karnakdesign@gmail.com

ARCHITECT:

No.	Description	Date

CLIENT:

Ed & Laura Scarpelli

929 Orchid Way
Carlsbad, CA 92011

PROJECT:

Townhouse Duplexes & Prof. office Mix Use

2754 & 2770 Jefferson St.
Calrsbad, CA 92011

SHEET TITLE:

3D Model View

NOT FOR CONSTRUCTION

Project number: 20200401_m

Date: **10/01/2020**

A-902

Scale:

10/1/2020 3:44:28 PM

Eilar Associates, Inc.
Acoustical and Environmental Consulting Services

Appendix B

Applicable Noise Regulations

Selected Land Use/Noise Compatibility Policies and Objectives from the Noise Element

IV. GOALS, OBJECTIVES AND IMPLEMENTING POLICIES & ACTION PROGRAMS

GENERAL

C. IMPLEMENTING POLICIES AND ACTION PROGRAMS

C.1 Control harmful or undesirable sounds through the planning and regulatory process with emphasis on noise/land-use compatibility planning.

C.2 Review all development proposals, both public and private, for consistency with the policies of this element.

C.4 Continue to enforce building codes to ensure adequate sound insulation between dwellings and to ensure adequate sound insulation of interior areas from loud external noise sources. The City shall continue to enforce project conditions of approval related to noise control.

C.5 Attempt to control noise primarily at its source. Where this is not feasible, controls along the transmission path of the noise should be required.

LAND USE

B. OBJECTIVES

B.1 To achieve noise compatibility between industrial/commercial and surrounding land uses and achieve an acceptable noise environment in industrial/commercial areas.

B.2 To achieve noise impact compatibility between land uses through the land use planning/development review process.

C. IMPLEMENTING POLICIES AND ACTION PROGRAMS

C.1 Encourage the development of compatible land uses in areas which are subject to excessive noise levels.

C.2 Develop specific noise standards for use in reviewing noise sensitive development.

C.3 Require the use of project design techniques, such as, increasing the distance between the noise source and the receiver; placing non-noise sensitive uses such as parking areas, maintenance facilities, and utility areas between the source and the receiver; using non-sensitive structures, such as a garage, to shield noise sensitive areas; and, orienting buildings to shield outdoor spaces from a noise source to minimize noise impacts during any discretionary review of a residential or other noise sensitive project.

C.5 Enforce the policy of the City that sixty (60) dBA CNEL is the exterior noise level to which all residential units should be mitigated. 65 dBA CNEL is the maximum noise level to which residential units subject to noise from McClellan-Palomar Airport should be permitted. Additional disclosure actions for new development in the Airport Influence Area as depicted in the McClellan-Palomar Airport Land Use Compatibility Plan (ALUCP), such as avigation easements, deed restrictions, recorded notice, etc., may be required of developers/sellers of noise impacted residential units.

For residential properties identified as requiring a noise study, a study shall be prepared by an acoustical professional. This study shall document the projected maximum exterior noise level and mitigate the projected exterior noise level to a maximum allowable noise level as identified in this policy.

Interior noise levels should be mitigated to 45 dBA CNEL when openings to the exterior of the residence are open or closed. If openings are required to be closed to meet the interior noise standard, then mechanical ventilation shall be provided.

If the acoustical study shows that exterior noise levels cannot be mitigated to the level allowable as identified in this policy or less, the development should not be approved without one or more of the following findings:

TABLE 5–1: LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS

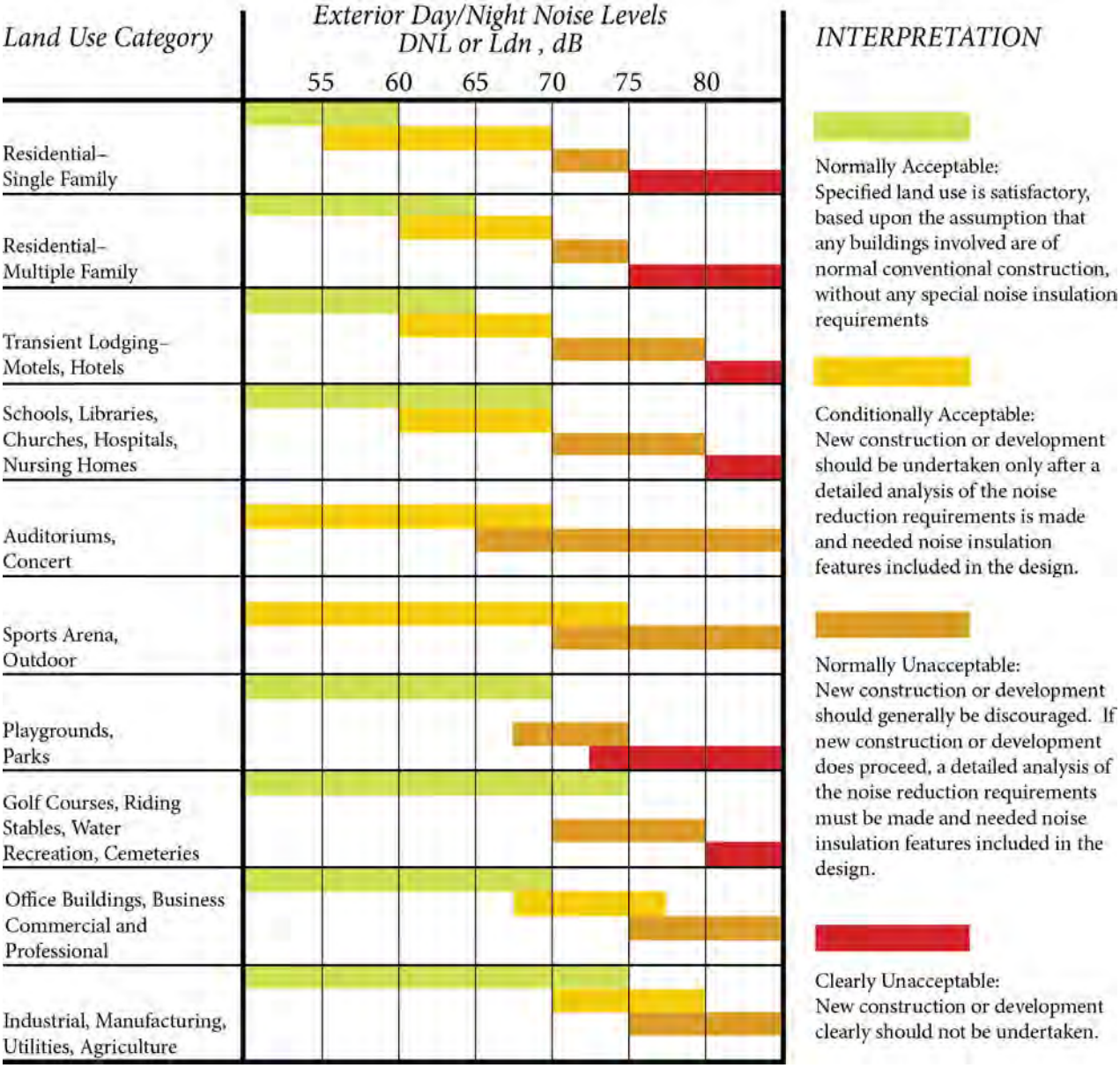


Table 5-3 provides standards for noise from non-transportation noise sources such as, but not limited to, industrial facilities, automotive servicing, car washes, equipment yards, nightclubs, hotels, and shopping centers. fl ese standards apply to the noise sources themselves, as measured at the edge of the property line; noise caused by motor vehicles traveling to and from the site is exempt from this standard.

TABLE 5–2: ALLOWABLE NOISE EXPOSURE[1]

LAND USE	OUTDOOR ACTIVITY[2, 3] AREAS (DBA CNEL)	INTERIOR SPACES (DBA CNEL)
Residential	60[4]	45
Motels, Hotels	65	45
Hospitals, Residential Care Facilities, Schools, Libraries, Museums, Churches, Day Care Facilities	65	45
Playgrounds, Parks, Recreation Uses	65	50
Commercial and Offlce Uses	65	50
Industrial Uses	70	65

1 Development proposed within the McClellan-Palomar Airport Area of Influence shall also be subject to the noise compatibility policies contained in the ALUCP.

2 For non-residential uses, where an outdoor activity area is not proposed, the standard does not apply. Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving use.

3 Where it is not possible to reduce noise in outdoor activity areas to the allowable maximum, levels up to 5 dB higher may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

4 An exterior noise exposure level of 65 dBA CNEL is allowable for residential uses in a mixed-use project and for residential uses within the McClellan-Palomar Airport Area of Influence, pursuant to the noise compatibility policies contained in the ALUCP.

TABLE 5–3: PERFORMANCE STANDARDS FOR NON-TRANSPORTATION SOURCES (AS MEASURED AT PROPERTY LINE OF SOURCE/SENSITIVE USE)

NOISE LEVEL DESCRIPTOR	DAYTIME (7 A.M. TO 10 P.M.)	NIGHTTIME (10 P.M. TO 7 A.M.)
Hourly Leq, dB	55	45
Maximum Level, dB	75	65

Each of the noise levels specifled above shall be lowered by 5 dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises.

Section 1206 Sound Transmission

1206.1 Scope

This section shall apply to common interior walls, partitions and floor/ceiling assemblies between adjacent *dwelling units* and *sleeping units* or between *dwelling units* and *sleeping units* and adjacent public areas such as halls, *corridors*, *stairways* or *service areas*.

1206.2 Airborne sound

Walls, partitions and floor-ceiling assemblies separating *dwelling units* and *sleeping units* from each other or from public or service areas shall have a sound transmission class of not less than 50, or not less than 45 if field tested, for airborne noise where tested in accordance with ASTM E90. Alternatively, the sound transmission class of walls, partitions and floor-ceiling assemblies shall be established by engineering analysis based on a comparison of walls, partitions and floor-ceiling assemblies having sound transmission class ratings as determined by the test procedures set forth in ASTM E90. Penetrations or openings in construction assemblies for piping; electrical devices; recessed cabinets; bathtubs; soffits; or heating, ventilating or exhaust ducts shall be sealed, lined, insulated or otherwise treated to maintain the required ratings. This requirement shall not apply to entrance doors; however, such doors shall be tight fitting to the frame and sill.

1206.2.1 Masonry

The sound transmission class of concrete masonry and clay masonry assemblies shall be calculated in accordance with TMS 0302 or determined through testing in accordance with ASTM E90.

1206.3 Structure-borne sound

Floor-ceiling assemblies between *dwelling units* and *sleeping units* or between a *dwelling unit* or *sleeping unit* and a public or service area within the structure shall have an impact insulation class rating of not less than 50, or not less than 45 if field tested, where tested in accordance with ASTM E492. Alternatively, the impact insulation class of floor-ceiling assemblies shall be established by engineering analysis based on a comparison of floor-ceiling assemblies having impact insulation class ratings as determined by the test procedures in ASTM E492.

Exception: Impact sound insulation is not required for floor-ceiling assemblies over nonhabitable rooms or spaces not designed to be occupied, such as garages, mechanical rooms or storage areas.

1206.4 Allowable interior noise levels

Interior noise levels attributable to exterior sources shall not exceed 45 dB in any habitable room. The noise metric shall be either the day-night average sound level (Ldn) or the community noise equivalent level (CNEL), consistent with the noise element of the local general plan.

1206.5 Acoustical control

[BSC-CG] See *California Green Building Standards Code*, Chapter 5, Division 5.5 for additional sound transmission requirements.

Eilar Associates, Inc.
Acoustical and Environmental Consulting Services

Appendix C

CadnaA Analysis Data and Results

Eilar Associates, Inc.
210 South Juniper Street, Suite 100
Escondido, California 92025-4230
Phone: (760) 738-5570
Date: 03 Dec 2020

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	1000.00
Min. Length of Section (#(Unit,LEN))	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	6.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	0
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.35
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (TNM)	
Railways (Schall 03 (1990))	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	
Strictly acc. to AzB	

Receivers

Name	M.	ID	Level Lr		Limit. Value		Land Use			Height		Coordinates		
			Day	Night	Day	Night	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
NML			67.1	-63.6	0.0	0.0				5.00	r	1306.88	876.86	59.64

Roads

Name	M.	ID	Lme			Count Data		exact Count Data						Speed Limit		SCS	Surface		Gradient	Mult. Reflection		
			Day	Evening	Night	DTV	Str.class.	M			p (%)			Auto	Truck	Dist.	Dstro	Type		Drefl	Hbuild	Dist.
			(dBA)	(dBA)	(dBA)			Day	Evening	Night	Day	Evening	Night	(mph)	(mph)		(dB)		(%)	(dB)	(ft)	(ft)
Jefferson Street			62.3	0.0	0.0			628.0	0.0	0.0	1.9	0.0	0.0	35		3.66	0.0	1	0.0	0.0		
Arbuckle Place			55.2	0.0	0.0			128.0	0.0	0.0	1.0	0.0	0.0	25		3.66	0.0	1	0.0	0.0		
Interstate 5 SB			78.6	0.0	0.0			7840.0	0.0	0.0	4.8	0.0	0.0	65		11.28	0.0	1	0.0	0.0		
Interstate 5 SB			78.6	0.0	0.0			7840.0	0.0	0.0	4.8	0.0	0.0	65		11.28	0.0	1	0.0	0.0		

Geometry - Roads

Name	Height				Coordinates				Dist	LSlope
	Begin		End		x	y	z	Ground	(ft)	(%)
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)		
Jefferson Street	0.00	r			1727.02	213.65	54.01	54.01		
					1517.84	517.49	54.99	54.99		
					1370.31	729.59	54.00	54.00		
					1302.82	830.09	54.37	54.37		
					1256.95	896.99	54.66	54.66		
					1204.37	975.00	55.01	55.01		
					1177.78	1027.58	55.55	55.55		
					1166.97	1064.40	55.84	55.84		
					1160.25	1105.88	56.14	56.14		
					1158.20	1231.22	57.00	57.00		
					1159.96	1685.81	57.96	57.96		
Arbuckle Place	0.00	r			1370.31	729.59	54.00	54.00		
					1073.95	527.84	47.56	47.56		
Interstate 5 SB	0.00	r			3185.25	57.88	86.44	86.44		
					3000.09	489.67	91.10	91.10		
					2843.49	856.63	90.32	90.32		
					2673.28	1256.41	86.06	86.06		
					2467.60	1739.07	83.07	83.07		
Interstate 5 SB	0.00	r			3268.44	87.33	87.27	87.27		
					3083.28	519.11	91.10	91.10		
					2926.68	886.07	90.32	90.32		
					2756.47	1285.86	86.04	86.04		
					2550.79	1768.52	83.06	83.06		

Buildings

Name	M.	ID	RB	Residents	Absorption	Height
						Begin
						(ft)
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		

Geometry - Buildings

Name	M.	ID	RB	Residents	Absorption	Height	Coordinates			
						Begin	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)
off-site building				0			1529.08	1043.63	77.00	50.00
							1469.81	1041.79	77.00	50.00
							1471.29	1111.36	77.00	50.00
							1530.55	1111.73	77.00	50.00
off-site building				0			1531.66	976.26	77.00	50.00
							1464.29	975.16	77.00	50.00
							1465.76	1027.06	77.00	50.00
							1532.76	1027.06	77.00	50.00
off-site building				0			1608.23	980.68	77.00	50.00
							1555.22	979.58	77.00	50.00
							1556.69	1049.15	77.00	50.00
							1608.96	1050.62	77.00	50.00
off-site building				0			1688.11	966.69	77.00	50.00
							1651.30	966.69	77.00	50.00
							1650.93	1138.60	77.00	50.00
							1687.74	1138.23	77.00	50.00
off-site building				0			1754.37	1056.88	78.00	50.00
							1723.08	1057.25	78.00	50.00
							1724.55	1150.38	78.00	50.00

Name	M.	ID	RB	Residents	Absorption	Height	Coordinates			
						Begin	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)
							1755.11	1150.01	78.00	50.00
off-site building				0			1829.10	1119.09	78.00	50.00
							1797.07	1118.36	78.00	50.00
							1798.18	1194.19	78.00	50.00
							1828.73	1193.82	78.00	50.00
off-site building				0			1829.84	1002.77	78.00	50.00
							1797.81	1002.03	78.00	50.00
							1798.91	1077.86	78.00	50.00
							1829.47	1077.49	78.00	50.00
off-site building				0			1796.99	961.62	78.00	50.00
							1723.91	961.11	78.00	50.00
							1723.39	989.64	78.00	50.00
							1797.08	989.73	78.00	50.00
off-site building				0			1774.26	1014.95	78.00	50.00
							1723.45	1014.91	78.00	50.00
							1723.16	1042.51	78.00	50.00
							1774.36	1043.07	78.00	50.00
off-site building				0			1775.36	1165.88	78.00	50.00
							1724.55	1165.84	78.00	50.00
							1724.27	1193.44	78.00	50.00
							1775.46	1194.00	78.00	50.00
off-site building				0			1908.73	1125.83	80.00	50.00
							1858.24	1125.09	80.00	50.00
							1859.68	1165.10	80.00	50.00
							1908.35	1165.74	80.00	50.00
off-site building				0			1908.36	1081.65	80.00	50.00
							1857.88	1080.91	80.00	50.00
							1859.32	1120.93	80.00	50.00
							1907.98	1121.56	80.00	50.00
off-site building				0			1909.10	1033.43	80.00	50.00
							1858.61	1032.69	80.00	50.00
							1860.05	1072.70	80.00	50.00
							1908.71	1073.34	80.00	50.00
off-site building				0			1907.25	951.33	80.00	50.00
							1861.56	951.15	80.00	50.00
							1860.79	1029.08	80.00	50.00
							1907.79	1029.35	80.00	50.00
off-site building				0			1908.91	907.16	80.00	50.00
							1858.43	906.42	80.00	50.00
							1859.87	946.44	80.00	50.00
							1908.53	947.07	80.00	50.00
off-site building				0			1904.52	1169.31	80.00	50.00
							1862.96	1169.03	80.00	50.00
							1862.67	1194.44	80.00	50.00
							1904.83	1194.72	80.00	50.00
off-site building				0			1603.60	802.51	76.00	50.00

Name	M.	ID	RB	Residents	Absorption	Height	Coordinates			
						Begin	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)
							1613.45	789.32	76.00	50.00
							1638.21	804.35	76.00	50.00
							1614.28	837.48	76.00	50.00
							1553.54	795.52	76.00	50.00
							1642.26	661.52	76.00	50.00
							1705.94	703.12	76.00	50.00
							1682.75	739.56	76.00	50.00
							1661.03	725.20	76.00	50.00
							1671.34	710.11	76.00	50.00
							1654.41	697.96	76.00	50.00
							1589.61	791.83	76.00	50.00
off-site building				0			1653.71	844.18	90.00	50.00
							1732.56	723.12	90.00	50.00
							1763.64	743.76	90.00	50.00
							1682.47	865.05	90.00	50.00
off-site building				0			1719.58	856.94	90.00	50.00
							1780.80	754.43	90.00	50.00
							1806.54	771.13	90.00	50.00
							1740.22	870.62	90.00	50.00

Terrain Contours

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(ft)	(ft)	(ft)	(ft)	(ft)
cLaguna						2544.38	1245.79	80.00
						2320.03	1244.62	70.00
						1822.24	1238.78	60.00
						1191.71	1231.52	57.00
						1125.87	1229.69	57.00
						870.53	1224.71	50.00
cJefferson						1129.58	1704.55	58.00
						1125.87	1229.69	57.00
						1130.51	1081.30	56.00
						1179.66	957.02	55.00
						1328.36	733.24	54.00
						1037.14	531.06	47.00
cJefferson						1061.32	496.65	47.00
						1359.45	690.99	54.00
						1497.84	496.65	55.00
						1697.33	187.48	54.00
cJefferson						1752.98	230.88	54.00
						1540.97	537.11	55.00
						1388.19	747.16	54.00
						1226.24	987.50	55.00
						1187.75	1087.20	56.00
						1191.71	1231.52	57.00
						1189.85	1702.68	58.00
cI5						2421.72	1736.90	83.00
						2638.88	1249.56	86.00
						2750.48	996.56	90.00
						3156.73	59.78	92.00
cI5						2571.98	1786.98	83.00
						2789.14	1299.65	86.00
						2900.74	1046.65	90.00
						3306.99	109.86	92.00
cPad				55.00		1336.48	888.93	55.00
						1485.38	887.45	55.00
						1514.09	844.76	55.00
						1403.29	770.03	55.00
						1334.83	871.63	55.00
						1336.48	888.93	55.00

Height Points

Name	M.	ID	Coordinates		
			X	Y	Z
			(ft)	(ft)	(ft)
h55			842.00	1682.32	55.00
h60			1979.17	839.17	60.00
h65			2251.84	1006.11	65.00
h62			2190.63	531.25	62.00
h70			2539.35	776.10	70.00
h63			2478.14	143.58	63.00
h71			2867.67	399.56	71.00
h74			3201.55	638.84	74.00
h75			2390.96	1677.58	75.00

Eilar Associates, Inc.
210 South Juniper Street, Suite 100
Escondido, California 92025-4230
Phone: (760) 738-5570
Date: 04 Dec 2020

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	1000.00
Min. Length of Section (#(Unit,LEN))	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	6.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	0
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.35
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (TNM)	
Railways (Schall 03 (1990))	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	
Strictly acc. to AzB	

Roads

Name	M.	ID	Lme			Count Data		exact Count Data						Speed Limit		SCS	Surface		Gradient	Mult. Reflection		
			Day	Evening	Night	DTV	Str.class.	M			p (%)			Auto	Truck	Dist.	Dstro	Type		Drefl	Hbuild	Dist.
			(dBA)	(dBA)	(dBA)			Day	Evening	Night	Day	Evening	Night	(mph)	(mph)		(dB)		(%)	(dB)	(ft)	(ft)
Jefferson Street			63.6	0.0	0.0			800.0	0.0	0.0	2.0	0.0	0.0	35		3.66	0.0	1	0.0	0.0		
Arbuckle Place			55.8	0.0	0.0			147.0	0.0	0.0	1.0	0.0	0.0	25		3.66	0.0	1	0.0	0.0		
Interstate 5 SB			79.2	0.0	0.0			9016.0	0.0	0.0	4.8	0.0	0.0	65		11.28	0.0	1	0.0	0.0		
Interstate 5 SB			79.2	0.0	0.0			9016.0	0.0	0.0	4.8	0.0	0.0	65		11.28	0.0	1	0.0	0.0		

Geometry - Roads

Name	Height				Coordinates				Dist	LSlope
	Begin		End		x	y	z	Ground	(ft)	(%)
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)		
Jefferson Street	0.00	r			1727.02	213.65	54.01	54.01		
					1517.84	517.49	54.99	54.99		
					1370.31	729.59	54.00	54.00		
					1302.82	830.09	54.37	54.37		
					1256.95	896.99	54.66	54.66		
					1204.37	975.00	55.01	55.01		
					1177.78	1027.58	55.55	55.55		
					1166.97	1064.40	55.84	55.84		
					1160.25	1105.88	56.14	56.14		
					1158.20	1231.22	57.00	57.00		
					1159.96	1685.81	57.96	57.96		
Arbuckle Place	0.00	r			1370.31	729.59	54.00	54.00		
					1073.95	527.84	47.56	47.56		
Interstate 5 SB	0.00	r			3185.25	57.88	86.44	86.44		
					3000.09	489.67	91.10	91.10		
					2843.49	856.63	90.32	90.32		
					2673.28	1256.41	86.06	86.06		
					2467.60	1739.07	83.07	83.07		
Interstate 5 SB	0.00	r			3268.44	87.33	87.27	87.27		
					3083.28	519.11	91.10	91.10		
					2926.68	886.07	90.32	90.32		
					2756.47	1285.86	86.04	86.04		
					2550.79	1768.52	83.06	83.06		

Buildings

Name	M.	ID	RB	Residents	Absorption	Height
						Begin
						(ft)
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		

Geometry - Buildings

Name	M.	ID	RB	Residents	Absorption	Height	Coordinates			
						Begin	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)
off-site building				0			1529.08	1043.63	77.00	50.00
							1469.81	1041.79	77.00	50.00
							1471.29	1111.36	77.00	50.00
							1530.55	1111.73	77.00	50.00
off-site building				0			1531.66	976.26	77.00	50.00
							1464.29	975.16	77.00	50.00
							1465.76	1027.06	77.00	50.00
							1532.76	1027.06	77.00	50.00
off-site building				0			1608.23	980.68	77.00	50.00
							1555.22	979.58	77.00	50.00
							1556.69	1049.15	77.00	50.00
							1608.96	1050.62	77.00	50.00
off-site building				0			1688.11	966.69	77.00	50.00
							1651.30	966.69	77.00	50.00
							1650.93	1138.60	77.00	50.00
							1687.74	1138.23	77.00	50.00
off-site building				0			1754.37	1056.88	78.00	50.00
							1723.08	1057.25	78.00	50.00
							1724.55	1150.38	78.00	50.00

Name	M.	ID	RB	Residents	Absorption	Height	Coordinates			
						Begin	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)
							1755.11	1150.01	78.00	50.00
off-site building				0			1829.10	1119.09	78.00	50.00
							1797.07	1118.36	78.00	50.00
							1798.18	1194.19	78.00	50.00
							1828.73	1193.82	78.00	50.00
off-site building				0			1829.84	1002.77	78.00	50.00
							1797.81	1002.03	78.00	50.00
							1798.91	1077.86	78.00	50.00
							1829.47	1077.49	78.00	50.00
off-site building				0			1796.99	961.62	78.00	50.00
							1723.91	961.11	78.00	50.00
							1723.39	989.64	78.00	50.00
							1797.08	989.73	78.00	50.00
off-site building				0			1774.26	1014.95	78.00	50.00
							1723.45	1014.91	78.00	50.00
							1723.16	1042.51	78.00	50.00
							1774.36	1043.07	78.00	50.00
off-site building				0			1775.36	1165.88	78.00	50.00
							1724.55	1165.84	78.00	50.00
							1724.27	1193.44	78.00	50.00
							1775.46	1194.00	78.00	50.00
off-site building				0			1908.73	1125.83	80.00	50.00
							1858.24	1125.09	80.00	50.00
							1859.68	1165.10	80.00	50.00
							1908.35	1165.74	80.00	50.00
off-site building				0			1908.36	1081.65	80.00	50.00
							1857.88	1080.91	80.00	50.00
							1859.32	1120.93	80.00	50.00
							1907.98	1121.56	80.00	50.00
off-site building				0			1909.10	1033.43	80.00	50.00
							1858.61	1032.69	80.00	50.00
							1860.05	1072.70	80.00	50.00
							1908.71	1073.34	80.00	50.00
off-site building				0			1907.25	951.33	80.00	50.00
							1861.56	951.15	80.00	50.00
							1860.79	1029.08	80.00	50.00
							1907.79	1029.35	80.00	50.00
off-site building				0			1908.91	907.16	80.00	50.00
							1858.43	906.42	80.00	50.00
							1859.87	946.44	80.00	50.00
							1908.53	947.07	80.00	50.00
off-site building				0			1904.52	1169.31	80.00	50.00
							1862.96	1169.03	80.00	50.00
							1862.67	1194.44	80.00	50.00
							1904.83	1194.72	80.00	50.00
off-site building				0			1603.60	802.51	76.00	50.00

Name	M.	ID	RB	Residents	Absorption	Height	Coordinates			
						Begin	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)
							1613.45	789.32	76.00	50.00
							1638.21	804.35	76.00	50.00
							1614.28	837.48	76.00	50.00
							1553.54	795.52	76.00	50.00
							1642.26	661.52	76.00	50.00
							1705.94	703.12	76.00	50.00
							1682.75	739.56	76.00	50.00
							1661.03	725.20	76.00	50.00
							1671.34	710.11	76.00	50.00
							1654.41	697.96	76.00	50.00
							1589.61	791.83	76.00	50.00
off-site building				0			1653.71	844.18	90.00	50.00
							1732.56	723.12	90.00	50.00
							1763.64	743.76	90.00	50.00
							1682.47	865.05	90.00	50.00
off-site building				0			1719.58	856.94	90.00	50.00
							1780.80	754.43	90.00	50.00
							1806.54	771.13	90.00	50.00
							1740.22	870.62	90.00	50.00

Terrain Contours

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(ft)	(ft)	(ft)	(ft)	(ft)
cLaguna						2544.38	1245.79	80.00
						2320.03	1244.62	70.00
						1822.24	1238.78	60.00
						1191.71	1231.52	57.00
						1125.87	1229.69	57.00
						870.53	1224.71	50.00
cJefferson						1129.58	1704.55	58.00
						1125.87	1229.69	57.00
						1130.51	1081.30	56.00
						1179.66	957.02	55.00
						1328.36	733.24	54.00
						1037.14	531.06	47.00
cJefferson						1061.32	496.65	47.00
						1359.45	690.99	54.00
						1497.84	496.65	55.00
						1697.33	187.48	54.00
cJefferson						1752.98	230.88	54.00
						1540.97	537.11	55.00
						1388.19	747.16	54.00
						1226.24	987.50	55.00
						1187.75	1087.20	56.00
						1191.71	1231.52	57.00
						1189.85	1702.68	58.00
cI5						2421.72	1736.90	83.00
						2638.88	1249.56	86.00
						2750.48	996.56	90.00
						3156.73	59.78	92.00
cI5						2571.98	1786.98	83.00
						2789.14	1299.65	86.00
						2900.74	1046.65	90.00
						3306.99	109.86	92.00
cPad				55.00		1336.48	888.93	55.00
						1485.38	887.45	55.00
						1514.09	844.76	55.00
						1403.29	770.03	55.00
						1334.83	871.63	55.00
						1336.48	888.93	55.00

Height Points

Name	M.	ID	Coordinates		
			X	Y	Z
			(ft)	(ft)	(ft)
h55			842.00	1682.32	55.00
h60			1979.17	839.17	60.00
h65			2251.84	1006.11	65.00
h62			2190.63	531.25	62.00
h70			2539.35	776.10	70.00
h63			2478.14	143.58	63.00
h71			2867.67	399.56	71.00
h74			3201.55	638.84	74.00
h75			2390.96	1677.58	75.00

Eilar Associates, Inc.
210 South Juniper Street, Suite 100
Escondido, California 92025-4230
Phone: (760) 738-5570
Date: 04 Dec 2020

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	1000.00
Min. Length of Section (#(Unit,LEN))	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	6.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	0
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.35
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (TNM)	
Railways (Schall 03 (1990))	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	
Strictly acc. to AzB	

Roads

Name	M.	ID	Lme			Count Data		exact Count Data						Speed Limit		SCS	Surface		Gradient	Mult. Reflection		
			Day	Evening	Night	DTV	Str.class.	M			p (%)			Auto	Truck	Dist.	Dstro	Type		Drefl	Hbuild	Dist.
			(dBA)	(dBA)	(dBA)			Day	Evening	Night	Day	Evening	Night	(mph)	(mph)		(dB)		(%)	(dB)	(ft)	(ft)
Jefferson Street			61.8	0.0	0.0			534.0	0.0	0.0	2.0	0.0	0.0	35		3.66	0.0	1	0.0	0.0		
Arbuckle Place			57.0	0.0	0.0			193.0	0.0	0.0	1.0	0.0	0.0	25		3.66	0.0	1	0.0	0.0		
Interstate 5 SB			79.6	0.0	0.0			9784.0	0.0	0.0	4.8	0.0	0.0	65		11.28	0.0	1	0.0	0.0		
Interstate 5 SB			79.6	0.0	0.0			9784.0	0.0	0.0	4.8	0.0	0.0	65		11.28	0.0	1	0.0	0.0		

Geometry - Roads

Name	Height				Coordinates				Dist	LSlope
	Begin		End		x	y	z	Ground	(ft)	(%)
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)		
Jefferson Street	0.00	r			1727.02	213.65	54.01	54.01		
					1517.84	517.49	54.99	54.99		
					1370.31	729.59	54.00	54.00		
					1302.82	830.09	54.37	54.37		
					1256.95	896.99	54.66	54.66		
					1204.37	975.00	55.01	55.01		
					1177.78	1027.58	55.55	55.55		
					1166.97	1064.40	55.84	55.84		
					1160.25	1105.88	56.14	56.14		
					1158.20	1231.22	57.00	57.00		
					1159.96	1685.81	57.96	57.96		
Arbuckle Place	0.00	r			1370.31	729.59	54.00	54.00		
					1073.95	527.84	47.56	47.56		
Interstate 5 SB	0.00	r			3185.25	57.88	86.44	86.44		
					3000.09	489.67	91.10	91.10		
					2843.49	856.63	90.32	90.32		
					2673.28	1256.41	86.06	86.06		
					2467.60	1739.07	83.07	83.07		
Interstate 5 SB	0.00	r			3268.44	87.33	87.27	87.27		
					3083.28	519.11	91.10	91.10		
					2926.68	886.07	90.32	90.32		
					2756.47	1285.86	86.04	86.04		
					2550.79	1768.52	83.06	83.06		

Buildings

Name	M.	ID	RB	Residents	Absorption	Height
						Begin
						(ft)
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		

Geometry - Buildings

Name	M.	ID	RB	Residents	Absorption	Height	Coordinates			
						Begin	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)
off-site building				0			1529.08	1043.63	77.00	50.00
							1469.81	1041.79	77.00	50.00
							1471.29	1111.36	77.00	50.00
							1530.55	1111.73	77.00	50.00
off-site building				0			1531.66	976.26	77.00	50.00
							1464.29	975.16	77.00	50.00
							1465.76	1027.06	77.00	50.00
							1532.76	1027.06	77.00	50.00
off-site building				0			1608.23	980.68	77.00	50.00
							1555.22	979.58	77.00	50.00
							1556.69	1049.15	77.00	50.00
							1608.96	1050.62	77.00	50.00
off-site building				0			1688.11	966.69	77.00	50.00
							1651.30	966.69	77.00	50.00
							1650.93	1138.60	77.00	50.00
							1687.74	1138.23	77.00	50.00
off-site building				0			1754.37	1056.88	78.00	50.00
							1723.08	1057.25	78.00	50.00
							1724.55	1150.38	78.00	50.00

Name	M.	ID	RB	Residents	Absorption	Height	Coordinates			
						Begin	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)
							1755.11	1150.01	78.00	50.00
off-site building				0			1829.10	1119.09	78.00	50.00
							1797.07	1118.36	78.00	50.00
							1798.18	1194.19	78.00	50.00
							1828.73	1193.82	78.00	50.00
off-site building				0			1829.84	1002.77	78.00	50.00
							1797.81	1002.03	78.00	50.00
							1798.91	1077.86	78.00	50.00
							1829.47	1077.49	78.00	50.00
off-site building				0			1796.99	961.62	78.00	50.00
							1723.91	961.11	78.00	50.00
							1723.39	989.64	78.00	50.00
							1797.08	989.73	78.00	50.00
off-site building				0			1774.26	1014.95	78.00	50.00
							1723.45	1014.91	78.00	50.00
							1723.16	1042.51	78.00	50.00
							1774.36	1043.07	78.00	50.00
off-site building				0			1775.36	1165.88	78.00	50.00
							1724.55	1165.84	78.00	50.00
							1724.27	1193.44	78.00	50.00
							1775.46	1194.00	78.00	50.00
off-site building				0			1908.73	1125.83	80.00	50.00
							1858.24	1125.09	80.00	50.00
							1859.68	1165.10	80.00	50.00
							1908.35	1165.74	80.00	50.00
off-site building				0			1908.36	1081.65	80.00	50.00
							1857.88	1080.91	80.00	50.00
							1859.32	1120.93	80.00	50.00
							1907.98	1121.56	80.00	50.00
off-site building				0			1909.10	1033.43	80.00	50.00
							1858.61	1032.69	80.00	50.00
							1860.05	1072.70	80.00	50.00
							1908.71	1073.34	80.00	50.00
off-site building				0			1907.25	951.33	80.00	50.00
							1861.56	951.15	80.00	50.00
							1860.79	1029.08	80.00	50.00
							1907.79	1029.35	80.00	50.00
off-site building				0			1908.91	907.16	80.00	50.00
							1858.43	906.42	80.00	50.00
							1859.87	946.44	80.00	50.00
							1908.53	947.07	80.00	50.00
off-site building				0			1904.52	1169.31	80.00	50.00
							1862.96	1169.03	80.00	50.00
							1862.67	1194.44	80.00	50.00
							1904.83	1194.72	80.00	50.00
off-site building				0			1603.60	802.51	76.00	50.00

Name	M.	ID	RB	Residents	Absorption	Height	Coordinates			
						Begin	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)
							1613.45	789.32	76.00	50.00
							1638.21	804.35	76.00	50.00
							1614.28	837.48	76.00	50.00
							1553.54	795.52	76.00	50.00
							1642.26	661.52	76.00	50.00
							1705.94	703.12	76.00	50.00
							1682.75	739.56	76.00	50.00
							1661.03	725.20	76.00	50.00
							1671.34	710.11	76.00	50.00
							1654.41	697.96	76.00	50.00
							1589.61	791.83	76.00	50.00
off-site building				0			1653.71	844.18	90.00	50.00
							1732.56	723.12	90.00	50.00
							1763.64	743.76	90.00	50.00
							1682.47	865.05	90.00	50.00
off-site building				0			1719.58	856.94	90.00	50.00
							1780.80	754.43	90.00	50.00
							1806.54	771.13	90.00	50.00
							1740.22	870.62	90.00	50.00

Terrain Contours

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(ft)	(ft)	(ft)	(ft)	(ft)
cLaguna						2544.38	1245.79	80.00
						2320.03	1244.62	70.00
						1822.24	1238.78	60.00
						1191.71	1231.52	57.00
						1125.87	1229.69	57.00
						870.53	1224.71	50.00
cJefferson						1129.58	1704.55	58.00
						1125.87	1229.69	57.00
						1130.51	1081.30	56.00
						1179.66	957.02	55.00
						1328.36	733.24	54.00
						1037.14	531.06	47.00
cJefferson						1061.32	496.65	47.00
						1359.45	690.99	54.00
						1497.84	496.65	55.00
						1697.33	187.48	54.00
cJefferson						1752.98	230.88	54.00
						1540.97	537.11	55.00
						1388.19	747.16	54.00
						1226.24	987.50	55.00
						1187.75	1087.20	56.00
						1191.71	1231.52	57.00
						1189.85	1702.68	58.00
cI5						2421.72	1736.90	83.00
						2638.88	1249.56	86.00
						2750.48	996.56	90.00
						3156.73	59.78	92.00
cI5						2571.98	1786.98	83.00
						2789.14	1299.65	86.00
						2900.74	1046.65	90.00
						3306.99	109.86	92.00
cPad				55.00		1336.48	888.93	55.00
						1485.38	887.45	55.00
						1514.09	844.76	55.00
						1403.29	770.03	55.00
						1334.83	871.63	55.00
						1336.48	888.93	55.00

Height Points

Name	M.	ID	Coordinates		
			X	Y	Z
			(ft)	(ft)	(ft)
h55			842.00	1682.32	55.00
h60			1979.17	839.17	60.00
h65			2251.84	1006.11	65.00
h62			2190.63	531.25	62.00
h70			2539.35	776.10	70.00
h63			2478.14	143.58	63.00
h71			2867.67	399.56	71.00
h74			3201.55	638.84	74.00
h75			2390.96	1677.58	75.00

Eilar Associates, Inc.
210 South Juniper Street, Suite 100
Escondido, California 92025-4230
Phone: (760) 738-5570
Date: 04 Dec 2020

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	1000.00
Min. Length of Section (#(Unit,LEN))	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	6.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	0
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.35
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (TNM)	
Railways (Schall 03 (1990))	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	
Strictly acc. to AzB	

Roads

Name	M.	ID	Lme			Count Data		exact Count Data						Speed Limit		SCS	Surface		Gradient	Mult. Reflection		
			Day	Evening	Night	DTV	Str.class.	M			p (%)			Auto	Truck	Dist.	Dstro	Type		Drefl	Hbuild	Dist.
			(dBA)	(dBA)	(dBA)			Day	Evening	Night	Day	Evening	Night	(mph)	(mph)		(dB)		(%)	(dB)	(ft)	(ft)
Jefferson Street			63.6	0.0	0.0			800.0	0.0	0.0	2.0	0.0	0.0	35		3.66	0.0	1	0.0	0.0		
Arbuckle Place			57.0	0.0	0.0			193.0	0.0	0.0	1.0	0.0	0.0	25		3.66	0.0	1	0.0	0.0		
Interstate 5 SB			79.6	0.0	0.0			9784.0	0.0	0.0	4.8	0.0	0.0	65		11.28	0.0	1	0.0	0.0		
Interstate 5 SB			79.6	0.0	0.0			9784.0	0.0	0.0	4.8	0.0	0.0	65		11.28	0.0	1	0.0	0.0		

Geometry - Roads

Name	Height				Coordinates				Dist	LSlope
	Begin		End		x	y	z	Ground	(ft)	(%)
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)		
Jefferson Street	0.00	r			1727.02	213.65	54.01	54.01		
					1517.84	517.49	54.99	54.99		
					1370.31	729.59	54.00	54.00		
					1302.82	830.09	54.37	54.37		
					1256.95	896.99	54.66	54.66		
					1204.37	975.00	55.01	55.01		
					1177.78	1027.58	55.55	55.55		
					1166.97	1064.40	55.84	55.84		
					1160.25	1105.88	56.14	56.14		
					1158.20	1231.22	57.00	57.00		
					1159.96	1685.81	57.96	57.96		
Arbuckle Place	0.00	r			1370.31	729.59	54.00	54.00		
					1073.95	527.84	47.56	47.56		
Interstate 5 SB	0.00	r			3185.25	57.88	86.44	86.44		
					3000.09	489.67	91.10	91.10		
					2843.49	856.63	90.32	90.32		
					2673.28	1256.41	86.06	86.06		
					2467.60	1739.07	83.07	83.07		
Interstate 5 SB	0.00	r			3268.44	87.33	87.27	87.27		
					3083.28	519.11	91.10	91.10		
					2926.68	886.07	90.32	90.32		
					2756.47	1285.86	86.04	86.04		
					2550.79	1768.52	83.06	83.06		

Buildings

Name	M.	ID	RB	Residents	Absorption	Height
						Begin
						(ft)
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		
off-site building				0		

Geometry - Buildings

Name	M.	ID	RB	Residents	Absorption	Height	Coordinates			
						Begin	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)
off-site building				0			1529.08	1043.63	77.00	50.00
							1469.81	1041.79	77.00	50.00
							1471.29	1111.36	77.00	50.00
							1530.55	1111.73	77.00	50.00
off-site building				0			1531.66	976.26	77.00	50.00
							1464.29	975.16	77.00	50.00
							1465.76	1027.06	77.00	50.00
							1532.76	1027.06	77.00	50.00
off-site building				0			1608.23	980.68	77.00	50.00
							1555.22	979.58	77.00	50.00
							1556.69	1049.15	77.00	50.00
							1608.96	1050.62	77.00	50.00
off-site building				0			1688.11	966.69	77.00	50.00
							1651.30	966.69	77.00	50.00
							1650.93	1138.60	77.00	50.00
							1687.74	1138.23	77.00	50.00
off-site building				0			1754.37	1056.88	78.00	50.00
							1723.08	1057.25	78.00	50.00
							1724.55	1150.38	78.00	50.00

Name	M.	ID	RB	Residents	Absorption	Height	Coordinates			
						Begin	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)
							1755.11	1150.01	78.00	50.00
off-site building				0			1829.10	1119.09	78.00	50.00
							1797.07	1118.36	78.00	50.00
							1798.18	1194.19	78.00	50.00
							1828.73	1193.82	78.00	50.00
off-site building				0			1829.84	1002.77	78.00	50.00
							1797.81	1002.03	78.00	50.00
							1798.91	1077.86	78.00	50.00
							1829.47	1077.49	78.00	50.00
off-site building				0			1796.99	961.62	78.00	50.00
							1723.91	961.11	78.00	50.00
							1723.39	989.64	78.00	50.00
							1797.08	989.73	78.00	50.00
off-site building				0			1774.26	1014.95	78.00	50.00
							1723.45	1014.91	78.00	50.00
							1723.16	1042.51	78.00	50.00
							1774.36	1043.07	78.00	50.00
off-site building				0			1775.36	1165.88	78.00	50.00
							1724.55	1165.84	78.00	50.00
							1724.27	1193.44	78.00	50.00
							1775.46	1194.00	78.00	50.00
off-site building				0			1908.73	1125.83	80.00	50.00
							1858.24	1125.09	80.00	50.00
							1859.68	1165.10	80.00	50.00
							1908.35	1165.74	80.00	50.00
off-site building				0			1908.36	1081.65	80.00	50.00
							1857.88	1080.91	80.00	50.00
							1859.32	1120.93	80.00	50.00
							1907.98	1121.56	80.00	50.00
off-site building				0			1909.10	1033.43	80.00	50.00
							1858.61	1032.69	80.00	50.00
							1860.05	1072.70	80.00	50.00
							1908.71	1073.34	80.00	50.00
off-site building				0			1907.25	951.33	80.00	50.00
							1861.56	951.15	80.00	50.00
							1860.79	1029.08	80.00	50.00
							1907.79	1029.35	80.00	50.00
off-site building				0			1908.91	907.16	80.00	50.00
							1858.43	906.42	80.00	50.00
							1859.87	946.44	80.00	50.00
							1908.53	947.07	80.00	50.00
off-site building				0			1904.52	1169.31	80.00	50.00
							1862.96	1169.03	80.00	50.00
							1862.67	1194.44	80.00	50.00
							1904.83	1194.72	80.00	50.00
off-site building				0			1603.60	802.51	76.00	50.00

Name	M.	ID	RB	Residents	Absorption	Height	Coordinates			
						Begin	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)
							1613.45	789.32	76.00	50.00
							1638.21	804.35	76.00	50.00
							1614.28	837.48	76.00	50.00
							1553.54	795.52	76.00	50.00
							1642.26	661.52	76.00	50.00
							1705.94	703.12	76.00	50.00
							1682.75	739.56	76.00	50.00
							1661.03	725.20	76.00	50.00
							1671.34	710.11	76.00	50.00
							1654.41	697.96	76.00	50.00
							1589.61	791.83	76.00	50.00
off-site building				0			1653.71	844.18	90.00	50.00
							1732.56	723.12	90.00	50.00
							1763.64	743.76	90.00	50.00
							1682.47	865.05	90.00	50.00
off-site building				0			1719.58	856.94	90.00	50.00
							1780.80	754.43	90.00	50.00
							1806.54	771.13	90.00	50.00
							1740.22	870.62	90.00	50.00

Terrain Contours

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(ft)	(ft)	(ft)	(ft)	(ft)
cLaguna						2544.38	1245.79	80.00
						2320.03	1244.62	70.00
						1822.24	1238.78	60.00
						1191.71	1231.52	57.00
						1125.87	1229.69	57.00
						870.53	1224.71	50.00
cJefferson						1129.58	1704.55	58.00
						1125.87	1229.69	57.00
						1130.51	1081.30	56.00
						1179.66	957.02	55.00
						1328.36	733.24	54.00
						1037.14	531.06	47.00
cJefferson						1061.32	496.65	47.00
						1359.45	690.99	54.00
						1497.84	496.65	55.00
						1697.33	187.48	54.00
cJefferson						1752.98	230.88	54.00
						1540.97	537.11	55.00
						1388.19	747.16	54.00
						1226.24	987.50	55.00
						1187.75	1087.20	56.00
						1191.71	1231.52	57.00
						1189.85	1702.68	58.00
cI5						2421.72	1736.90	83.00
						2638.88	1249.56	86.00
						2750.48	996.56	90.00
						3156.73	59.78	92.00
cI5						2571.98	1786.98	83.00
						2789.14	1299.65	86.00
						2900.74	1046.65	90.00
						3306.99	109.86	92.00
cPad				55.00		1336.48	888.93	55.00
						1485.38	887.45	55.00
						1514.09	844.76	55.00
						1403.29	770.03	55.00
						1334.83	871.63	55.00
						1336.48	888.93	55.00

Height Points

Name	M.	ID	Coordinates		
			X	Y	Z
			(ft)	(ft)	(ft)
h55			842.00	1682.32	55.00
h60			1979.17	839.17	60.00
h65			2251.84	1006.11	65.00
h62			2190.63	531.25	62.00
h70			2539.35	776.10	70.00
h63			2478.14	143.58	63.00
h71			2867.67	399.56	71.00
h74			3201.55	638.84	74.00
h75			2390.96	1677.58	75.00

Eilar Associates, Inc.
210 South Juniper Street, Suite 100
Escondido, California 92025-4230
Phone: (760) 738-5570
Date: 07 Dec 2020

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	1000.00
Min. Length of Section (#(Unit,LEN))	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	6.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	0
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.35
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (TNM)	
Railways (Schall 03 (1990))	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	
Strictly acc. to AzB	

Receivers

Name	M.	ID	Level Lr		Limit. Value		Land Use			Height		Coordinates		
			Day	Night	Day	Night	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
OU1			59.6	-71.9	65.0	0.0				15.00	r	1356.69	878.82	70.00
OU2			59.3	-71.2	65.0	0.0				15.00	r	1385.51	843.50	70.00
OU3			54.8	-75.2	65.0	0.0				15.00	r	1414.65	878.35	70.00
OU4			57.1	-72.4	65.0	0.0				15.00	r	1411.95	852.12	70.00
OU5			55.0	-75.2	65.0	0.0				15.00	r	1432.59	878.17	70.00
OU6			54.3	-75.7	65.0	0.0				15.00	r	1462.61	877.59	70.00
OU7			52.8	-77.0	65.0	0.0				15.00	r	1470.36	873.61	70.00
OU8			55.3	-74.9	65.0	0.0				15.00	r	1439.34	848.21	70.00
OU9			56.2	-74.0	65.0	0.0				15.00	r	1445.51	839.38	70.00
OU10			51.2	-77.4	65.0	0.0				15.00	r	1479.01	860.73	70.00
OU11			58.2	-71.7	65.0	0.0				15.00	r	1455.72	822.44	70.00

Roads

Name	M.	ID	Lme			Count Data		exact Count Data						Speed Limit		SCS	Surface		Gradient	Mult. Reflection		
			Day	Evening	Night	DTV	Str.class.	M			p (%)			Auto	Truck	Dist.	Dstro	Type		Drefl	Hbuild	Dist.
			(dBA)	(dBA)	(dBA)			Day	Evening	Night	Day	Evening	Night	(mph)	(mph)		(dB)		(%)	(dB)	(ft)	(ft)
Jefferson Street			63.6	0.0	0.0			800.0	0.0	0.0	2.0	0.0	0.0	35		3.66	0.0	1	0.0	0.0		
Arbuckle Place			57.0	0.0	0.0			193.0	0.0	0.0	1.0	0.0	0.0	25		3.66	0.0	1	0.0	0.0		
Interstate 5 SB			79.6	0.0	0.0			9784.0	0.0	0.0	4.8	0.0	0.0	65		11.28	0.0	1	0.0	0.0		
Interstate 5 SB			79.6	0.0	0.0			9784.0	0.0	0.0	4.8	0.0	0.0	65		11.28	0.0	1	0.0	0.0		

Geometry - Roads

Name	Height				Coordinates				Dist	LSlope
	Begin		End		x	y	z	Ground	(ft)	(%)
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)		
Jefferson Street	0.00	r			1727.02	213.65	54.01	54.01		
					1517.84	517.49	54.99	54.99		
					1370.31	729.59	54.00	54.00		
					1302.82	830.09	54.37	54.37		
					1256.95	896.99	54.66	54.66		
					1204.37	975.00	55.01	55.01		
					1177.78	1027.58	55.55	55.55		
					1166.97	1064.40	55.84	55.84		
					1160.25	1105.88	56.14	56.14		
					1158.20	1231.22	57.00	57.00		
					1159.96	1685.81	57.96	57.96		
Arbuckle Place	0.00	r			1370.31	729.59	54.00	54.00		
					1073.95	527.84	47.56	47.56		
Interstate 5 SB	0.00	r			3185.25	57.88	86.44	86.44		
					3000.09	489.67	91.10	91.10		
					2843.49	856.63	90.32	90.32		
					2673.28	1256.41	86.06	86.06		
					2467.60	1739.07	83.07	83.07		
Interstate 5 SB	0.00	r			3268.44	87.33	87.27	87.27		
					3083.28	519.11	91.10	91.10		
					2926.68	886.07	90.32	90.32		
					2756.47	1285.86	86.04	86.04		
					2550.79	1768.52	83.06	83.06		

Buildings

Name	M.	ID	RB	Residents	Absorption	Height	
						Begin	
						(ft)	
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
Residential Floor 1				0		10.00	r
Commercial Floor 1				0		10.00	r
Residential Floor 2				0			
Commercial Floor 2				0			

Geometry - Buildings

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
off-site building				0				1529.08	1043.63	77.00	50.00
								1469.81	1041.79	77.00	50.00
								1471.29	1111.36	77.00	50.00
								1530.55	1111.73	77.00	50.00
off-site building				0				1531.66	976.26	77.00	50.00
								1464.29	975.16	77.00	50.00
								1465.76	1027.06	77.00	50.00
								1532.76	1027.06	77.00	50.00
off-site building				0				1608.23	980.68	77.00	50.00
								1555.22	979.58	77.00	50.00
								1556.69	1049.15	77.00	50.00
								1608.96	1050.62	77.00	50.00
off-site building				0				1688.11	966.69	77.00	50.00
								1651.30	966.69	77.00	50.00
								1650.93	1138.60	77.00	50.00

Name	M.	ID	RB	Residents	Absorption	Height	Coordinates			
						Begin	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)
							1687.74	1138.23	77.00	50.00
off-site building				0			1754.37	1056.88	78.00	50.00
							1723.08	1057.25	78.00	50.00
							1724.55	1150.38	78.00	50.00
							1755.11	1150.01	78.00	50.00
off-site building				0			1829.10	1119.09	78.00	50.00
							1797.07	1118.36	78.00	50.00
							1798.18	1194.19	78.00	50.00
							1828.73	1193.82	78.00	50.00
off-site building				0			1829.84	1002.77	78.00	50.00
							1797.81	1002.03	78.00	50.00
							1798.91	1077.86	78.00	50.00
							1829.47	1077.49	78.00	50.00
off-site building				0			1796.99	961.62	78.00	50.00
							1723.91	961.11	78.00	50.00
							1723.39	989.64	78.00	50.00
							1797.08	989.73	78.00	50.00
off-site building				0			1774.26	1014.95	78.00	50.00
							1723.45	1014.91	78.00	50.00
							1723.16	1042.51	78.00	50.00
							1774.36	1043.07	78.00	50.00
off-site building				0			1775.36	1165.88	78.00	50.00
							1724.55	1165.84	78.00	50.00
							1724.27	1193.44	78.00	50.00
							1775.46	1194.00	78.00	50.00
off-site building				0			1908.73	1125.83	80.00	50.00
							1858.24	1125.09	80.00	50.00
							1859.68	1165.10	80.00	50.00
							1908.35	1165.74	80.00	50.00
off-site building				0			1908.36	1081.65	80.00	50.00
							1857.88	1080.91	80.00	50.00
							1859.32	1120.93	80.00	50.00
							1907.98	1121.56	80.00	50.00
off-site building				0			1909.10	1033.43	80.00	50.00
							1858.61	1032.69	80.00	50.00
							1860.05	1072.70	80.00	50.00
							1908.71	1073.34	80.00	50.00
off-site building				0			1907.25	951.33	80.00	50.00
							1861.56	951.15	80.00	50.00
							1860.79	1029.08	80.00	50.00
							1907.79	1029.35	80.00	50.00
off-site building				0			1908.91	907.16	80.00	50.00
							1858.43	906.42	80.00	50.00
							1859.87	946.44	80.00	50.00
							1908.53	947.07	80.00	50.00
off-site building				0			1904.52	1169.31	80.00	50.00

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
								1862.96	1169.03	80.00	50.00
								1862.67	1194.44	80.00	50.00
								1904.83	1194.72	80.00	50.00
off-site building				0				1603.60	802.51	76.00	50.00
								1613.45	789.32	76.00	50.00
								1638.21	804.35	76.00	50.00
								1614.28	837.48	76.00	50.00
								1553.54	795.52	76.00	50.00
								1642.26	661.52	76.00	50.00
								1705.94	703.12	76.00	50.00
								1682.75	739.56	76.00	50.00
								1661.03	725.20	76.00	50.00
								1671.34	710.11	76.00	50.00
								1654.41	697.96	76.00	50.00
								1589.61	791.83	76.00	50.00
off-site building				0				1653.71	844.18	90.00	50.00
								1732.56	723.12	90.00	50.00
								1763.64	743.76	90.00	50.00
								1682.47	865.05	90.00	50.00
off-site building				0				1719.58	856.94	90.00	50.00
								1780.80	754.43	90.00	50.00
								1806.54	771.13	90.00	50.00
								1740.22	870.62	90.00	50.00
Residential Floor 1				0		10.00	r	1371.80	838.25	65.00	55.00
								1348.94	872.07	65.00	55.00
								1348.98	877.22	65.00	55.00
								1466.86	875.94	65.00	55.00
								1489.77	841.94	65.00	55.00
								1460.10	821.93	65.00	55.00
								1448.14	839.64	65.00	55.00
								1463.04	849.67	65.00	55.00
								1457.04	858.65	65.00	55.00
								1452.06	855.21	65.00	55.00
								1449.30	859.00	65.00	55.00
								1444.38	859.09	65.00	55.00
								1444.38	855.00	65.00	55.00
								1402.37	855.21	65.00	55.00
								1402.30	859.26	65.00	55.00
								1396.07	859.28	65.00	55.00
								1389.09	869.43	65.00	55.00
								1380.44	863.66	65.00	55.00
								1389.53	850.04	65.00	55.00
Commercial Floor 1				0		10.00	r	1387.78	814.67	65.00	55.00
								1392.23	808.02	65.00	55.00
								1402.46	792.78	65.00	55.00
								1406.96	786.03	65.00	55.00

Name	M.	ID	RB	Residents	Absorption	Height	Coordinates			
						Begin	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)
							1425.34	798.32	65.00	55.00
							1420.66	805.28	65.00	55.00
							1410.42	820.52	65.00	55.00
							1406.09	826.95	65.00	55.00
Residential Floor 2				0			1390.03	848.48	75.00	65.00
							1392.06	845.72	75.00	65.00
							1398.84	850.37	75.00	65.00
							1406.97	850.29	75.00	65.00
							1406.96	853.89	75.00	65.00
							1417.18	853.80	75.00	65.00
							1417.22	850.34	75.00	65.00
							1435.24	850.03	75.00	65.00
							1439.33	852.99	75.00	65.00
							1443.44	846.56	75.00	65.00
							1439.52	843.98	75.00	65.00
							1440.08	843.11	75.00	65.00
							1444.15	845.79	75.00	65.00
							1448.14	839.64	75.00	65.00
							1451.21	835.08	75.00	65.00
							1446.90	832.29	75.00	65.00
							1450.26	827.54	75.00	65.00
							1453.07	829.46	75.00	65.00
							1460.41	818.60	75.00	65.00
							1476.21	829.30	75.00	65.00
							1474.57	831.69	75.00	65.00
							1489.77	841.94	75.00	65.00
							1466.86	875.94	75.00	65.00
							1444.61	876.18	75.00	65.00
							1444.59	878.70	75.00	65.00
							1438.56	878.81	75.00	65.00
							1438.55	876.25	75.00	65.00
							1408.61	876.57	75.00	65.00
							1408.60	879.21	75.00	65.00
							1402.55	879.19	75.00	65.00
							1402.55	876.64	75.00	65.00
							1348.98	877.22	75.00	65.00
							1346.11	877.20	75.00	65.00
							1346.03	870.99	75.00	65.00
							1372.12	832.39	75.00	65.00
							1380.96	838.21	75.00	65.00
							1379.02	841.06	75.00	65.00
Commercial Floor 2				0			1392.23	808.02	75.00	65.00
							1410.42	820.52	75.00	65.00
							1420.66	805.28	75.00	65.00
							1402.46	792.78	75.00	65.00

Terrain Contours

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(ft)	(ft)	(ft)	(ft)	(ft)
cLaguna						2544.38	1245.79	80.00
						2320.03	1244.62	70.00
						1822.24	1238.78	60.00
						1191.71	1231.52	57.00
						1125.87	1229.69	57.00
						870.53	1224.71	50.00
cJefferson						1129.58	1704.55	58.00
						1125.87	1229.69	57.00
						1130.51	1081.30	56.00
						1179.66	957.02	55.00
						1328.36	733.24	54.00
						1037.14	531.06	47.00
cJefferson						1061.32	496.65	47.00
						1359.45	690.99	54.00
						1497.84	496.65	55.00
						1697.33	187.48	54.00
cJefferson						1752.98	230.88	54.00
						1540.97	537.11	55.00
						1388.19	747.16	54.00
						1226.24	987.50	55.00
						1187.75	1087.20	56.00
						1191.71	1231.52	57.00
						1189.85	1702.68	58.00
cI5						2421.72	1736.90	83.00
						2638.88	1249.56	86.00
						2750.48	996.56	90.00
						3156.73	59.78	92.00
cI5						2571.98	1786.98	83.00
						2789.14	1299.65	86.00
						2900.74	1046.65	90.00
						3306.99	109.86	92.00
cPad				55.00		1336.48	888.93	55.00
						1485.38	887.45	55.00
						1514.09	844.76	55.00
						1403.29	770.03	55.00
						1334.83	871.63	55.00
						1336.48	888.93	55.00

Height Points

Name	M.	ID	Coordinates		
			X	Y	Z
			(ft)	(ft)	(ft)
h55			842.00	1682.32	55.00
h60			1979.17	839.17	60.00
h65			2251.84	1006.11	65.00
h62			2190.63	531.25	62.00
h70			2539.35	776.10	70.00
h63			2478.14	143.58	63.00
h71			2867.67	399.56	71.00
h74			3201.55	638.84	74.00
h75			2390.96	1677.58	75.00

Eilar Associates, Inc.
210 South Juniper Street, Suite 100
Escondido, California 92025-4230
Phone: (760) 738-5570
Date: 07 Dec 2020

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	1000.00
Min. Length of Section (#(Unit,LEN))	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	6.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	0
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.35
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (TNM)	
Railways (Schall 03 (1990))	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	
Strictly acc. to AzB	

Receivers

Name	M.	ID	Level Lr		Limit. Value		Land Use			Height		Coordinates		
			Day	Night	Day	Night	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
1-F1			64.6	-66.5	0.0	0.0		x	Total	5.00	r	1353.78	854.01	60.00
1-F2			57.8	-72.7	0.0	0.0		x	Total	5.00	r	1363.68	879.62	60.00
1-F3			54.2	-75.1	0.0	0.0		x	Total	5.00	r	1413.64	878.99	60.00
1-F4			53.5	-75.7	0.0	0.0		x	Total	5.00	r	1456.38	878.68	60.00
1-F5			49.6	-77.2	0.0	0.0		x	Total	5.00	r	1480.26	860.77	60.00
1-F6			56.2	-72.9	0.0	0.0		x	Total	5.00	r	1479.00	829.19	60.00
1-F7			55.2	-73.9	0.0	0.0		x	Total	5.00	r	1443.97	832.01	60.00
1-F8			55.3	-73.7	0.0	0.0		x	Total	5.00	r	1418.51	847.57	60.00
1-F9			59.3	-70.7	0.0	0.0		x	Total	5.00	r	1389.60	839.87	60.00
1-F10			60.5	-70.4	0.0	0.0		x	Total	5.00	r	1393.37	822.90	60.00
1-F11			64.3	-66.5	0.0	0.0		x	Total	5.00	r	1393.69	799.96	60.00
1-F12			61.1	-69.0	0.0	0.0		x	Total	5.00	r	1416.47	789.91	60.00
1-F13			45.8	-79.6	0.0	0.0		x	Total	5.00	r	1416.47	814.57	60.00
2-F1			65.3	-66.2	0.0	0.0		x	Total	15.00	r	1353.78	854.01	70.00
2-F2			59.0	-72.3	0.0	0.0		x	Total	15.00	r	1363.68	879.62	70.00
2-F3			55.7	-74.8	0.0	0.0		x	Total	15.00	r	1413.64	878.99	70.00
2-F4			54.7	-75.5	0.0	0.0		x	Total	15.00	r	1456.38	878.68	70.00
2-F5			51.3	-77.4	0.0	0.0		x	Total	15.00	r	1480.26	860.77	70.00
2-F6			57.7	-72.5	0.0	0.0		x	Total	15.00	r	1479.00	829.19	70.00
2-F7			57.1	-73.3	0.0	0.0		x	Total	15.00	r	1443.97	832.01	70.00
2-F8			57.2	-72.7	0.0	0.0		x	Total	15.00	r	1418.51	847.57	70.00
2-F9			60.8	-70.0	0.0	0.0		x	Total	15.00	r	1389.60	839.87	70.00
2-F10			62.9	-68.3	0.0	0.0		x	Total	15.00	r	1393.37	822.90	70.00
2-F11			65.1	-66.2	0.0	0.0		x	Total	15.00	r	1393.69	799.96	70.00
2-F12			63.4	-67.9	0.0	0.0		x	Total	15.00	r	1416.47	789.91	70.00
2-F13			49.2	-78.6	0.0	0.0		x	Total	15.00	r	1416.47	814.57	70.00

Roads

Name	M.	ID	Lme			Count Data		exact Count Data						Speed Limit		SCS	Surface		Gradient	Mult. Reflection		
			Day	Evening	Night	DTV	Str.class.	M			p (%)			Auto	Truck	Dist.	Dstro	Type		Drefl	Hbuild	Dist.
			(dBA)	(dBA)	(dBA)			Day	Evening	Night	Day	Evening	Night	(mph)	(mph)		(dB)		(%)	(dB)	(ft)	(ft)
Jefferson Street			63.6	0.0	0.0			800.0	0.0	0.0	2.0	0.0	0.0	35		3.66	0.0	1	0.0	0.0		
Arbuckle Place			57.0	0.0	0.0			193.0	0.0	0.0	1.0	0.0	0.0	25		3.66	0.0	1	0.0	0.0		
Interstate 5 SB			79.6	0.0	0.0			9784.0	0.0	0.0	4.8	0.0	0.0	65		11.28	0.0	1	0.0	0.0		
Interstate 5 SB			79.6	0.0	0.0			9784.0	0.0	0.0	4.8	0.0	0.0	65		11.28	0.0	1	0.0	0.0		

Geometry - Roads

Name	Height				Coordinates				Dist	LSlope
	Begin		End		x	y	z	Ground	(ft)	(%)
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)		
Jefferson Street	0.00	r			1727.02	213.65	54.01	54.01		
					1517.84	517.49	54.99	54.99		
					1370.31	729.59	54.00	54.00		
					1302.82	830.09	54.37	54.37		
					1256.95	896.99	54.66	54.66		
					1204.37	975.00	55.01	55.01		
					1177.78	1027.58	55.55	55.55		
					1166.97	1064.40	55.84	55.84		
					1160.25	1105.88	56.14	56.14		
					1158.20	1231.22	57.00	57.00		
					1159.96	1685.81	57.96	57.96		
Arbuckle Place	0.00	r			1370.31	729.59	54.00	54.00		
					1073.95	527.84	47.56	47.56		
Interstate 5 SB	0.00	r			3185.25	57.88	86.44	86.44		
					3000.09	489.67	91.10	91.10		
					2843.49	856.63	90.32	90.32		
					2673.28	1256.41	86.06	86.06		
					2467.60	1739.07	83.07	83.07		
Interstate 5 SB	0.00	r			3268.44	87.33	87.27	87.27		
					3083.28	519.11	91.10	91.10		
					2926.68	886.07	90.32	90.32		
					2756.47	1285.86	86.04	86.04		
					2550.79	1768.52	83.06	83.06		

Buildings

Name	M.	ID	RB	Residents	Absorption	Height	
						Begin	
						(ft)	
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
off-site building				0			
Residential Floor 1				0		10.00	r
Commercial Floor 1				0		10.00	r
Residential Floor 2				0			
Commercial Floor 2				0			

Geometry - Buildings

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
off-site building				0				1529.08	1043.63	77.00	50.00
								1469.81	1041.79	77.00	50.00
								1471.29	1111.36	77.00	50.00
								1530.55	1111.73	77.00	50.00
off-site building				0				1531.66	976.26	77.00	50.00
								1464.29	975.16	77.00	50.00
								1465.76	1027.06	77.00	50.00
								1532.76	1027.06	77.00	50.00
off-site building				0				1608.23	980.68	77.00	50.00
								1555.22	979.58	77.00	50.00
								1556.69	1049.15	77.00	50.00
								1608.96	1050.62	77.00	50.00
off-site building				0				1688.11	966.69	77.00	50.00
								1651.30	966.69	77.00	50.00
								1650.93	1138.60	77.00	50.00

Name	M.	ID	RB	Residents	Absorption	Height	Coordinates			
						Begin	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)
							1687.74	1138.23	77.00	50.00
off-site building				0			1754.37	1056.88	78.00	50.00
							1723.08	1057.25	78.00	50.00
							1724.55	1150.38	78.00	50.00
							1755.11	1150.01	78.00	50.00
off-site building				0			1829.10	1119.09	78.00	50.00
							1797.07	1118.36	78.00	50.00
							1798.18	1194.19	78.00	50.00
							1828.73	1193.82	78.00	50.00
off-site building				0			1829.84	1002.77	78.00	50.00
							1797.81	1002.03	78.00	50.00
							1798.91	1077.86	78.00	50.00
							1829.47	1077.49	78.00	50.00
off-site building				0			1796.99	961.62	78.00	50.00
							1723.91	961.11	78.00	50.00
							1723.39	989.64	78.00	50.00
							1797.08	989.73	78.00	50.00
off-site building				0			1774.26	1014.95	78.00	50.00
							1723.45	1014.91	78.00	50.00
							1723.16	1042.51	78.00	50.00
							1774.36	1043.07	78.00	50.00
off-site building				0			1775.36	1165.88	78.00	50.00
							1724.55	1165.84	78.00	50.00
							1724.27	1193.44	78.00	50.00
							1775.46	1194.00	78.00	50.00
off-site building				0			1908.73	1125.83	80.00	50.00
							1858.24	1125.09	80.00	50.00
							1859.68	1165.10	80.00	50.00
							1908.35	1165.74	80.00	50.00
off-site building				0			1908.36	1081.65	80.00	50.00
							1857.88	1080.91	80.00	50.00
							1859.32	1120.93	80.00	50.00
							1907.98	1121.56	80.00	50.00
off-site building				0			1909.10	1033.43	80.00	50.00
							1858.61	1032.69	80.00	50.00
							1860.05	1072.70	80.00	50.00
							1908.71	1073.34	80.00	50.00
off-site building				0			1907.25	951.33	80.00	50.00
							1861.56	951.15	80.00	50.00
							1860.79	1029.08	80.00	50.00
							1907.79	1029.35	80.00	50.00
off-site building				0			1908.91	907.16	80.00	50.00
							1858.43	906.42	80.00	50.00
							1859.87	946.44	80.00	50.00
							1908.53	947.07	80.00	50.00
off-site building				0			1904.52	1169.31	80.00	50.00

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
								1862.96	1169.03	80.00	50.00
								1862.67	1194.44	80.00	50.00
								1904.83	1194.72	80.00	50.00
off-site building				0				1603.60	802.51	76.00	50.00
								1613.45	789.32	76.00	50.00
								1638.21	804.35	76.00	50.00
								1614.28	837.48	76.00	50.00
								1553.54	795.52	76.00	50.00
								1642.26	661.52	76.00	50.00
								1705.94	703.12	76.00	50.00
								1682.75	739.56	76.00	50.00
								1661.03	725.20	76.00	50.00
								1671.34	710.11	76.00	50.00
								1654.41	697.96	76.00	50.00
								1589.61	791.83	76.00	50.00
off-site building				0				1653.71	844.18	90.00	50.00
								1732.56	723.12	90.00	50.00
								1763.64	743.76	90.00	50.00
								1682.47	865.05	90.00	50.00
off-site building				0				1719.58	856.94	90.00	50.00
								1780.80	754.43	90.00	50.00
								1806.54	771.13	90.00	50.00
								1740.22	870.62	90.00	50.00
Residential Floor 1				0		10.00	r	1371.80	838.25	65.00	55.00
								1348.94	872.07	65.00	55.00
								1348.98	877.22	65.00	55.00
								1466.86	875.94	65.00	55.00
								1489.77	841.94	65.00	55.00
								1460.10	821.93	65.00	55.00
								1448.14	839.64	65.00	55.00
								1463.04	849.67	65.00	55.00
								1457.04	858.65	65.00	55.00
								1452.06	855.21	65.00	55.00
								1449.30	859.00	65.00	55.00
								1444.38	859.09	65.00	55.00
								1444.38	855.00	65.00	55.00
								1402.37	855.21	65.00	55.00
								1402.30	859.26	65.00	55.00
								1396.07	859.28	65.00	55.00
								1389.09	869.43	65.00	55.00
								1380.44	863.66	65.00	55.00
								1389.53	850.04	65.00	55.00
Commercial Floor 1				0		10.00	r	1387.78	814.67	65.00	55.00
								1392.23	808.02	65.00	55.00
								1402.46	792.78	65.00	55.00
								1406.96	786.03	65.00	55.00

Name	M.	ID	RB	Residents	Absorption	Height	Coordinates			
						Begin	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)
							1425.34	798.32	65.00	55.00
							1420.66	805.28	65.00	55.00
							1410.42	820.52	65.00	55.00
							1406.09	826.95	65.00	55.00
Residential Floor 2				0			1390.03	848.48	75.00	65.00
							1392.06	845.72	75.00	65.00
							1398.84	850.37	75.00	65.00
							1406.97	850.29	75.00	65.00
							1406.96	853.89	75.00	65.00
							1417.18	853.80	75.00	65.00
							1417.22	850.34	75.00	65.00
							1435.24	850.03	75.00	65.00
							1439.33	852.99	75.00	65.00
							1443.44	846.56	75.00	65.00
							1439.52	843.98	75.00	65.00
							1440.08	843.11	75.00	65.00
							1444.15	845.79	75.00	65.00
							1448.14	839.64	75.00	65.00
							1451.21	835.08	75.00	65.00
							1446.90	832.29	75.00	65.00
							1450.26	827.54	75.00	65.00
							1453.07	829.46	75.00	65.00
							1460.41	818.60	75.00	65.00
							1476.21	829.30	75.00	65.00
							1474.57	831.69	75.00	65.00
							1489.77	841.94	75.00	65.00
							1466.86	875.94	75.00	65.00
							1444.61	876.18	75.00	65.00
							1444.59	878.70	75.00	65.00
							1438.56	878.81	75.00	65.00
							1438.55	876.25	75.00	65.00
							1408.61	876.57	75.00	65.00
							1408.60	879.21	75.00	65.00
							1402.55	879.19	75.00	65.00
							1402.55	876.64	75.00	65.00
							1348.98	877.22	75.00	65.00
							1346.11	877.20	75.00	65.00
							1346.03	870.99	75.00	65.00
							1372.12	832.39	75.00	65.00
							1380.96	838.21	75.00	65.00
							1379.02	841.06	75.00	65.00
Commercial Floor 2				0			1392.23	808.02	75.00	65.00
							1410.42	820.52	75.00	65.00
							1420.66	805.28	75.00	65.00
							1402.46	792.78	75.00	65.00

Terrain Contours

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(ft)	(ft)	(ft)	(ft)	(ft)
cLaguna						2544.38	1245.79	80.00
						2320.03	1244.62	70.00
						1822.24	1238.78	60.00
						1191.71	1231.52	57.00
						1125.87	1229.69	57.00
						870.53	1224.71	50.00
cJefferson						1129.58	1704.55	58.00
						1125.87	1229.69	57.00
						1130.51	1081.30	56.00
						1179.66	957.02	55.00
						1328.36	733.24	54.00
						1037.14	531.06	47.00
cJefferson						1061.32	496.65	47.00
						1359.45	690.99	54.00
						1497.84	496.65	55.00
						1697.33	187.48	54.00
cJefferson						1752.98	230.88	54.00
						1540.97	537.11	55.00
						1388.19	747.16	54.00
						1226.24	987.50	55.00
						1187.75	1087.20	56.00
						1191.71	1231.52	57.00
						1189.85	1702.68	58.00
cI5						2421.72	1736.90	83.00
						2638.88	1249.56	86.00
						2750.48	996.56	90.00
						3156.73	59.78	92.00
cI5						2571.98	1786.98	83.00
						2789.14	1299.65	86.00
						2900.74	1046.65	90.00
						3306.99	109.86	92.00
cPad				55.00		1336.48	888.93	55.00
						1485.38	887.45	55.00
						1514.09	844.76	55.00
						1403.29	770.03	55.00
						1334.83	871.63	55.00
						1336.48	888.93	55.00

Height Points

Name	M.	ID	Coordinates		
			X	Y	Z
			(ft)	(ft)	(ft)
h55			842.00	1682.32	55.00
h60			1979.17	839.17	60.00
h65			2251.84	1006.11	65.00
h62			2190.63	531.25	62.00
h70			2539.35	776.10	70.00
h63			2478.14	143.58	63.00
h71			2867.67	399.56	71.00
h74			3201.55	638.84	74.00
h75			2390.96	1677.58	75.00

Eilar Associates, Inc.
Acoustical and Environmental Consulting Services

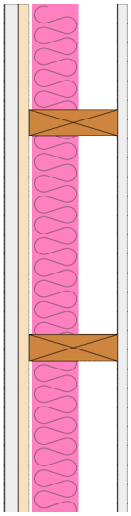
Appendix D

Sound Insulation Prediction Results

Sound Insulation Prediction (v9.0.20)

Margin of error is generally within STC ±3 dB
- Key No. 1866
Job Name:
Job No.: Initials:mouwenga
Date:8/26/2020
File Name:

Notes:



STC 38
OITC 30

Mass-air-mass resonant frequency = =45 Hz

Panel Size = 8.9 ft x 13.1 ft

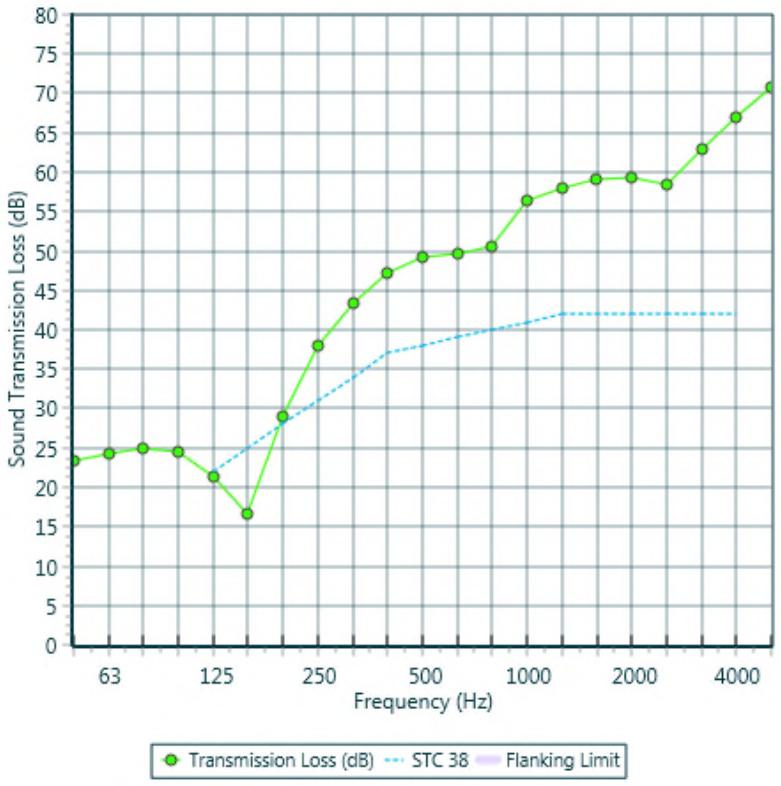
Partition surface mass = 14.4 lb/ft2

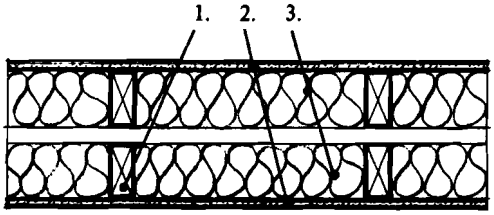
System description

Panel 1 : 1 x 0.87 in -Coat Plaster (sand:gypsum =3:1) + 1 x 0.6902 in Plywood

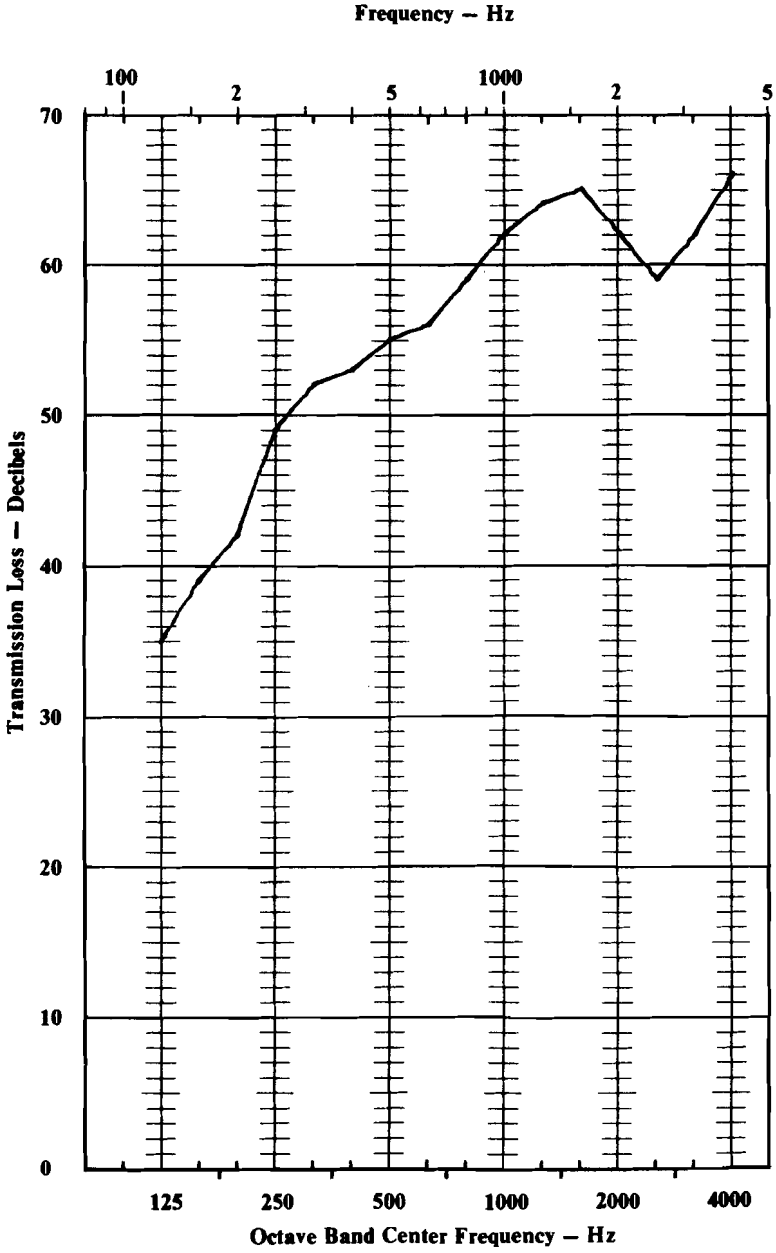
Frame: Timber stud (5.7 in x 1.8 in), Stud spacing 16 in ; Cavity Width 5.67 in , 1 x fiberglass (0.6 lb/ft3) Thickness 3.0 in
Panel 2 : 1 x 0.6299 in Type X Gypsum Board

freq.(Hz)	TL(dB)	TL(dB)
50	23	
63	24	24
80	25	
100	25	
125	21	20
160	17	
200	29	
250	38	33
315	43	
400	47	
500	49	49
630	50	
800	51	
1000	56	54
1250	58	
1600	59	
2000	59	59
2500	58	
3150	63	
4000	67	66
5000	71	



Sketch	Brief Description	D_n	Laboratory Test Number Year Frequencies Tested Source of Data	STC	Section Number
	1. double row of 2x4 studs 16"o.c. on separate plates spaced 1" apart. 2. 5/8" type X gypsum board attached with screws 16"o.c. 3. 3 1/2" thick sound attenuation blankets in both stud cavities.	*54*	Riverbank Acoustical Labs. TL75-83 1975 16f U.S. Dept. of Agriculture	57	1.2.4.1.5.4

125 HZ	35
160 HZ	39
200 HZ	42
250 HZ	49
315 HZ	52
400 HZ	53
500 HZ	55
630 HZ	56
800 HZ	59
1000 HZ	62
1250 HZ	64
1600 HZ	65
2000 HZ	62
2500 HZ	59
3150 HZ	62
4000 HZ	66



Eilar Associates, Inc.
Acoustical and Environmental Consulting Services

Appendix E

Exterior-to-Interior Noise Analysis

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Townhouse Duplexes and Professional Office Mixed Use **Wall 1 of 2**
Project #: S201109
Room Name: Living / Kitchen / Dining

Room Type : **Medium Soft**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.6	0.6	0.6	0.6	0.5	0.5	: Moderately Absorptive Room
Room Absorption (Sabins) :	365	365	365	365	437	437	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**59.0**	**CNEL**	42.3	47.8	50.3	54.3	54.3	48.3	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**59.0**	**CNEL**	42.3	47.8	50.3	54.3	54.3	48.3	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 38 Typical Exterior Wall	N	31	9	1	208.0	20	33	49	54	59	66
Window, Insulated Dual-Glazed (STC 25)	N	4	7	1	28.0	14	21	24	22	30	29
Window, Insulated Dual-Glazed (STC 25)	Y	4	7	1	28.0	14	21	24	22	30	29
Window, Insulated Dual-Glazed (STC 25)	N	3	2.5	1	7.5	14	21	24	22	30	29
Window, Insulated Dual-Glazed (STC 25)	Y	3	2.5	1	7.5	14	21	24	22	30	29
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **16** ft **Overall Area:** **279** ft²
Volume: **4464** ft³
Number of Impacted Walls: **2**

Windows Open		
Interior Noise Level:	**51.6**	**CNEL**
Windows Closed		
Interior Noise Level:	**35.3**	**CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
42.3	47.8	50.3	54.3	54.3	48.3	: Exterior Wall Noise Exposure
11.0	11.8	11.9	11.9	12.0	11.9	: Transmission Loss
24.5	24.5	24.5	24.5	24.5	24.5	: Wall Surface Area Factor
25.6	25.6	25.6	25.6	26.4	26.4	: Absorption
30.1	34.8	37.2	41.3	40.4	34.4	: Noise Level
45.6	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
42.3	47.8	50.3	54.3	54.3	48.3	: Exterior Wall Noise Exposure
17.5	26.2	29.9	27.9	35.9	34.9	: Transmission Loss
24.5	24.5	24.5	24.5	24.5	24.5	: Wall Surface Area Factor
25.6	25.6	25.6	25.6	26.4	26.4	: Absorption
23.6	20.4	19.2	25.2	16.4	11.4	: Noise Level
29.1	**CNEL**	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Townhouse Duplexes and Professional Office Mixed Use **Wall 2 of 2**
Project #: S201109
Room Name: Living / Kitchen / Dining

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**65.3**	**CNEL**	48.6	54.1	56.6	60.6	60.6	54.6	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**65.3**	**CNEL**	48.6	54.1	56.6	60.6	60.6	54.6	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 38 Typical Exterior Wall	N	29	9	1	212.0	20	33	49	54	59	66
Window, Insulated Dual-Glazed (STC 25)	N	2	4	1	8.0	14	21	24	22	30	29
Window, Insulated Dual-Glazed (STC 25)	Y	2	4	1	8.0	14	21	24	22	30	29
Window, Insulated Dual-Glazed (STC 25)	N	3	4	1	12.0	14	21	24	22	30	29
Window, Insulated Dual-Glazed (STC 25)	Y	3	4	1	12.0	14	21	24	22	30	29
Window, Insulated Dual-Glazed (STC 25)	N	3	1.5	1	4.5	14	21	24	22	30	29
Window, Insulated Dual-Glazed (STC 25)	Y	3	1.5	1	4.5	14	21	24	22	30	29
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Overall Area: **261** ft²

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.6	54.1	56.6	60.6	60.6	54.6	: Exterior Wall Noise Exposure
12.2	13.1	13.2	13.2	13.3	13.3	: Transmission Loss
24.2	24.2	24.2	24.2	24.2	24.2	: Wall Surface Area Factor
25.6	25.6	25.6	25.6	26.4	26.4	: Absorption
35.0	39.5	41.9	46.0	45.1	39.1	: Noise Level
50.3	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.6	54.1	56.6	60.6	60.6	54.6	: Exterior Wall Noise Exposure
18.1	27.2	31.2	29.3	37.2	36.3	: Transmission Loss
24.2	24.2	24.2	24.2	24.2	24.2	: Wall Surface Area Factor
25.6	25.6	25.6	25.6	26.4	26.4	: Absorption
29.1	25.4	24.0	29.9	21.1	16.1	: Noise Level
34.1	**CNEL**	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Townhouse Duplexes and Professional Office Mixed Use
Project #: S201109
Room Name: Master Bedroom

Wall 1 of 1

Room Type : **Soft**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.5	0.5	0.5	0.5	0.4	0.4	: Highly Absorptive Room
Room Absorption (Sabins) :	173	173	173	173	216	216	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**60.8**	**CNEL**	44.1	49.6	52.1	56.1	56.1	50.1	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**60.8**	**CNEL**	44.1	49.6	52.1	56.1	56.1	50.1	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 38 Typical Exterior Wall	N	14	9	1	84.0	20	33	49	54	59	66
Window, Insulated Dual-Glazed (STC 25)	N	3	7	1	21.0	14	21	24	22	30	29
Window, Insulated Dual-Glazed (STC 25)	Y	3	7	1	21.0	14	21	24	22	30	29
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **14** ft **Overall Area:** **126** ft²
Volume: **1764** ft³
Number of Impacted Walls: **1**

Windows Open		
Interior Noise Level:	**48.3**	**CNEL**
Windows Closed		
Interior Noise Level:	**31.6**	**CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
44.1	49.6	52.1	56.1	56.1	50.1	: Exterior Wall Noise Exposure
10.0	10.7	10.7	10.7	10.8	10.8	: Transmission Loss
21.0	21.0	21.0	21.0	21.0	21.0	: Wall Surface Area Factor
22.4	22.4	22.4	22.4	23.3	23.3	: Absorption
32.7	37.6	40.0	44.0	43.0	37.0	: Noise Level
48.3	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
44.1	49.6	52.1	56.1	56.1	50.1	: Exterior Wall Noise Exposure
17.0	25.3	28.7	26.8	34.8	33.8	: Transmission Loss
21.0	21.0	21.0	21.0	21.0	21.0	: Wall Surface Area Factor
22.4	22.4	22.4	22.4	23.3	23.3	: Absorption
25.7	23.0	22.0	28.0	19.0	14.0	: Noise Level
31.6	**CNEL**	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Townhouse Duplexes and Professional Office Mixed Use **Wall 1 of 2**
Project #: S201109
Room Name: First-Floor Bedroom

Room Type : **Soft**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.5	0.5	0.5	0.5	0.4	0.4	: Highly Absorptive Room
Room Absorption (Sabins) :	159	159	159	159	198	198	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**64.6**	**CNEL**	47.9	53.4	55.9	59.9	59.9	53.9	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**64.6**	**CNEL**	47.9	53.4	55.9	59.9	59.9	53.9	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 38 Typical Exterior Wall	N	18	9	1	106.5	20	33	49	54	59	66
Window, Insulated Dual-Glazed (STC 25)	N	3	2.25	1	6.8	14	21	24	22	30	29
Window, Insulated Dual-Glazed (STC 25)	Y	3	2.25	1	6.8	14	21	24	22	30	29
Window, Insulated Dual-Glazed (STC 25)	N	3	7	1	21.0	14	21	24	22	30	29
Window, Insulated Dual-Glazed (STC 25)	Y	3	7	1	21.0	14	21	24	22	30	29
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **10** ft **Overall Area:** **162** ft²
Volume: **1620** ft³
Number of Impacted Walls: **2**

Windows Open		
Interior Noise Level:	**53.7**	**CNEL**
Windows Closed		
Interior Noise Level:	**37.6**	**CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
47.9	53.4	55.9	59.9	59.9	53.9	: Exterior Wall Noise Exposure
9.9	10.6	10.6	10.6	10.7	10.7	: Transmission Loss
22.1	22.1	22.1	22.1	22.1	22.1	: Wall Surface Area Factor
22.0	22.0	22.0	22.0	23.0	23.0	: Absorption
38.1	42.9	45.4	49.4	48.4	42.4	: Noise Level
53.7	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
47.9	53.4	55.9	59.9	59.9	53.9	: Exterior Wall Noise Exposure
16.9	25.2	28.6	26.6	34.6	33.7	: Transmission Loss
22.1	22.1	22.1	22.1	22.1	22.1	: Wall Surface Area Factor
22.0	22.0	22.0	22.0	23.0	23.0	: Absorption
31.1	28.3	27.4	33.3	24.4	19.4	: Noise Level
37.0	**CNEL**	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Townhouse Duplexes and Professional Office Mixed Use **Wall 2 of 2**
Project #: S201109
Room Name: First-Floor Bedroom

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**65.3**	**CNEL**	48.6	54.1	56.6	60.6	60.6	54.6	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**65.3**	**CNEL**	48.6	54.1	56.6	60.6	60.6	54.6	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 38 Typical Exterior Wall	N	15	9	1	135.0	20	33	49	54	59	66
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Overall Area: **135** ft²

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.6	54.1	56.6	60.6	60.6	54.6	: Exterior Wall Noise Exposure
20.0	33.0	49.0	54.0	59.0	66.0	: Transmission Loss
21.3	21.3	21.3	21.3	21.3	21.3	: Wall Surface Area Factor
22.0	22.0	22.0	22.0	23.0	23.0	: Absorption
27.9	20.4	6.9	5.9	-0.1	-13.1	: Noise Level
28.7	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.6	54.1	56.6	60.6	60.6	54.6	: Exterior Wall Noise Exposure
20.0	33.0	49.0	54.0	59.0	66.0	: Transmission Loss
21.3	21.3	21.3	21.3	21.3	21.3	: Wall Surface Area Factor
22.0	22.0	22.0	22.0	23.0	23.0	: Absorption
27.9	20.4	6.9	5.9	-0.1	-13.1	: Noise Level
28.7	**CNEL**	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Townhouse Duplexes and Professional Office Mixed Use **Wall 1 of 2**
Project #: S201109
Room Name: Second-Floor Bedroom

Room Type : **Soft**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.5	0.5	0.5	0.5	0.4	0.4	: Highly Absorptive Room
Room Absorption (Sabins) :	109	109	109	109	136	136	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**65.3**	**CNEL**	48.6	54.1	56.6	60.6	60.6	54.6	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**65.3**	**CNEL**	48.6	54.1	56.6	60.6	60.6	54.6	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 38 Typical Exterior Wall	N	13	9	1	93.0	20	33	49	54	59	66
Window, Insulated Dual-Glazed (STC 25)	N	3	4	1	12.0	14	21	24	22	30	29
Window, Insulated Dual-Glazed (STC 25)	Y	3	4	1	12.0	14	21	24	22	30	29
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **9.5** ft **Overall Area:** **117** ft^2
Volume: **1112** ft^3
Number of Impacted Walls: **2**

Windows Open		
Interior Noise Level:	**53.1**	**CNEL**
Windows Closed		
Interior Noise Level:	**36.9**	**CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.6	54.1	56.6	60.6	60.6	54.6	: Exterior Wall Noise Exposure
11.8	12.8	12.8	12.8	12.9	12.9	: Transmission Loss
20.7	20.7	20.7	20.7	20.7	20.7	: Wall Surface Area Factor
20.4	20.4	20.4	20.4	21.3	21.3	: Absorption
37.1	41.7	44.1	48.1	47.1	41.1	: Noise Level
52.4	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.6	54.1	56.6	60.6	60.6	54.6	: Exterior Wall Noise Exposure
17.9	26.9	30.8	28.9	36.9	35.9	: Transmission Loss
20.7	20.7	20.7	20.7	20.7	20.7	: Wall Surface Area Factor
20.4	20.4	20.4	20.4	21.3	21.3	: Absorption
31.0	27.5	26.1	32.0	23.1	18.1	: Noise Level
36.1	**CNEL**	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Townhouse Duplexes and Professional Office Mixed Use **Wall 2 of 2**
Project #: S201109
Room Name: Second-Floor Bedroom

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**60.8**	**CNEL**	44.1	49.6	52.1	56.1	56.1	50.1	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**60.8**	**CNEL**	44.1	49.6	52.1	56.1	56.1	50.1	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 38 Typical Exterior Wall	N	9.5	9	1	73.5	20	33	49	54	59	66
Window, Insulated Dual-Glazed (STC 25)	N	3	2	1	6.0	14	21	24	22	30	29
Window, Insulated Dual-Glazed (STC 25)	Y	3	2	1	6.0	14	21	24	22	30	29
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Overall Area: **85.5** ft²

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
44.1	49.6	52.1	56.1	56.1	50.1	: Exterior Wall Noise Exposure
13.2	14.4	14.5	14.5	14.5	14.5	: Transmission Loss
19.3	19.3	19.3	19.3	19.3	19.3	: Wall Surface Area Factor
20.4	20.4	20.4	20.4	21.3	21.3	: Absorption
29.9	34.2	36.6	40.6	39.6	33.6	: Noise Level
44.9	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
44.1	49.6	52.1	56.1	56.1	50.1	: Exterior Wall Noise Exposure
18.5	28.1	32.4	30.5	38.5	37.5	: Transmission Loss
19.3	19.3	19.3	19.3	19.3	19.3	: Wall Surface Area Factor
20.4	20.4	20.4	20.4	21.3	21.3	: Absorption
24.6	20.4	18.6	24.5	15.6	10.6	: Noise Level
29.0	**CNEL**	WINDOWS CLOSED				

Eilar Associates, Inc.
Acoustical and Environmental Consulting Services

Appendix F
Recommended Products

TECHNICAL DATA SHEET

Revision: August 7, 2018
Supersedes: November 13, 2015
Ref. #: 518327

DRAFT & ACOUSTICAL SOUND SEALANT

SC175

DESIGNED FOR USE ON SOUND-RATED WALL SYSTEMS

OSI SC175 Draft & Acoustical Sound Sealant is a non-flammable, latex-based sealant specially designed to reduce sound transmissions and drafts in all types of wall systems where a sound-rated assembly is required. Its primary function is to achieve and maintain the specific STC (Sound Transmission Class) value of the system designed. This paintable sealant remains flexible and adheres firmly to wood, metal studs, concrete, gypsum board and most other building materials. It is easy-to-use and cleans up easily with soap and water.

Available As:

Item #	Size	Color
1496542	28 fl oz (828 ml) cartridge	White

FEATURES & BENEFITS

- Designed for Use on Sound-Rated Wall Systems
- Reduces Draft & Sound Transmission
- Tested to UL 1479 and UL 2079 *****
- Tested to ASTM E84
- Stays Permanently Flexible
- VOC Compliant

RECOMMENDED FOR

- Developed primarily for commercial construction utilizing light weight cavity walls and floor systems
- Used for exposed and unexposed applications at perimeter joints, floor and ceiling runners, cutouts in gypsum board, veneer plaster systems and other areas where a sound rated assembly is required
- Sealant can also be applied or buttered around all electrical boxes and outlets, cold air returns, heating and air conditioning ducts and other utility equipment penetrating wall surfaces for increased acoustical performance
- Works well for sealing sill and base plates in residential construction and non-fire rated systems

LIMITATIONS

- SC175 must be applied in accordance with ASTM C919 (Standard Practice for Use of Sealants in Acoustical Applications
- Non-fire rated and fire rated systems. Refer to UL Fire Resistance Directory for testing details *****
- Not for use in underwater applications or permanent water immersion
- Do not use in applications requiring temperature resistance greater than 170°F
- Do not use on metals that will corrode
- Consult with manufacturer of adjoining materials for compatibility, including CPVC materials
- Not recommended for bonding two non-porous surfaces
- Not recommended for use with polyethylene, polypropylene, polytetrafluoroethylene (PTFE)/Teflon® or nylon

COVERAGE

For a 28 fl. oz. (825 ml) cartridge:	
▪ A 1/4” (6 mm) bead extrudes approximately 86 ft. (26 m)	▪ A 3/8” (9.5 mm) bead extrudes approximately 38 ft. (12 m)

TECHNICAL DATA

Typical Uncured Physical Properties:

Color:	White	**VOC Content:**	<1.0% by weight CARB 45 g/l SCAQMD rule 1168
Appearance:	Non-slumping paste		
Base:	Synthetic latex rubber	**Shelf Life:**	24 months from date of manufacture (unopened)
Odor:	Mild acrylic odor	**Lot Code Explanation**	**YYDDD** **YY=** Last two digits of year of manufacture **DDD=** Day of manufacture based on 365 days in a year
Specific Gravity:	1.59		
Flashpoint:	800.6° F (427°C)		
Freeze/Thaw Stability	3 Freeze/Thaw Cycles Unaffected by freezing once cured	**Example:**	18061 = 61st day of 2018 = March 2, 2018

Typical Application Properties:

Application Temperature:	Above 40°F (4°C)	
Open/Tooling Time	15 minutes*	
Tack-free Time:	30 minutes	
Cure Time:	2-7 days or longer*	* Cure time is dependent on temperature, humidity and depth of sealant applied
Sag or Slump:	0.10 inches	ASTM D2202

Typical Cured Performance Properties:

Color:	White	
Service Temperature:	-5°F (-21°C) to 170°F (77°C)	
Water Resistant:	Yes	
Paintable:	Yes, after 24 hours	
Surface Burning Characteristics:	Flame Spread Index: 0 Smoke Development: 0	ASTM E 84 Inorganic reinforced cement board
Sound Transmission Class:	Unsealed partition: STC = 15 Single bead of sealant used at top and bottom runners only – both sides of partition system: STC = 24 Single bead of sealant used at top, bottom and perimeter joints – both sides of system: STC = 45 Double Bead of Sealant used at top, bottom, and all perimeter edges - both sides of partition system: STC = 55	ASTM E 90
Low Temperature Flexibility After Artificial Weathering:	Pass with no cracking or adhesion loss	ASTM C734
Consistency Test:	300	ASTM D217
180° Peel Adhesion:		ASTM C794
Aluminum:	10.0 pli	7day cure @ 73°F & day cure @ 122°F
Wood:	8.0 pli	

TECHNICAL DATA SHEET

Revision: August 7, 2018
Supersedes: November 13, 2015
Ref. #: 518327

TECHNICAL DATA

Specifications:

UL File Number R39256

FILL, VOID OR CAVITY MATERIAL
FOR USE IN THROUGH-PENETRATION FIRESTOP
SYSTEMS & JOINT SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY
Control No. # R39256

Tested to or conforms to:

- **ASTM C834** – Standard Specification for Latex Sealants
- **ASTM E84, Class A** – Standard Test Method for Surface Burning Characteristics of Building Materials (Tested at UL under research project)
- **ASTM E90** – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
- **ASTM C919** – Standard Practice for Use of Sealants in Acoustical Applications
- **ASTM D217** – Standard Test Methods for Cone Penetration of Lubricating Grease
- *** UL 1479** (ASTM E814) – Standard for Fire Tests of Penetration Firestops
- *** UL 2079** (ASTM E1966) – Standard for Tests for Fire Resistance of Building Joint Systems
- GreenGuard® Certified

*** Refer to UL Fire Resistance Directory for design systems**

DIRECTIONS

Tools Typically Required:
Utility knife, caulking gun and tool to puncture inside seal of cartridge.

Safety Precautions:
Wear gloves.

Preparation:
The temperature of the product, the surfaces and the working area must be above 40°F (4°C). For best performance, apply sealant at 70°F (21°C). Ensure surfaces to be sealed are clean, dry, structurally sound and free of dust, grease, oil, and other foreign contaminants. Cut off tip of cartridge at a 45° angle to desired bead size (3/8" recommended). Puncture inside seal of cartridge.

Application:
Sealant should be applied as specified in the sound-rated system being installed (either wood or metal studs). Sealant must be applied in accordance with ASTM C 919. Maximum joint size should not exceed 5/8" (15.9 mm) width x ½" (12.7 mm) depth. If necessary, sealant can be painted as applicable to meet project requirements after 24 hours.

Bottom and Top Runners:
Apply a continuous 3/8" (9.5 mm) round bead of sealant on runners before setting gypsum board. Press gypsum board firmly into sealant, ensuring complete contact with adjacent materials. Fill joint on top runners to complete the seal. Repeat procedure for double-layer applications.

Cut-Outs and Perimeter Joints:
Backs of electrical boxes, pipes, duct systems and other types of utility equipment penetrating wall surfaces shall be buttered with sealant. Seal all joints at perimeter edges including abutting surfaces and corner joints.

For further application information, refer to ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications.

Clean-up:
Clean tools and uncured adhesive residue immediately with warm water and soap. Cured sealant may be carefully cut away with a sharp-edged tool.

STORAGE & DISPOSAL

DAMAGED BY FREEZING. Store in a cool, dry location at room temperature. For maximum shelf life store at 75°F (24°C). Take unwanted product to an approved household hazardous waste transfer facility. Hardened material may be disposed of with

LABEL PRECAUTIONS

CAUTION! Contains ethylene glycol, mineral spirits, and crystalline silica. May cause skin, eye and respiratory irritation. Avoid contact with eyes and skin. Avoid breathing vapors. Use with adequate ventilation. Do not swallow. FIRST AID: If swallowed do not induce vomiting, call a physician or Poison Control center immediately. For eye contact, flush with water for 15 minutes, call a physician. For skin contact, wash thoroughly with soap and water. **KEEP OUT OF REACH OF CHILDREN.**

WARNING: Cancer and Reproductive Harm – www.P65Warnings.ca.gov.

Refer to the Safety Data Sheet (SDS) for further information.

LIMITED WARRANTY

This product is warranted to be free from defects in materials when used as directed. Henkel's sole obligation shall be, at its option, to replace or refund the purchase price of product proven to be defective. Henkel makes no other warranty, express or implied, including warranties of MERCHANTABILITY and FITNESS FOR A PARTICULAR PURPOSE and will not be liable for consequential or incidental damages. This limited warranty gives you specific legal rights, which vary from state to state

DISCLAIMER

The information and recommendations contained herein are based on our research and are believed to be accurate, but no warranty, express or implied, is made or should be inferred. Henkel recommends purchasers/users should test the products to determine acceptable quality and suitability for the intended use. All adhesive/sealant applications should be tested under simulated or actual end use conditions to ensure the adhesive/sealant meets or exceeds all required project specifications. Since assembly conditions may be critical to adhesive/sealant performance, it is also recommended that testing be performed on specimens assembled under simulated or actual production conditions. Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute a permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of the patent.

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OSI works side by side with residential builders, contractors and remodeling professionals who use our products every day on their jobsites. OSI combines this deep understanding with the sophisticated global innovation and manufacturing excellence of Henkel to make the world's best professional-grade caulks, sealants and adhesives.

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www.ositough.com

OSI Brand is part of the Henkel family of brands. Founded in 1876, Henkel is a global leader in the consumer and industrial businesses. Henkel operates worldwide with leading brands and technologies in three business areas: Laundry & Home Care, Beauty Care and Adhesive Technologies.

Henkel Corporation - Professional & Consumer Adhesives Headquarters - Rocky Hill, CT 06067
www.henkelna.com

AC-20 FTR®

(Fire & Temperature Rated) Acoustical & Insulation Sealant

Specification Data Sheet

PECORA CORPORATION

BASIC USES

• AC-20 FTR® fire-rated systems are suitable for applications in schools, hospitals, churches, high-rise office buildings and hotels, prisons, sports arenas, and other public-use buildings to ensure a safe and orderly evacuation in the event of a fire.

2. MANUFACTURER

Pecora Corporation
165 Wambold Road
Harleysville, PA 19438
Phone: 215-723-6051
800-523-6688
Fax: 215-721-0286
Website: www.pecora.com

3. PRODUCT DESCRIPTION

AC-20 FTR® is a unique acrylic latex sealant that is UL® Classified in firestopping systems for expansion joints and through penetrations. When properly installed, these systems effectively contain fire, smoke, toxic fumes, and water within a given area surrounded by firewalls for a two, three, or four hour period, depending on the design specifications.

Other Uses: Excellent adhesive, flexibility and durability qualities make AC-20 FTR® ideal for insulating and weatherproofing around windows, doors, panels, siding, duct work, base plates, etc. It is compatible with all common building materials including specialties such as polystyrene, polyurethane, cork, vinyl, foamed and fibrous glass.

Used as an acoustical sealant, AC-20 FTR® reduces sound transmission in partition systems to achieve specific STC values by sealing spaces around cut-outs and at perimeters of partitions. The sealant cures to a tough rubber to form a long-lasting acoustical seal.

PACKAGING

• 30 fl. oz. (.887 liter) fiber cartridges
• 5-gallon (18.9 liter) pails

COLOR

• White, Beige-Gray
Special colors available in 250-gallon (946 liter) batches.

4. TECHNICAL DATA

Applicable Standards: ASTM C-834-86 specification for latex sealing compounds.

Fire Rated System: Two-hour Fire and Temperature Rated wall and floor joint systems up to 7" (178mm) wide and four-hour systems up to 4" wide can be designed with AC-20 FTR® in conjunction with Ultra Block fire blocking material in fire-rated walls and floors. Reference: ANSI/UL 263, ASTM E-119, NFPA No. 251.

UL CLASSIFIED

UNDERWRITERS LABORATORIES INC.® CLASSIFIED JOINT TREATMENT MATERIALS FIRE RESISTANCE CLASSIFICATION

DESIGNS J900H (FFS 0006) &U900 "O" (WWS 0010), J900Z (FFS 2002), U900Z-009 (WWS 2008), J900Z-007 (FFS 1010), U900Z-015 (WWS 1012)

AC-20 FTR® in conjunction with Ultra Block® achieves a 2-hour fire rating when sealing around steel or copper pipe and electrical metallic tubing or steel conduit in through penetration systems. Reference: ANSI/UL 1479, ASTM E-814.

FILL, VOID OR CAVITY MATERIALS CLASSIFIED BY UNDERWRITERS LABORATORIES INC. FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEM NO. CAJ 1093

In addition to its fire-blocking value, Ultra Block® is very efficient acoustically, having a noise reduction coefficient of .75 and sound transmission coefficient of .5 (Ultra Block® is a registered trademark of Backer Rod Mfg. and Supply Co., Denver, CO, USA.)

5. INSTALLATION

Surface Preparation: Surfaces must be free of all contamination. Sealant may be applied to damp, porous surfaces. No priming is required.

Application: Refer to Pecora Firestopping Manual 07270 and UL Fire Resistance Directory for installation details on fire-rated joint and through penetration systems. For insulating and weatherproofing purposes, fill all window, door, and panel perimeter joints using a resilient backer rod to control sealant depth to 1/2" (13mm) maximum. For best results, protect sealant from excessive low temperatures and apply above 40°F (4°C). For acoustical purposes, apply continuous

TYPICAL PHYSICAL PROPERTIES

Test Property	Value	Procedure
Modulus @ 100% (psi)	15-20	ASTM D412
Ultimate Tensile (psi)	30-40	ASTM D412
Ultimate Elongation (%)	400-500	ASTM D412
Movement Capability (%)	±7 1/2	ASTM D412
VOC Content	31 g/L	

beads of sealant to seal perimeters of all sound-rated partitions. Apply sealant in the angles formed by metal components or base-layer panels and abutting surfaces. Apply sealant around all openings formed for outlets; electrical, telephone, light fixtures, etc.

Tooling: Tool material flush with surfaces to allow for expected shrinkage and insure good contact and adhesion to the substrate.

Cleaning: Remove excess material with water or a damp cloth before it cures. Sealant may be painted within 30 minutes after application with a good grade of latex paint.

Shelf Life: AC-20 FTR® has a shelf life well in excess of one year when stored in unopened containers below 80° F (27°C).

Precautions: AC-20 FTR® is non-flammable, non-toxic, non-irritating and environmentally safe. However, do not take internally. Refer to Material Safety Data Sheet for additional information.

Ultra Block® is a non-carcinogenic processed continuous filament textile glass fiber that may cause skin, eye and respiratory irritation. When applying, wear long sleeves, gloves, cap, goggles or safety glasses and NIOSH/MSHA-approved dust respirator. After use bathe with soap and warm water. Wash clothes separately and rinse after use. Refer to Material Safety Data Sheet for additional information.

FOR PROFESSIONAL USE ONLY.
KEEP OUT OF THE REACH OF CHILDREN.

6. AVAILABILITY AND COST

Pecora products are available from our stocking distributors in all major cities. For the name and telephone number of your nearest representative call one of our locations listed below or visit our website at www.pecora.com.

7. WARRANTY

Pecora Corporation warrants its products to be free of defects. Under this warranty, we will provide, at no charge, replacement materials for, or refund the purchase price of, any product proven to be defective when installed in accordance with our published recommendations and in applications considered by us as suitable from this product. This warranty in lieu of any and all other warranties expressed or implied, and in no case will Pecora be liable for incidental or consequential damages.

8. MAINTENANCE

If the sealant is damaged and the bond is intact, cut out the damaged area and recaulk. No primer is required. If the bond has been affected, remove the sealant, clean and prepare the joint in accordance with instructions under "Installation".

9. TECHNICAL SERVICES

Pecora representatives are available to assist you in selecting an appropriate product and to provide on-site application instructions or to conduct jobsite inspections. For further assistance call our Technical Service Department at 800-523-6688.

ISO 9001:2000
KEMA CERTIFICATE
Accredited by ANSI-RAB NAP

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