INITIAL STUDY
FOR
31451 COAST HIGHWAY

Prepared For:

City of Laguna Beach
Community Development Department
505 Forest Avenue
Laguna Beach, CA 92651

May 2023

EcoTierra consulting

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I. INTRODUCTION

A. INTRODUCTION AND REGULATORY GUIDANCE

An Initial Study (IS) is conducted by a lead agency to determine if a project may have a significant effect on the environment (CEQA Guidelines Section 15063[a]). If there is substantial evidence that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) must be prepared, in accordance with California Environmental Quality Act (CEQA) Guidelines Section 15064(a). However, if the lead agency determines the impacts are, or can be reduced to, less than significant, a Mitigated Negative Declaration (MND) or Negative Declaration (ND) may be prepared instead of an EIR (CEQA Guidelines Section 15070[b]). Pursuant to CEQA Guidelines Section 15070, a MND or ND is appropriate when the project's Initial Study identifies potentially significant effects, but:

a. Revisions to the project plan were made that would avoid or reduce the effects to a point where clearly no significant effects would occur; and

b. There is no substantial evidence that the project, as revised, may have a significant effect on the environment.

This IS prepared by the City of Laguna Beach (including an attached Environmental Checklist form) determined that the proposed project will not have a significant environmental effect, and the preparation of an EIR is not required. This IS/MND has been prepared in accordance with Section 15070 of the State California Environmental Quality Act (CEQA) Guidelines.

B. LEAD AGENCY

The lead agency is the public agency with primary responsibility over a proposed project. In accordance with CEQA Guidelines Section 15051(b)(1), "the lead agency will normally be the agency with general governmental powers." The project would be approved by the City of Laguna Beach. Therefore, based on the criteria described above, the City of Laguna Beach, Community Development Department, Planning Division is the lead agency for the proposed project.

C. PURPOSE AND DOCUMENT OGRANIZATION

The purpose of this IS/MND is to evaluate the potential environmental effects of the project. The document is divided into the following sections:

I. INTRODUCTION

This section provides an introduction and describes the purpose and organization of this document.

II. INITIAL STUDY CHECKLIST

This section includes the project background and a detailed description of the project. This section describes the environmental setting for each of the environmental subject areas; evaluates a range of impacts classified as “no impact,” “less than significant impact,” “less than significant impact with mitigation incorporated,” or “potentially significant impact” in response to the environmental checklist and provides an environmental determination for the project.

III. REFERENCES

This section identifies resources used in the preparation of the IS/MND.

II. INITIAL STUDY CHECKLIST

A. PROJECT DESCRIPTION

1. Project Title:

31451 Coast Highway Project

2. Lead Agency Name and Address:

City of Laguna Beach
Community Development Department, Planning Division
505 Forest Avenue
Laguna Beach, CA 92651

3. Lead Agency Contact Person and Phone Number:

Martina Caron, AICP
Principal Planner

Amber Dobson
Planning Manager
949.464.0362
mcaron@lagunabeachcity.net
adobson@lagunabeachcity.net

4. Project Location:

31451 Coast Highway
Laguna Beach, CA 92651

5. Applicant's Name and Address:

Tonya Reyna
16530 Ventura Boulevard, Suite 305
Encino, CA 91436

6. General Plan Land Use Designations:

Village Low Density (3-7 D.U./Acre)

7. Zoning Designation:

R-1, Residential Low Density

8. Surrounding Land Uses and Setting:

The project site is located within an urbanized setting in the City of Laguna Beach (City). Property in the surrounding area is characterized by low-density neighborhoods. Surrounding land uses include the Pacific Ocean shoreline to the west, Coast Highway to the east and single-family residential land uses beyond, and single-family residential land uses to the north and south. There is a partially in-filled natural drainage channel to the north. Similar to the project site, surrounding land use designations are Village Low Density. Refer to **Figure 1** and **Figure 2, Views of Surrounding Uses**.

9. Description of Project:

The proposed development ("project") involves the construction of a new single-family residential structure on a vacant bluff top parcel lot on Coast Highway in the City of Laguna Beach. The project site is comprised of one parcel with a total buildable lot area of approximately 0.56 acre. The project consists of a new three level structure with a total of 7,584 square feet of livable space with related retaining walls, driveway, deck, pool, and an attached three-car garage. Please see Figures 3 through Figure 7, below, for proposed site plans and building sections. Table 1, below, is a project summary to help illustrate what is proposed.

Project Setting

The project site is located at 31451 Coast Highway in the City of Laguna Beach in south Orange County, just west of the intersection of Coast Highway and Bluff Drive, a private street. Regional vehicular access to the site includes California State Route 1 (Coast Highway), to I-5, and I-405 via Laguna Canyon Road. **Figure 3, Regional and Vicinity Location Map** show the project's regional location.

Existing Conditions

The project site, which consists of a bluff top parcel within Assessor Parcel Number (APN) 056-032-26, is rectangular in shaped, and totals approximately 0.56-acre (24,338 square feet). The project site is currently undeveloped with the exception of an existing electrical utility box and an associated three-foot high retaining wall along the northern edge of the project site. Site vegetation consists of weeds, grasses, shrubs, and sparse trees. The project site consists of a gently sloping pad trending southwesterly adjacent to Coast Highway, followed by a steeply sloping area to a second pad area, followed by a coastal bluff descending to the Pacific Ocean shoreline. Site elevations vary between approximately 15 feet and 123 feet for an overall relief of roughly 108 feet.[1] **Figure 4, Aerial Photograph** show the project site boundaries. **Figure 5, Views of the Project Site**, show the existing conditions of the site.

The project site is located in a Very High Fire Hazard Severity Zone (VHFHSZ) and a Seismic Hazard Landslide Area.[2]

Project Components

The project would include vegetation clearing, grading, and construction of a single-family residential use, retaining walls, driveway, deck, pool, and other site finishes (e.g., landscaping) on an undeveloped project site that fronts the Pacific Ocean. The project would be comprised of a three-story, approximately 7,584 square foot single-family residence with an approximate 604 square foot three car garage, 5 bedrooms, 1,425 square feet of elevated decks, new site/retaining walls, pool, spa, BBQ, reflecting pond, and landscaping. Refer to **Table 1, Project Development Summary,** for a

[1] Coastal Bluff Edge Evaluation, Proposed Single-Family Development, 31451 S. Coast Highway, Laguna Beach, Orange County, California 92651, Assessor's Parcel Number (APN) 056-032-26, prepared by GeoSoils, Inc., May 15, 2020. Refer to **Appendix A** of this document.

[2] City of Laguna Beach, GIS Map, https://lagunabeach.maps.arcgis.com/apps/webappviewer/index.html?id=75a3aa3236c7475bb5e81925d130a763. Accessed October 2022.

summary of the project. **Figures 6, 7, and 8** show the Lower, Middle, and Upper Level living areas. **Figures 9** and **10** show the project elevations.

Other project components include the installation of landscaping, site lighting, driveway construction, and connection to offsite utilities (sewer, domestic water, electrical, telecommunications) in the right-of-way on Coast Highway. The project would include stormwater detention features, including a Biofiltration system, located at the rear yard, located on the western end of the project site.

Table 1
Project Development Summary

Land Use	Amount (SF)
Residential	
Lower Level	1,754.28
Middle Level	2,956.60
Upper Level	2,873.35
Total Square Footage	**7,584.23**
Other	
Garage (3-car)	603.89
Mechanical	240.34
Deck Area	1,424.67
sf = square feet *Source: HORST Architects, November 2022.*	

Landscaping improvements would include planting of drought resistant trees, shrubs, and ornamental grasses and would be compatible with the surrounding neighborhood. Non-view impacting trees and shrubs would be used and maintained at proper height. The planting plans are shown in **Figures 11** and **12**.

All exterior lighting to be low voltage and 5 Watt max. The chosen light fixtures for landscape lighting would only light and highlight elements within the project site. Lighting would be placed so as not to have negative visual impact on neighboring uses. Wall sconces would have light deflectors or diffusers.

The project would include implementation of a Fuel Modification Plan on the project site.[3]

Construction

Typical construction equipment would be used during project construction, including bulldozers, dump trucks, and excavator trucks. Construction staging would be located on the project site and an Erosion Control Plan, including sediment control best management practices (BMPs) would be implemented during construction.

The project would include up to 4,340 cubic yards (CY) of soil cut, 1,070 CY of soil fill, for a total of 3,270 CY of net soil export.

[3] AM&M Request for Joe Reyna, 718 The Strand, Hermosa Beach, CA 90254, prepared by FIREWISE 2000, LLC, January 27, 2022. Refer to **Appendix B** of this document.

The length of time anticipated for construction of the project is approximately 25 months, starting March 2024. Project phases and duration are anticipated below:

- Grading and Excavation—24 weeks
- Foundations—36 weeks
- Interiors and finishing—50 weeks (includes framing)

The project would be operational in March 2026.

Permits and Approvals

The project would require the following permits and approvals:

- Design Review
- Coastal Development Permit
- Building Permit
- Grading Permit

10. Other Public Agencies Whose Approval Is Required:

No other approvals by outside public agencies are required.

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:

As part of the process of identifying cultural resources issues in or near the project site, the City sent letters inviting tribes to consult with the City on October 10, 2022. The City requested a response within 30 days of receipt as specified by Assembly Bill 52 (AB 52). One tribe responded, the Gabrielino Tongva Indians of California. The City of Laguna Beach initiated consultation with the tribe and the requests were addressed through discussions with the representative and email correspondence.



View 1: View looking southeast from the Project Site towards adjacent residential uses.



View 2: View looking east from the Project Site towards the construction site of the proposed adjacent residential use.



View 3: View looking southeast from Coast Highway towards the construction site of the proposed adjacent residential use.



PROJECT SITE

PHOTO LOCATION MAP

Source: GoogleEarth, December 2022.

Figure 1
Views of Surrounding Uses
Views 1, 2, and 3



View 4: View looking north from Coast Highway towards residential uses.



View 5: View looking north from Coast Highway towards residential uses.



View 6: View looking southwest from Coast Highway towards an adjacent residential use.



PHOTO LOCATION MAP

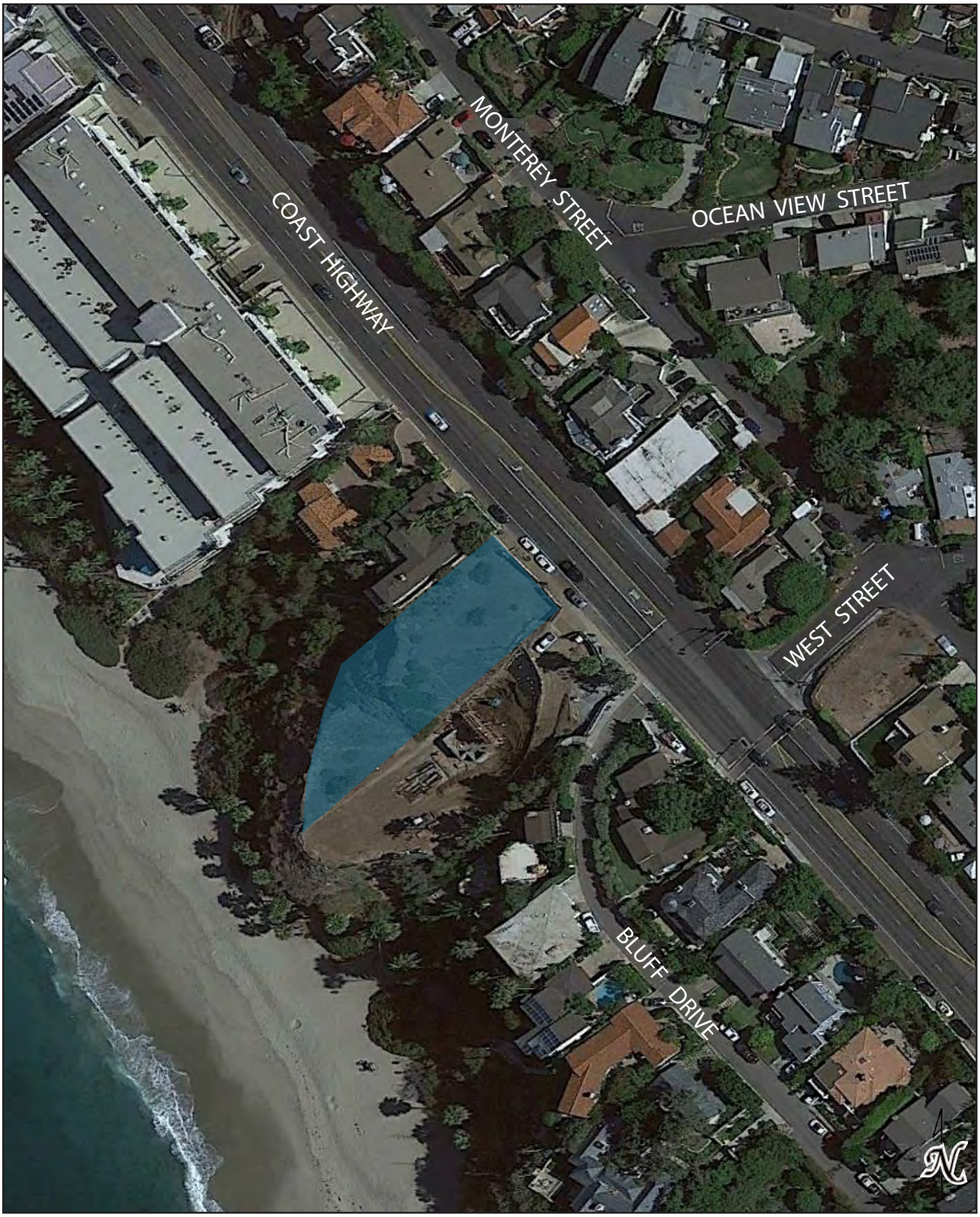
Source: GoogleEarth, December 2022.

Figure 2
Views of Surrounding Uses
Views 4, 5, and 6



Source: OpenStreetMaps, September 2022.

Figure 3
Regional and Vicinity Location Map



Project Site
Source: Google Earth, September 2022.

Figure 4
Aerial Photograph



View 1: View looking northeast across the Project Site towards Coast Highway.



View 2: View looking southwest from Coast Highway across the Project Site.



View 3: View looking northwest across the Project Site.

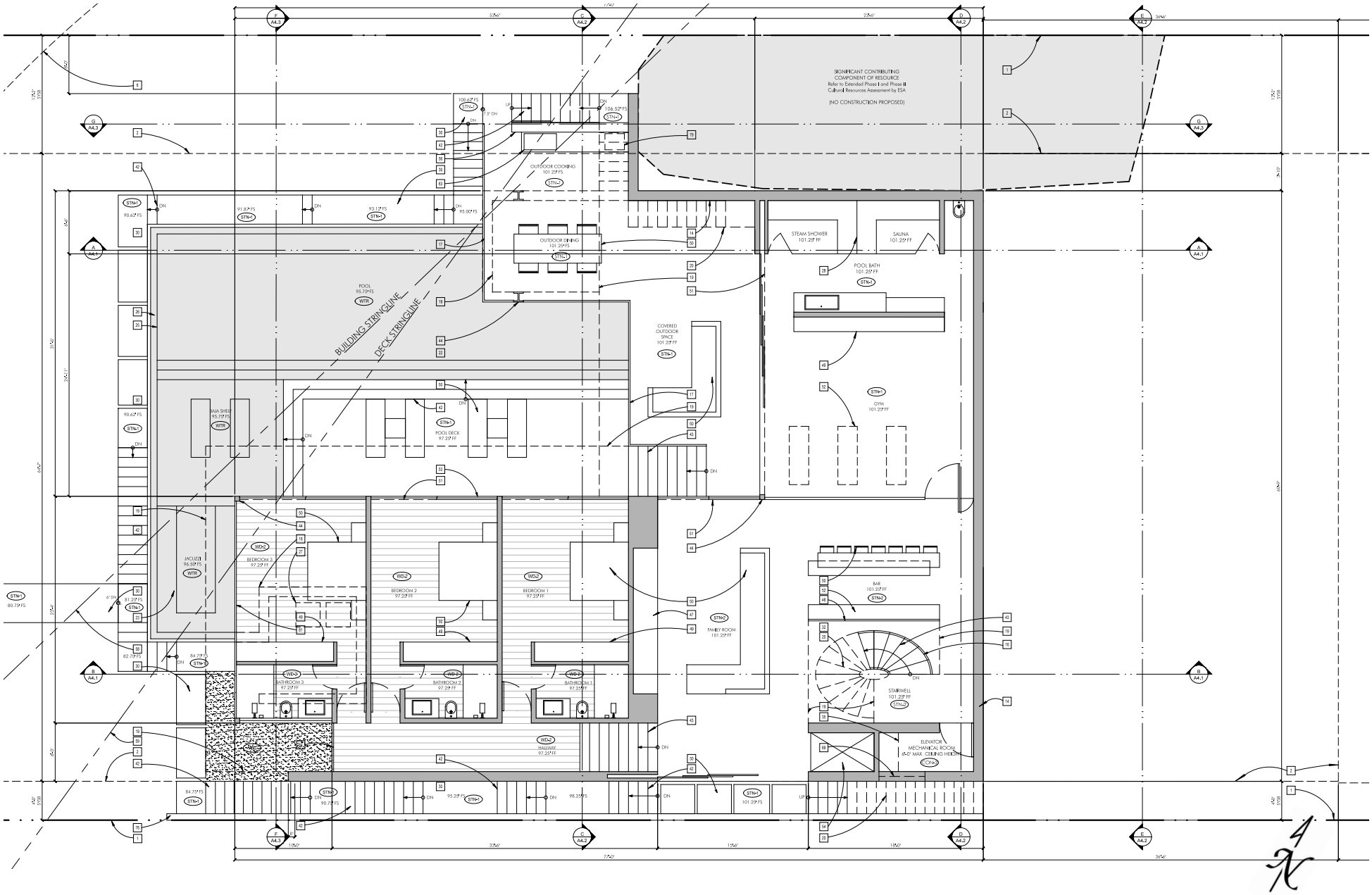


PROJECT SITE

PHOTO LOCATION MAP

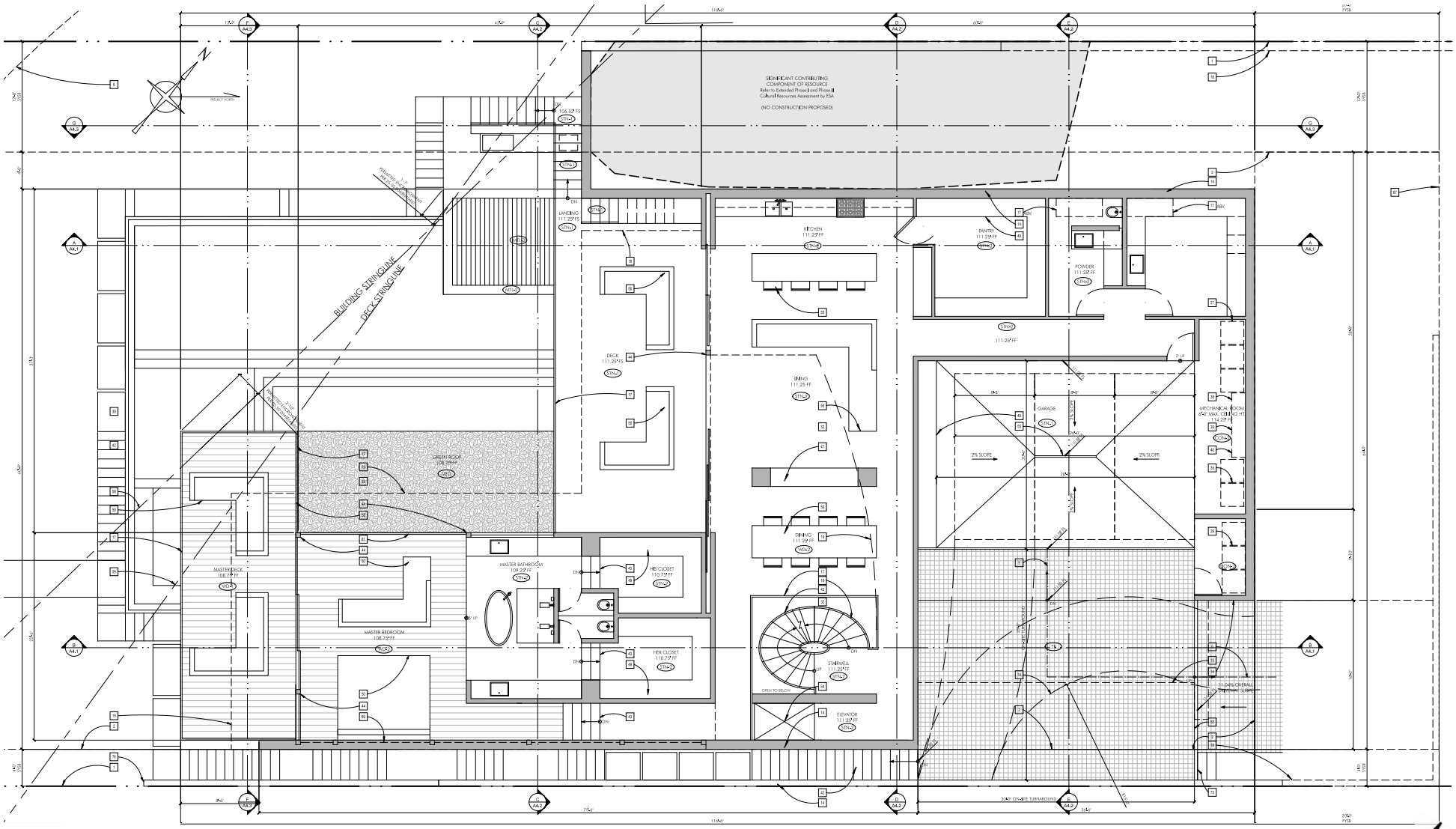
Source: GoogleEarth, December 2022.

Figure 5
Views of the Project Site
Views 1, 2, and 3



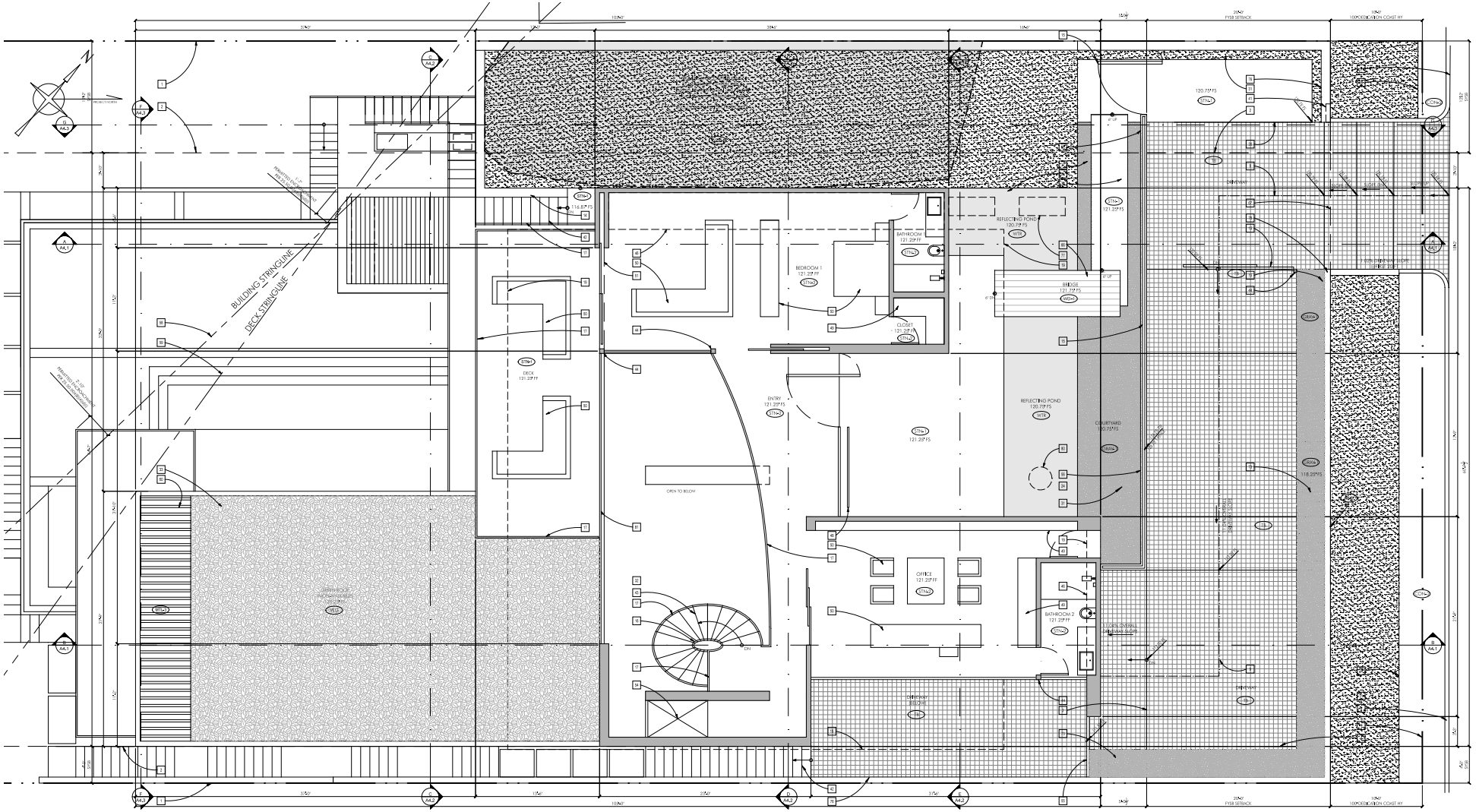
Source: HORST Architects, November 2022.

Figure 6
Lower Level Floor Plan



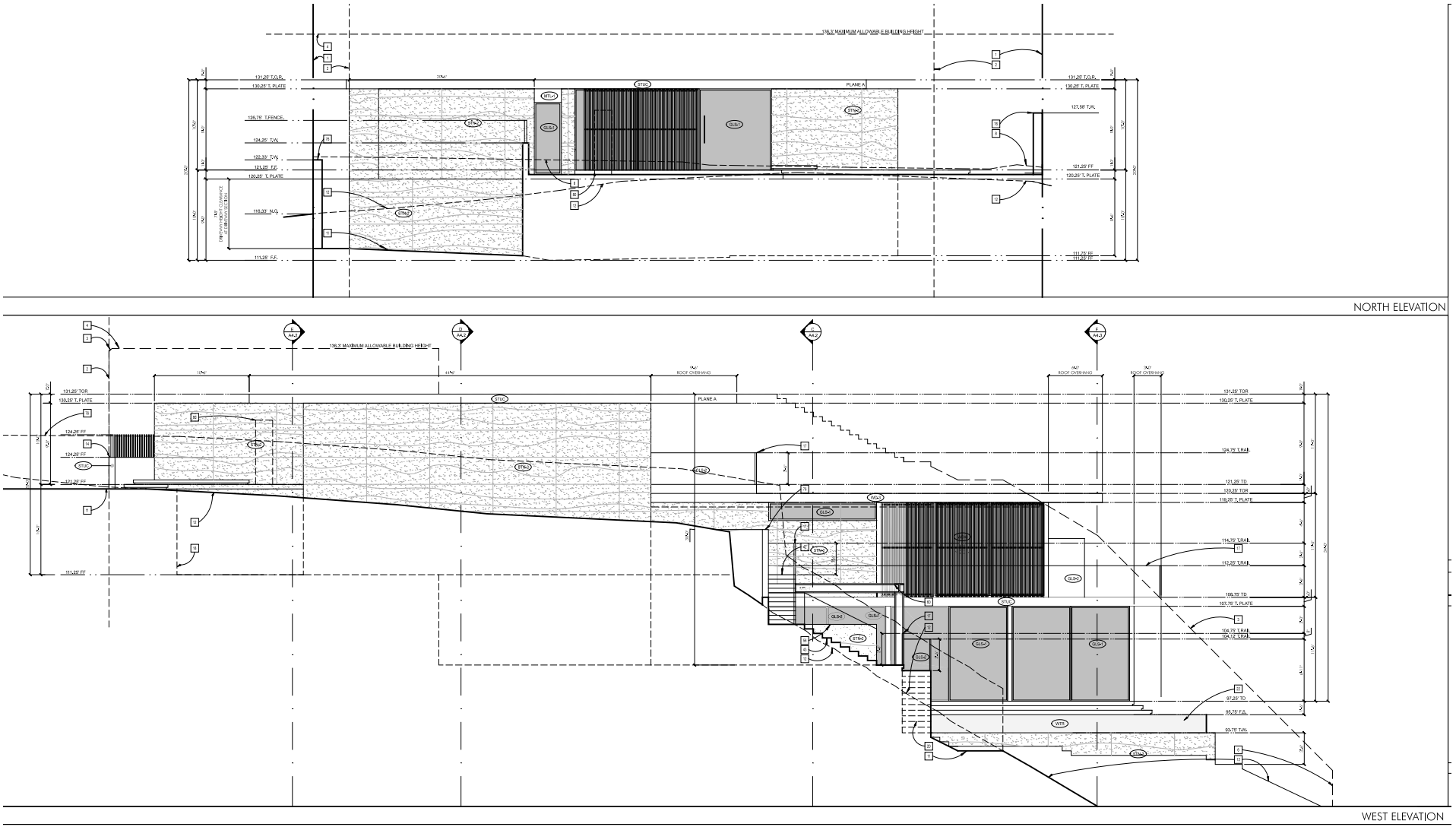
Source: HORST Architects, November 2022.

Figure 7
Middle Level Floor Plan



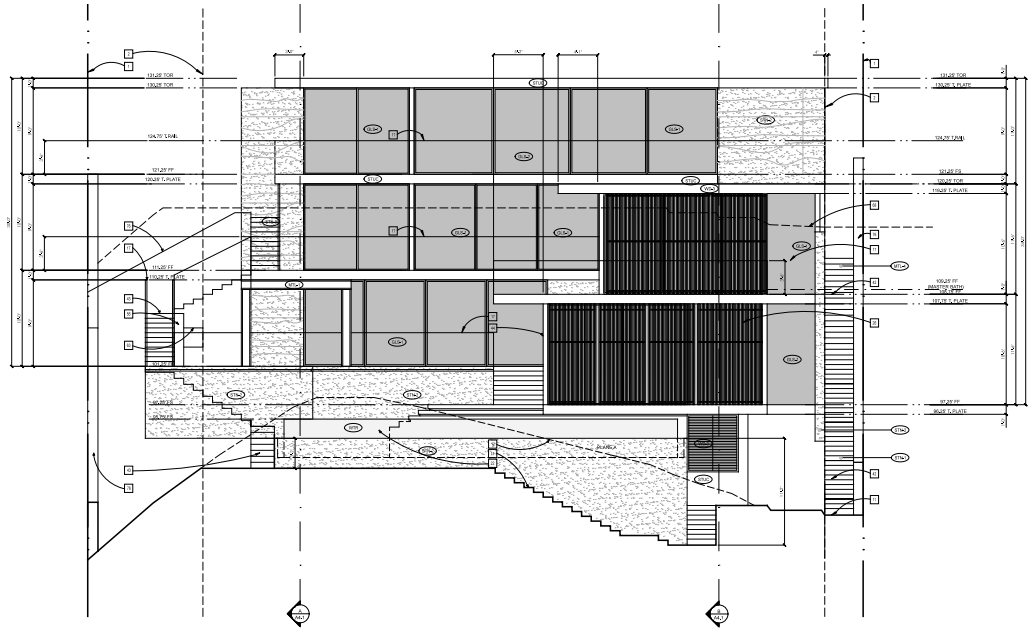
Source: HORST Architects, November 2022.

Figure 8
Upper Level Floor Plan

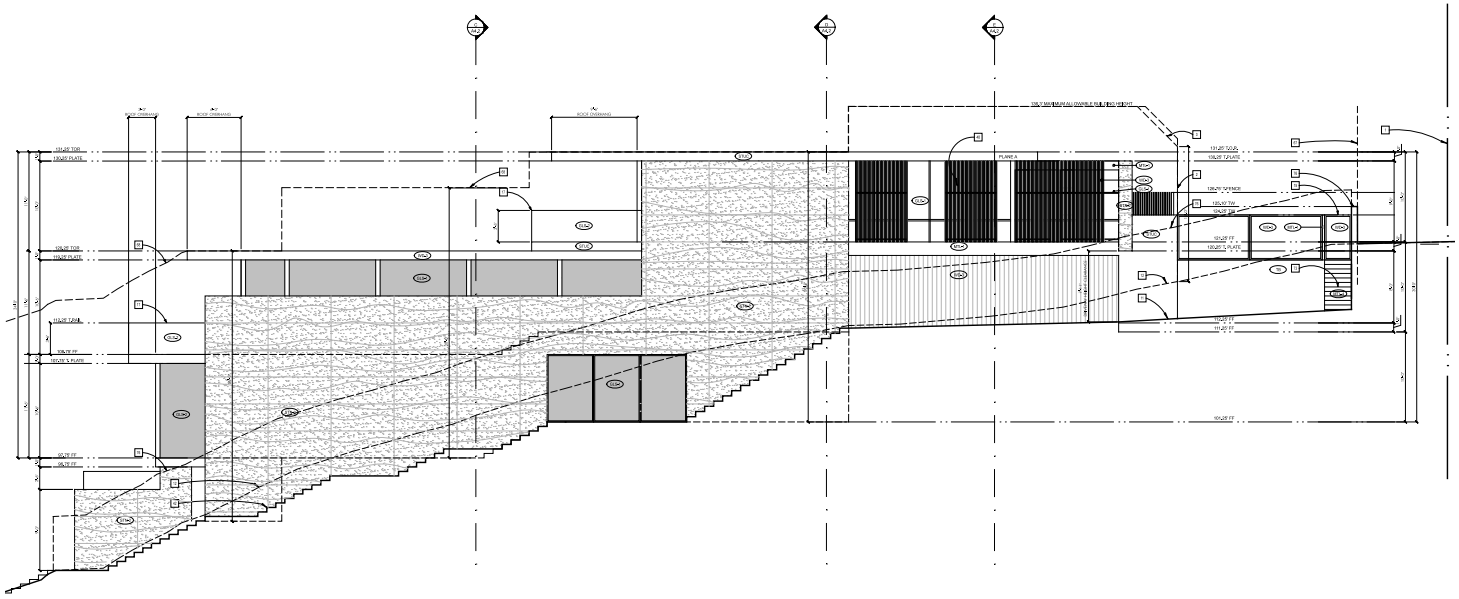


Source: HORST Architects, November 2022.

Figure 9
North and West Elevations



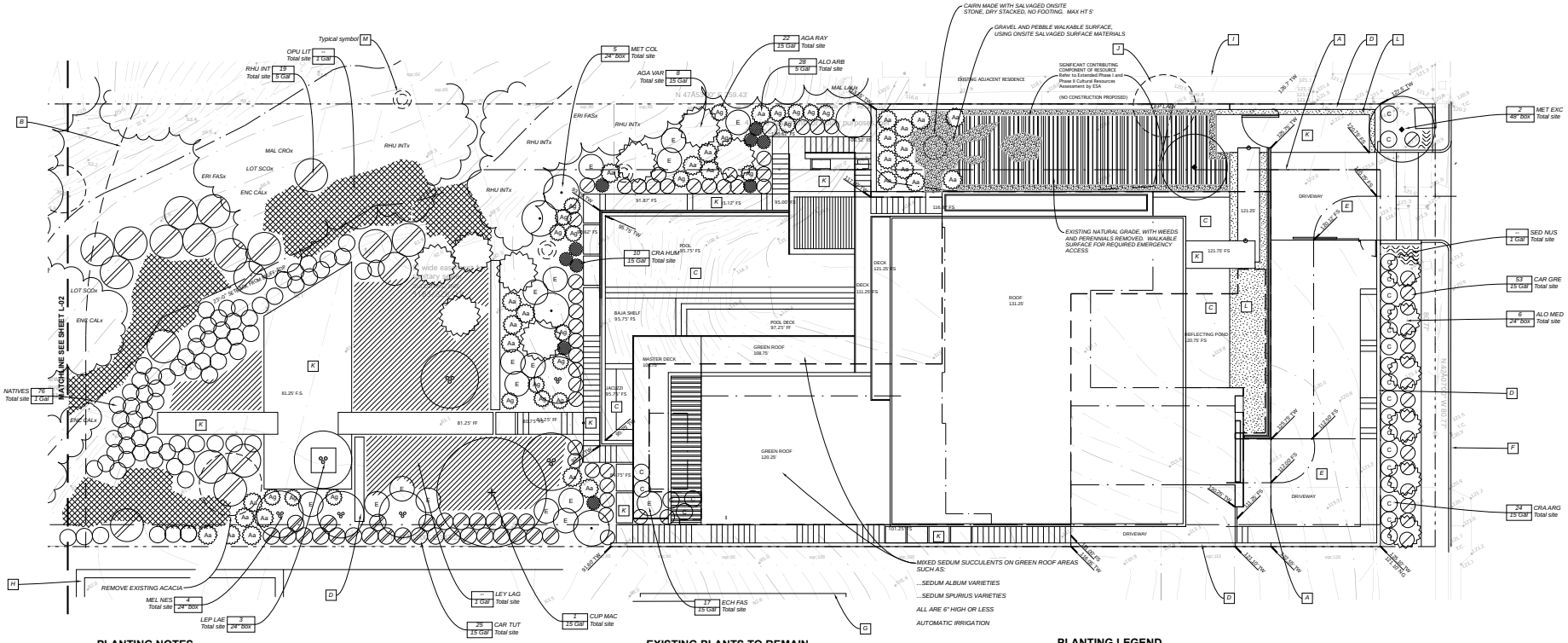
SOUTH ELEVATION



EAST ELEVATION

Source: HORST Architects, November 2022.

Figure 10
South and East Elevations



PLANTING NOTES

PROVIDE AUTOMATIC IRRIGATION FOR ALL PLANTED AREAS. IRRIGATION WILL CONSIST OF A COMBINATION OF LOW VOLUME DRIP TUBING AND SPRAY HEADS, CONTROLLED WITH AUTOMATIC VALVES AND A FLEXIBLE AUTOMATIC CONTROLLER HAVING WEATHER SENSITIVITY. A REDUCED PRESSURE BACKFLOW PREVENTER WILL BE USED AND WILL NOT BE LOCATED IN THE RIGHT OF WAY.

THIS PRELIMINARY PLAN IS NOT INTENDED TO BE A CONSTRUCTION DOCUMENT

ALL VEGETATION EXISTING ONSITE ABOVE THE BLUFF SETBACK WILL BE REMOVED UNLESS OTHERWISE INDICATED.

PER THE CITY'S GIS MAP, THIS PROPERTY FALLS WITHIN THE CITY'S VERY HIGH FIRE HAZARD SEVERITY ZONE (VHFHSZ). THE PRELIMINARY PLANTING PLAN IS INTENDED TO BE CONSISTENT WITH VHFHSZ REQUIREMENTS FOR PLANTING, ***WHICH DOES NOT CURRENTLY INCLUDE THE 2019 FM GUIDELINES SINCE APPLICATION HAS BEEN SUSPENDED BY CITY COUNCIL. FUTURE MAINTENANCE WILL BE CONSISTENT WITH THE CITY'S DEFENSIBLE SPACE GUIDELINE.***

EXISTING PLANTS TO REMAIN

SHRUBS AND PERENNIALS		Ult ht x w	Maint
ACA LON	*ACACIA LONGIFOLIA / Sydney Golden Wattle*	*10' x 10'*	*10'*
CAP EDU	*CAPROBROTUS EDULIS / Hot N Tot Fig*	*1' x 4'*	*1'*
*ENC CAL**	*ENCELIA CALIFORNICA / Bush Sunflower*	*3' x 3'*	*3'*
*EUP MIS**	*EUPHORBIA MISERA / Cliff Spurge Locations shown this plan, and on Biological Resources Assessment*	*1' x 1'*	*1'*
LEP LAE	*LEPTOSPERMUM LAEVIGATUM / Australian Tea*	*15' x 15'*	*15'*
*LOT SCO**	*LOTUS SCOPARIUS / Deerweed*	*1' x 2'*	*1'*
MAL CRO	*MALEPHORA CROCEA / Iceplant*	*1' x 2'*	*1'*
*MAL LAU**	*MALOSMA LAURINA / Sumac*	*8' x 8'*	*8'*
MES CRY	*MESEMBRYANTHEMUM CRYSTALINUM / Crystal Iceplant*	*1' x 2'*	*1'*
*RHU INT**	*RHUS INTEGRIFOLIA / Lemonade Berry (Most likely stays lower in bluff conditions)*	*6' x 6'*	*6'*
WAS ROB	*WASHINGTONIA ROBUSTA / Fan Palm*	*70' x 12'*	*Ult*

**Indicates plants native to Southern California coasts*

See also the Biological Resources Assessment prepared by LSA for a complete description of existing vegetation, including minor natives and non-natives.

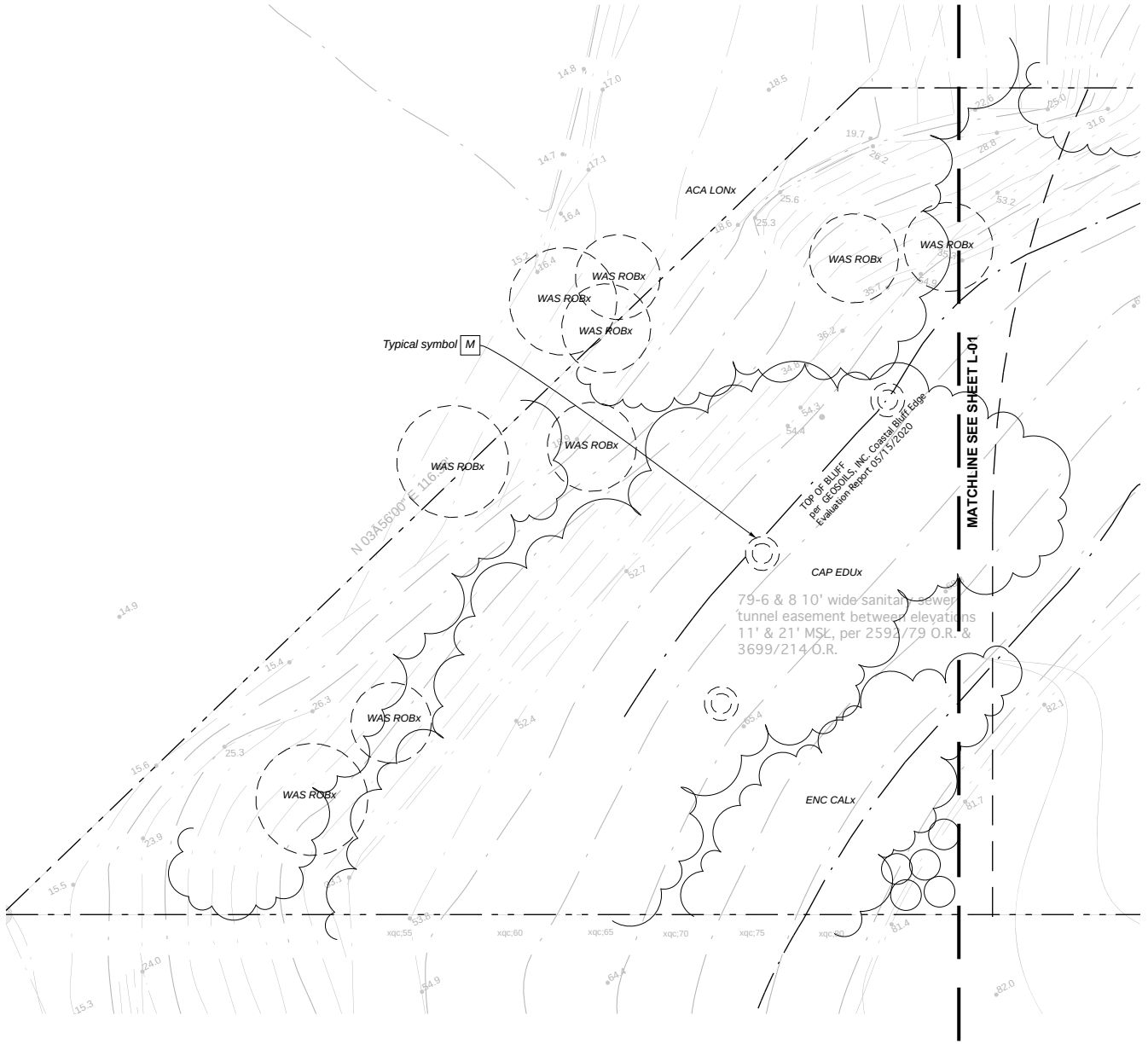
PLANTING LEGEND

TREES		Ult ht x w	Maint
*CUP MAC**	*CUPRESSUS MACROCARPA / Monterey Cypress*	*30' x 30'*	*20'*
LEP LAE	*LEPTOSPERMUM LAEVIGATUM / Australian Tea Tree*	*10' x 10'*	*10'*
MEL NES	*MELALEUCA NESPHILA / Pink Powder Puff*	*10' x 10'*	*10'*
MET SPR	*METROSIDEROS SPRINGFIRE / Dwarf NZ Christmas Tree*	*10' x 10'*	*10'*
MET EXC	*METROSIDEROS EXCELSA / New Zealand Christmas Tree*	*15' x 15'*	*15'*
SHRUBS AND PERENNIALS			
AGA VAR	*AGAVE AMERICANA VARIEGATA / Variegated Century Plan*	*6' x 8'*	*6'*
AGA RAY	*AGAVE RAY OF LIGHT / Variegated Foxtail Agave*	*3' x 3'*	*3'*
ALO ARB	*ALOE ARBORESCENS / Tree Aloe*	*3' x 3'*	*3'*
ALO MED	*ALOE MEDUSA / Aloe*	*6' x 4'*	*6'*
*BLU NAT**	*BLUFF NATIVE PERENNIALS / Encelia californica / Bush Sunflower (20%), Salvia Bees Bliss / Sage (10%), Isomeris arborea / Bladderpod (20%), Isocoma menziesii (10%), Eriogonum parvifolium/Sea Cliff Buckwheat (20%), Coreopsis maritimus / Beach Coreopsis (20%)*	*3' x 3'*	*3'*
CAR GRE	*CARISSA GREEN CARPET / Dwarf Natal Plum*	*2' x 3'*	*2'*
CAR TUT	*CARISSA TUTTLEI / Natal Plum*	*3' x 3'*	*3'*
CRA ARG	*CRASSULA ARGENTEA / Jade Plant*		
CRA HUM	*CRASSULA HUMMEL'S SUNSET / Variegated Jade*	*2' x 3'*	
ECH FAS	*ECHIUM FASTUOSUM / Pride of Madeira*	*4' X 5'*	*4'*
*LEY LAG**	*LEYMUS TRITICOIDES LAGUNITA / Lagunita Wild Rye Alternative: Muhlenbergia dubia / Dwarf Deer Grass*	*2' x 3'*	*2'*
*OPU LIT**	*OPUNTIA LITTORALIS / Beavertail Cactus*	*3' x 3'*	*3'*
SED NUS	*SEDUM NUSSBAUMERIANUM / Orange Stonecrop*	*1' x 1'*	*1'*

**Indicates plants native to California coasts*

Source: HORST Architects, November 2022.

Figure 11
Upper Landscape Plan



Source: HORST Architects, November 2022.

Figure 12
Lower Landscape Plan

II. INITIAL STUDY CHECKLIST

B. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors that would be potentially affected by this project and are mitigated to a less than significant impact are indicated below.

☐ Aesthetics	☐ Agriculture and Forestry Resources	☐ Air Quality
☒ Biological Resources	☒ Cultural Resources	☐ Energy
☒ Geology/Soils	☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials
☒ Hydrology/Water Quality	☐ Land Use/Planning	☐ Mineral Resources
☐ Noise	☐ Population/Housing	☒ Public Services
☐ Recreation	☐ Transportation/Traffic	☒ Tribal Cultural Resources
☐ Utilities/Service Systems	☐ Wildfire	☒ Mandatory Findings of Significance

C. DETERMINATION

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 of the incorporated mitigation measures and 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 EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	Date
Amber Dobson	Planning Manager

D. EVALUATION OF ENVIRONMENTAL IMPACTS

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources cited. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards.

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect, and construction as well as operational impacts.

3) A "Less Than Significant Impact" applies when the proposed project would not result in a substantial and adverse change in the environment. This impact level does not require mitigation measures.

4) "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect is significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

5) "Potentially Significant Unless Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The initial study must describe the mitigation measures and briefly explain how they reduce the effect to a less than significant level.

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. AESTHETICS. Except as provided in Public Resources Code Section 21099 would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcrops, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Regulatory Setting

Regulations exist at state and local levels that guide development and influence the physical form and aesthetic character of the City. These include:

- California Coastal Act
- California Scenic Highway Program
- Orange County General Plan
- Laguna Beach General Plan Landscape and Scenic Highway Element
- Laguna Beach Landscape and Scenic Highways Resource Document
- Laguna Beach Municipal Code

Environmental Setting

Scenic Vistas and Scenic Resources

According to the City's General Plan Landscape and Scenic Highway Element, Laguna Beach is a coastal community, which is comprised of 38 distinct neighborhoods and surrounded by natural open space within the City's nine square mile jurisdiction. The open space encompasses approximately 30,000 acres of largely undeveloped lands and includes Laguna Coast Wilderness Park, Aliso and Wood Canyons Wilderness Park, Crystal Cove State Park, and Laguna Laurel Ecological Reserve. This public open-space land is principally under the jurisdiction of the State and Orange County and physically separates the City from the urbanization occurring elsewhere in the Orange County. The predominate land use in the City is open space, recreational, and environmentally sensitive lands making up approximately 59 percent of the

total area. Residential land use make up approximately 35 percent, commercial uses make up approximately 4 percent, and industrial and institutional make up approximately 1 percent each.[4]

Scenic resources consist predominantly of the San Joaquin Hills that surround the City and the Pacific Ocean to the west. Public views of these resources are primarily available from Coast Highway, Laguna Canyon Road, other local roads, and public areas such as parks, beaches, and trails.[5] The Laguna Beach Landscape and Scenic Highways Resources Document (LSHRD), which was adopted along with the General Plan Landscape and Scenic Highways Element, includes a vision and overview of landscape issues; including goals, policies, and implementing action items for topics that include Neighborhood Character, View Management, Scenic Highways, Streetscape/Parks, Heritage Trees, Fire Safety, Landform Stability, and Design and Maintenance.[6] According to the LSHRD, the project site is within the Zone J, which is a characterized by scenic rock outcroppings above steep bluffs with plantings on the inland side, and a residential development with little landscaping on the ocean side.[7] Public scenic vistas, while traveling south on Coast Highway, include views that are channeled between single-family homes and residential privacy walls with landscaping on the right, and a steep bluff with single-family homes above on the left. While houses are visible above the bluff on the inland side, the scenic rock outcroppings, plants, and a view to Aliso Peak dominate the landscape, which is possible because residential vehicular access is primarily taken from Monterey Street above, and is not visible from Coast Highway.[8]

Scenic Highways

The California Scenic Highway System indicates that no existing or proposed state scenic highways located in the vicinity of the project site.[9] Coast Highway, Laguna Canyon Road, and El Toro Road are the three arterial roads within and adjacent to City that meet scenic highways designation guidelines. Coast Highway, which the project site fronts, is an eligible State Scenic Highway and Orange County considers Coast Highway, Laguna Canyon Road, and El Toro Road as Viewscape Corridors in the Scenic Highway Plan in the Orange County's General Plan.[10] According to the City's General Plan Landscape and Scenic Highways Element, the City intends to eventually implement a Corridor Protection Plan for Coast Highway.[11] The LSHRD classifies the Coast Highway into zones and provides landscaping and streetscape improvement recommendations for each zone. As previously mentioned, the project site is within LSHRD Zone J of the Coast Highway.

Light and Glare

The project is located in a well-lit urbanized area of the City where there are moderate levels of ambient nighttime lighting, including street lighting, vehicle headlights from Coast Highway, architectural and security lighting, and indoor building illumination (light emanating from structures that passes through windows). Glare is generally a result of reflections off of pavement, vehicle windows and chrome, and building materials that include reflective glass and other shiny materials. Potential impacts from light and

4 Laguna Beach General Plan, Land Use Element, Scenic Highway Plan, December 7, 2011. Page 5-2.
5 Laguna Beach General Plan, Land Use Element, Scenic Highway Plan, December 7, 2011. Page 5-2.
6 Laguna Beach Landscape and Scenic Highways Resource Document, November 2018. Page 1.
7 Laguna Beach Landscape and Scenic Highways Resource Document, November 2018. Page 28.
8 Laguna Beach Landscape and Scenic Highways Resource Document, November 2018. Page 42.
9 California Department of Transportation, California Scenic Highway Mapping System, List of eligible and officially designated State Scenic Highways, Los Angeles County, August 2019.
10 Orange County, Scenic Highway Plan, April 18, 2005.
11 Laguna Beach Landscape and Scenic Highways Resource Document, November 2018. Page 34.

glare are directly related to the level of urbanization in the vicinity of the project site and the design of the proposed residential use.

Checklist Discussion

a) Would the project have a substantial adverse effect on a scenic vista?

Less Than Significant Impact. A significant impact may occur if a proposed project introduces incompatible visual elements within a field of view containing a scenic vista or substantially blocks a scenic vista.

According to the City's Landscape and Scenic Highways Element, aesthetic resources in the City predominantly consist of the San Joaquin Hills that surround the City, the Pacific Ocean to the west, and the Aliso and Laguna Canyons to the east. Public views would be scenic views from Coast Highway, Laguna Canyon Road, or other streets up to the hillsides, canyons, or down to the ocean, or views to or from other public areas including parks, beaches, trails, and viewpoints.[12] Aliso Canyon is located approximately 0.7 mile northeast of the project site and the southern terminus of Laguna Canyon is located approximately 3.6 miles north of the project site, where Laguna Canyon Road becomes Broadway Street. Public views of both Aliso Canyon and Laguna Canyon are not visible from the project vicinity due to the distance between them and the project site, as well as intervening commercial and residential structures located along Coast Highway.

The project site fronts Coast Highway, in an area of the City that is developed with single-family residential uses and several multi-family residential uses. Views from the project site include the Pacific Ocean to the west, single-family residential uses to the south and north, and Coast Highway and single-family residential uses to the north. Scenic vistas to the north and south include views of the San Joaquin Hills. Views to the west are comprised of the Pacific Ocean and the shoreline. The City's land use make up is comprised of approximately 35 percent residential uses, approximately four percent commercial uses, and approximately one percent each of industrial and institutional uses.[13]

The project site is currently undeveloped and fenced, with no pedestrian or vehicular access. Therefore, although views are available from the project site, those views are not accessible to the public. The project would result in the construction of a three-story, approximately 7,584 square foot single-family residence on a 0.56-acre site. According to LBMC Section 25.10.008, Property Development Standards, the maximum allowable building height for the project site is 30-feet. The proposed single-family residential use would be a maximum of 30 feet on the eastern half of the site, which is in line with existing residential development in the vicinity and does not exceed the City's building height standards. Furthermore, the project would not block views of Aliso Peak and the San Joaquin Hills to the north, east, and south due to the low height and stepped down design of the project and existing development surrounding the project site. Views of Aliso Peak, the San Joaquin Hills, and the Pacific Ocean would still be available via street corridors, as are currently available. Further, there are no focal views available in the vicinity that would be completely blocked by the project. While development of the project could partially obstruct views of the Pacific Ocean from properties to the north, views would not be significantly impacted. The Design Review Board project site ensure the new residential development complies with the City's zoning

[12] Laguna Beach Landscape and Scenic Highways Resource Document, November 2018. Page 30.

[13] Laguna Beach General Plan, Land Use Element, Scenic Highway Plan, December 7, 2011. Page 5-2.

standards and Design Guidelines in order to make the finding of LBMC Section 25.05.040(H)(4) Environmental Context.

Further, the project site lies within the Coastal Zone. The Coastal Act includes several basic goals and policies to ensure that development within the Coastal Zone is consistent and compatible with the unique characteristics of coastal resources. The project would not interfere with the public's access to the sea, significantly interfere with traffic circulation (refer to Section 17, Transportation/Traffic), affect marine resources, or environmentally sensitive habitat areas (refer to Section 3, Biological Resources). In addition, the project would not result in significant impacts to scenic and visual qualities of the coast, as the development is consistent with the area's height restrictions (30 feet) and has been designed to minimize the obstruction of the existing coastal views. As the entire project site lies within the Coastal Zone, as designated by the Coastal Act, the project site is therefore under the jurisdiction of the City of Laguna Beach and the Coastal Commission. With procurement of a Coastal Development Permit from the City and approval from the Coastal Commission, development of the project would be consistent with the Coast Act Policies and requirements. **Therefore, impacts would be less than significant**.

b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

Less Than Significant Impact. A significant impact may occur only where scenic resources would be damaged or removed by the project.

The California Scenic Highway System indicates that no existing or proposed state scenic highways located in the vicinity of the project site.[14] The nearest State-designated scenic highway to the project site is State Route 91, known as Riverside Freeway, is located over 30 miles north, between State Route 55 and the eastern boundary of the City of Anaheim.[15] However, Coast Highway is eligible for listing as a state scenic highway.

The project site, which is currently undeveloped, contains no designated historic buildings. However, the site does contain natural vegetation and the project construction activities would result in permanent direct impacts to this vegetation. The habitat is, however, degraded due to the prevalence of nonnative weeds and ornamental species.[16] Furthermore, the project as proposed would involve grading of a portion of the site (0.375 acre of the 0.56-acre site). The project would not require the removal of any trees. Therefore, because the project is not located adjacent to a designated state scenic highway, the project would not result in substantial damage to scenic resources in a state scenic highway. **Impacts would be less than significant**.

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[14] California Department of Transportation, California Scenic Highway Mapping System, List of eligible and officially designated State Scenic Highways, https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa. Accessed October 2022.

[15] California Department of Transportation, California Scenic Highway Mapping System, List of eligible and officially designated State Scenic Highways, https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa. Accessed October 2022.

[16] Biological Resources Assessment for 31451 Coast Highway, Laguna Beach, Orange County, California, prepared by LSA, May 21, 2020 (Available in **Appendix C** of this document).

c) Would the project, in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Less Than Significant Impact. A significant impact may occur if a project introduces incompatible visual elements on the project site or visual elements that would be incompatible with the character of the area surrounding the project site. The project is located in a developed residential area of the City of Laguna Beach; therefore, the applicable threshold with respect to the project is consistency with applicable zoning and other regulations governing scenic quality. However, because the project site is undeveloped, visual character and public views are also discussed below for informational purposes.

Height

The project site is located in an area characterized by single- and multi-family residential, uses, all of which are constructed with a variety of styles and materials. The topographic relief within the boundaries of the property is approximately 107-feet, with elevations ranging from approximately 122-feet (msl) along the northeast property boundary near Coast Highway to approximately 15-feet (msl) along the general western property boundary and toe of the seacliff.[17] Based on an average lot slope of over 20-percent, the building envelope is limited to a height of 30 feet. The project would be a maximum of 30 feet (three stories) and built in a split-level style, and would therefore not significantly impair private or public ocean views.

Massing

In addition to the increased height, the project's proposed building would increase the building mass on the project site. The project would likely be visually prominent in the immediately surrounding area compared to the existing undeveloped site and would have increased visibility on Coast Highway and the adjoining sidewalk. Additionally, the greater height and mass would increase the visibility of the project site from nearby residential properties. However, the project's façade would be comprised of high quality, contemporary, and neutral colored building materials that are compatible with the surrounding low density residential uses and the native vegetation and views of the Pacific Ocean. Furthermore, the project would be a maximum of 30 feet (three stories), built in a split-level style, and maintain a 25-foot buffer from the bluff top that would contain only native groundcover and set the building back from direct views from the Pacific Ocean shoreline.

Even with this increased visual prominence, however, the project would not include development that would be out of character with the Laguna Beach residential area, or with other development surrounding the project site. It would replace the existing undeveloped lot with a low-scale, single-family residential use that would be reflective of the expected visual character of the area as it develops in the future in accordance with adopted land use plans, including regional plans, and the General Plan. Accordingly, with respect to building mass, the project would not result in a contrast between proposed features and existing features; would not result in a building that would detract from the non-descript style or image

[17] Preliminary Geotechnical Investigation Proposed Single-Family Residence for 31451 South Coast Highway, Laguna Beach, California, prepared by Coastal Geotechnical, September 16, 2004 (Available in **Appendix D.1** of this document).

of the area; and would positively contribute to the area's aesthetic value. Therefore, the visual character impact associated with building mass would be less than significant.

Architectural Style and Urban Design

The buildings in the area of the project site vary in age and architectural style from more contemporary buildings to older buildings with little architectural interest and style. The project's design is high quality, contemporary architecture with cohesive building color and materials palette that is compatible with the more contemporary designs that have been incorporated in buildings, such as the multi-family residential use located north of the project site, constructed in the area over the recent decade. The project has been designed to incorporate the design and landscaping recommendations of the LSHRD for Zone J of the Coast Highway to the extent feasible. Furthermore, the project site Improvements surrounding the building would include a new curb adjustment, and new sidewalks as required. The project maintains a 25-foot buffer from the bluff top with only native groundcover, to meet the City of Laguna Beach Design Guidelines for residential projects.[18] Overall, while the project would change the visual character of the project site, the height of the proposed building, design, massing, and scale would be compatible with the existing residential uses that set the aesthetic character of the vicinity. Based on the analysis above, the project would not substantially degrade the existing visual character or quality of the project site or surrounding vicinity.

Zoning Consistency

The LBMC establishes the zoning for the project site as R-1 (Residential Low Density). According to LBMC Section 25.10.008, Property Development Standards, regarding height, where the slope of the lot measured from the lowest point of elevation of the lot to the highest point is 20 percent or more, and is limited to no building or structure shall exceed 30 feet in height as measured from grade.[19] The lot proposed for the project would also meet the minimum 6,000 square-foot lot size required in the R-1 zone, with a lot size of 0.56 acre (approximately 24,338 square feet). The single-family residential use proposed would be 7,584 square feet with a maximum height of 30 feet tall. Therefore, impacts with regards to zoning consistency would be less than significant.

Other Regulations Governing Scenic Quality

The project would incorporate the design and landscaping recommendations of the LSHRD for Zone J of the Coast Highway to the extent feasible. Project entitlements include approval of the building by the Design Review Board, a Coastal Development Permit, a Building Permit, and a Grading Permit. Design review by the City would ensure that the project would align with regulations governing scenic quality. Upon approval of the project, the addition of the three-story single-family residential use would not degrade the existing visual character or quality of the site and its immediate surroundings and would be consistent with the City's envisioned visual character and quality of the project site. Therefore, impacts would be less than significant.

Therefore, the project would not conflict with applicable zoning or regulations governing scenic quality. **Accordingly, impacts would be less than significant**.

[18] Laguna Beach Design Guidelines-A Guide to Residential Development, December 2010.

[19] LBMC Section 25.10.008 (D)(1).

d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Less Than Significant Impact. A significant impact may occur if a project introduces new sources of light or glare on the project site which would be incompatible with the areas surrounding the project site or which pose a safety hazard, such as to motorists utilizing adjacent streets.

Light

The project site is located within an urban residential environment; thus, light emanating from any one source contributes to the overall lighting impacts rather than being solely responsible for lighting impacts on a particular use. As uses surrounding the project site are already impacted by lighting from existing development within the area, any additional amount of new light sources must be noticeably visible to light-sensitive uses to have any notable effect.

The project would have the potential to alter lighting patterns in the area of the project site as compared with the existing undeveloped setting of the Site. Night lighting for the project would be provided to illuminate home entrances and the driveway. Although the amount of light emanating from the project would represent an increase over current light levels, the project would be designed to comply with the Laguna Beach Municipal Code (LBMC) Section 25.05.040 (H)(8) (Design Review Criteria, Light and Glare) which prohibits reflective materials and appurtenances that cause glare or a negative visual impact on neighboring properties.

It is anticipated that the amount of light emanating from the project would represent an increase over current light levels. Even so, the project's compliance with the City's regulatory compliance measures, including LBMC Section 7.70 (Good Neighbor Outdoor Lighting), regulates outdoor lighting in order to reduce or prevent light pollution, to reduce or prevent glare and light trespass, to promote the conservation of energy, and to preserve and enhance neighborhood character and night-sky beauty of the City, while also respecting the need for safety and security. Therefore, the project would not create a new source of substantial light that would adversely affect day or nighttime views in the area. **Impacts would be less than significant**.

Glare

Potential reflective surfaces in the project vicinity include vehicles traveling and parked on streets in the vicinity of the project site and exterior building windows. Excessive glare not only restricts visibility, but also increases the ambient heat reflectivity in a given area.

The project would incorporate both solid and glass surfaces. Exterior building materials of the proposed building would use various non-reflective material designed to minimize the transmission of glare from the project's building. The proposed home includes a garage, thereby minimizing potential glare from vehicles. Furthermore, the project's compliance with the City's existing regulations, including LBMC Section 25.05.040 (H)(8) (Design Review Criteria, Light and Glare) which prohibits reflective materials and appurtenances that cause glare or a negative visual impact on neighboring properties, would ensure potential glare impacts are not significant. Moreover, the project would not use polished metals in its design. Therefore, the project would not create a new source of substantial glare that would adversely affect day or nighttime views in the area. **Therefore, impacts would be less than significant**.

Mitigation Measures

None required.

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

Regulatory Setting

The Department of Conservation, the Division of Land Resource Protection (DLRP) serves as the state's leader in conserving California's agricultural lands. The Department of Conservation's Farmland Mapping and Monitoring Program (FMMP) produces maps and statistical data used for analyzing impacts on California's agricultural resources.

The DLRP also collects data on Williamson Act contracts, which are formed between a county or city and a landowner for the purpose of restricting specific parcels of land to agricultural or related open space use. Private land within locally-designated agricultural preserve areas are eligible for enrollment under a contract. The minimum term for contracts is ten years.

Environmental Setting

The City of Laguna Beach is an urban environment designated for residential and commercial uses and is essentially built out. There is no land within the City of Laguna Beach designated as farmland, forest, or timber production nor are there any existing agricultural, farmland, forest or timber production uses. Pursuant to the Farmland Mapping and Monitoring Program, the City is designated as Urban and Built-Up

Land.[20] The project site is designated as zoned R-1 and has a General Plan land use designation of Village Low Density. The project site is not under a Williamson Act contract.

Checklist Discussion

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No Impact. A significant impact may occur if a project were to result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) to non-agricultural use. The project site, which is currently undeveloped, is approximately 20 to 120 feet above mean sea level in elevation and is surrounded by residential land uses to the north and south, Coast Highway, residential land uses, and commercial land uses to the east, and the Pacific Ocean shoreline to the west. According to the State Farmland Mapping and Monitoring Program's most recent Farmland mapping data for Orange County, neither the project site nor the surrounding area are designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance.[21] **Thus, the project would not result in the loss of State-designated Farmland and no impact would occur**.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. A significant impact may occur if a project were to result in the conversion of land zoned for agricultural use or under a Williamson Act contract from agricultural use to another non-agricultural use. The project site is zoned R-1 and has a General Plan land use designation of Village Low Density. Thus, the project site is not zoned for agricultural use, nor are there any agricultural uses currently occurring at the project site or within the surrounding area. Additionally, according to the State's most recent Williamson Act land data, neither the project site nor surrounding area are under a Williamson Act contract.[22] **Therefore, no impacts would occur**.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

***No Impact*.** A significant impact may occur if a project results in the conversion of farmland to another, non-agricultural use, and/or if a project results in the conversion of forest land to another, non-forest use. There are no forest or timberland resources the immediate project area. The project site is zoned R-1 and has a General Plan land use designation of Village Low Density. The project site is not zoned for forest land, timberland, or timberland production land uses. Further, The City of Laguna Beach does not have any land that is designated or zoned for forest use or timber production. **Therefore, no impact would occur**.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. A significant impact may occur if a project results in the conversion of forest land to another, non-forest use. The project site is undeveloped; however, it is located in an urbanized area of the City. No

[20] State of California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program, Orange County Important Farmland 2018, published 2018.

[21] State of California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program, Orange County Important Farmland 2018, published 2018.

[22] State of California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program, Orange County Important Farmland 2018, published 2018.

forest land exists on or in the vicinity of the project site, and project implementation would not result in the loss or conversion of forest land. **Therefore, no impacts would occur**.

e) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

***No Impact*.** A significant impact may occur if a project results in the conversion of farmland to another, non-agricultural use, and/or if a project results in the conversion of forest land to another, non-forest use. The project site is previously undeveloped; however, it is located in an urbanized area of the City. No agricultural uses, designated Farmland, or forest land uses occur at the project site or within the surrounding area. As such, implementation of the project would not result in the conversion of existing Farmland, agricultural uses, or forest land on- or off-site. **Therefore, no impacts would occur**.

Mitigation Measures

None required.

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

Regulatory Setting

Regulations exist at federal, state, and local levels with regard to air quality and include:

a) Federal Clean Air Act
b) California Clean Air Act
c) State Implementation Plan
d) California Energy Code
e) Regional Air Quality Strategy
f) South Coast Air Quality Management District Rules and Regulations:

Environmental Setting

Both the U.S. Environmental Protection Agency (USEPA) and the California Air Resources Board (CARB) have established ambient air quality standards for common pollutants. Ambient air quality standards are set to protect public health and are levels of pollutants which represent safe levels that avoid specific adverse health effects. The ambient air quality standards cover what are called "criteria" pollutants because the health and other effects of each pollutant are described in criteria documents. The major criteria pollutants are ozone, carbon monoxide, nitrogen dioxide, and particulate matter. Both federal and state ambient air quality standards apply, as established by the U.S. Environmental Protection Agency (USEPA) and state air quality agencies (CALEPA for California). California air quality standards are generally more stringent that federal standards.

The City of Laguna Beach is within the South Coast Air Basin (basin). In Orange County, the South Coast Air Quality Management District (SCAQMD) is the agency responsible for protecting the public health and welfare through the administration of federal and state air quality laws and policies. This regional agency regulates air quality through its permit authority over most types of stationary emission sources and through its planning and review process.

Attainment Designations

Specific geographic areas that do not meet federal air quality standards (National Ambient Air Quality Standards [NAASQS]) or state air quality standards (California Ambient Air Quality Standards [CAAQS]) for a particular air quality pollutant are in "nonattainment" areas for the pollutant. The current federal and state attainment status for the basin is provided in **Table 2, Federal and State Air Quality Designations in the South Coast Air Basin**.

Table 2
South Coast Air Basin Attainment Status

Pollutant	Standard[1]	Averaging Time	Designation[2]	Attainment Date[3]
1-Hour Ozone	NAAQS	1979 1-Hour (0.12 ppm)	Nonattainment (Extreme)	2/6/2023 (not attained)[4]
	CAAQS	1-Hour (0.09 ppm)	Nonattainment	N/A
8-Hour Ozone[5]	NAAQS	1997 8-Hour (0.08 ppm)	Nonattainment (Extreme)	6/15/2024
	NAAQS	2008 8-Hour (0.075 ppm)	Nonattainment (Extreme)	7/20/2032
	NAAQS	2015 8-Hour (0.070 ppm)	Nonattainment (Extreme)	8/3/2038
	CAAQS	8-Hour (0.070 ppm)	Nonattainment	Beyond 2032
CO	NAAQS	1-Hour (35 ppm)	Attainment (Maintenance)	6/11/2007 (attained)
	CAAQS	8-Hour (9 ppm)	Attainment	6/11/2007 (attained)
NO_2 [6]	NAAQS	1-Hour (0.1 ppm)	Unclassifiable/Attainment	N/A (attained)
	NAAQS	Annual (0.053 ppm)	Attainment (Maintenance)	9/22/1998 (attained)
	CAAQS	1-hour (0.18 ppm) Annual (0.030 ppm)	Attainment	-
SO_2[7]	NAAQS	1-Hour (75 ppb)	Designations Pending (expect Uncl./Attainment)	N/A (attained)
	NAAQS	24-Hour (0.14 ppm) Annual (0.03 ppm)	Unclassifiable/Attainment	3/19/1979 (attained)
PM10	NAAQS	1987 24-Hour (150 µg/m^3)	Attainment (Maintenance)[8]	7/26/2013 (attained)
	CAAQS	24-Hour (50 µg/m^3) Annual (20 µg/m^3)	Nonattainment	N/A
PM2.5 [9]	NAAQS	2006 24-Hour (35 µg/m^3)	Nonattainment (Serious)	12/31/2019
	NAAQS	1997 Annual (15.0 µg/m^3)	Attainment	8/24/2016
	NAAQS	2021 Annual (12.0 µg/m^3)	Nonattainment (Serious)	12/31/2025
	CAAQS	Annual (12.0 µg/m^3)	Nonattainment	N/A

Table 2
South Coast Air Basin Attainment Status

Lead	NAAQS	3-Months Rolling (0.15 µg/m^3)	Nonattainment (Partial)[10]	12/31/2015

Notes:
Source: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/naaqs-caaqs-feb2016.pdf
[1] NAAQS = National Ambient Air Quality Standards, CAAQS = California Ambient Air Quality Standards
[2] U.S. EPA often only declares Nonattainment areas; everywhere else is listed as Unclassifiable/Attainment or Unclassifiable.
[3] A design value below the NAAQS for data through the full year or smog season prior to the attainment date is typically required for attainment demonstration.
[4] 1-hour O3 standard (0.12 ppm) was revoked, effective June 15, 2005; however, the Basin has not attained this standard based on 2008-2010 data and is still subject to anti-backsliding requirements.
[-*5] 1997 8-hour O3 standard (0.08 ppm) was reduced (0.075 ppm), effective May 27, 2008; the revoked 1997 O3 standard is still subject to anti-backsliding requirements.
[6] New NO2 1-hour standard, effective August 2, 2010; attainment designations January 20, 2012; annual NO2 standard retained.
[7] The 1971 annual and 24-hour SO2 standards were revoked, effective August 23, 2010; however, these 1971 standards will remain in effect until one year after U.S. EPA promulgates area designations for the 2010 SO2 1-hour standard. Area designations are still pending, with Basin expected to be designated Unclassifiable /Attainment.
[8] Annual PM10 standard was revoked, effective December 18, 2006; 24-hour PM10 NAAQS deadline was 12/31/2006; SCAQMD request for attainment redesignation and PM10 maintenance plan was approved by U.S. EPA on June 26, 2013, effective July 26, 2013.
[9] Attainment deadline for the 2006 24-Hour PM2.5 NAAQS (designation effective December 14, 2009) is December 31, 2019 (end of the 10th calendar year after effective date of designations for Serious nonattainment areas). Annual PM2.5 standard was revised on January 15, 2013, effective March 18, 2013, from 15 to 12 µg/m3. Designations effective April 15, 2015, so Serious area attainment deadline is December 31, 2025.
[10] Partial Nonattainment designation – Los Angeles County portion of Basin only for near-source monitors. Expect redesignation to attainment based on current monitoring data.

Air Quality Management Plan

Every three (3) years the SCAQMD prepares a new AQMP, updating the previous plan and having a 20-year horizon.[23] The 2022 AQMP was adopted December 2, 2022 by SCAQMD. The 2022 AQMP will be considered by CARB for approval and adoption on January 26, 2023.

On March 23, 2017 CARB approved the 2016 AQMP. The 2016 AQMP is a regional blueprint for achieving the federal air quality standards and healthful air. The 2016 AQMP includes both stationary and mobile source strategies to ensure that rapidly approaching attainment deadlines are met, that public health is protected to the maximum extent feasible, and that the region is not faced with burdensome sanctions if the Plan is not approved or if the NAAQS are not met on time.

The California Environmental Quality Act (CEQA) requires a discussion of any inconsistencies between a proposed project and applicable General Plans and Regional Plans (CEQA Guidelines Section 15125). The regional plan that applies to the project includes the SCAQMD Air Quality Management Plan (AQMP). The SCAQMD CEQA Handbook states that "New or amended General Plan Elements (including land use zoning and density amendments), Specific Plans, and significant projects must be analyzed for consistency with the AQMP." Strict consistency with all aspects of the plan is usually not required. A proposed project would be consistent with the AQMP if it furthers one or more policies and does not obstruct other policies.

[23] CARB is in the process of adopting the 2022 AQMP; however, it has not been adopted at this time and the 2016 AQMP is the operating plan.

Sensitive Receptors

CARB and the Office of Environmental Health Hazard Assessment (OEHHA) have identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, infants (including in utero in the third trimester of pregnancy), and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis. Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved and are referred to as sensitive receptors.

For purposes of CEQA, the SCAQMD considers a sensitive receptor to be a location where a sensitive individual could remain for 24 hours, such as residences, hospitals, or convalescent facilities.[24] Commercial and industrial facilities are not included in the definition because employees do not typically remain on-site for 24 hours.

The closest sensitive receptors to the project site include: the single-family dwelling units located adjacent to the north and south of the site, and the single-family dwelling units located across Coast Highway, approximately 85 feet from the project site.

Checklist Discussion

a) Conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant Impact. CEQA requires a discussion of any inconsistencies between a proposed project and applicable General Plans and Regional Plans (CEQA Guidelines Section 15125). The regional plan that applies to the project includes the SCAQMD AQMP. Therefore, this section discusses any potential inconsistencies of the project with the AQMP.

The purpose of this discussion is to set forth the issues regarding consistency with the assumptions and objectives of the AQMP and discuss whether the project would interfere with the region's ability to comply with Federal and State air quality standards. If the decision-makers determine that the project is inconsistent, the lead agency may consider project modifications or inclusion of mitigation to eliminate the inconsistency.

The SCAQMD CEQA Handbook states that "New or amended General Plan Elements (including land use zoning and density amendments), Specific Plans, and significant projects must be analyzed for consistency with the AQMP". Strict consistency with all aspects of the plan is usually not required. A proposed project should be considered to be consistent with the AQMP if it furthers one or more policies and does not obstruct other policies. The SCAQMD CEQA Handbook identifies two key indicators of consistency:

[24] SCAQMD 2008. Final Localized Significance Threshold Methodology (revised).

1. Whether the project will result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP.

2. Whether the project will exceed the assumptions in the AQMP in 2016 or increments based on the year of project buildout and phase.

Both of these criteria are evaluated in the following sections.

Criteria 1 – Increase in the Frequency or Severity of Violations

Based on the air quality modeling analysis (see b and c below), short-term construction impacts would not result in significant impacts based on the SCAQMD regional and local thresholds of significance. This analysis also found that long-term operations impacts would not result in significant impacts based on the SCAQMD local and regional thresholds of significance.

Therefore, the project is not projected to contribute to the exceedance of any air pollutant concentration standards and is found to be consistent with the AQMP for the first criterion.

Criteria 2 – Exceed Assumptions in the AQMP?

Consistency with the AQMP assumptions is determined by performing an analysis of the project with the assumptions in the AQMP. The emphasis of this criterion is to ensure that the analyses conducted for the proposed project are based on the same forecasts as the AQMP. The 2020-2045 Regional Transportation/Sustainable Communities Strategy prepared by SCAG (2020) includes chapters on: the challenges in a changing region, creating a plan for our future, and the road to greater mobility and sustainable growth. These chapters currently respond directly to federal and state requirements placed on SCAG. Local governments are required to use these as the basis of their plans for purposes of consistency with applicable regional plans under CEQA. For this project, the City's General Plan defines the assumptions that are represented in the AQMP.

The project site is within the Village Low Density General Plan land use designation, which primarily provides for residential uses, such as the project. This classification is intended for detached single-family residential uses in areas that are already developed and support existing homes. The district is intended to provide a residential living environment that is adjacent to local services and businesses. Building density ranges from 1 to 10 dwelling units per acre. The project is a single-family residence, located on an infill lot that would be surrounded by existing residential development. The project site is near several local restaurants and small commercial businesses. Thus, the project would be consistent with the Village Low Density General Plan land use designation. Therefore, the project is not anticipated to exceed the AQMP assumptions for the project site and is found to be consistent with the AQMP for the second criterion.

Based on the above, the project would not result in an inconsistency with the SCAQMD AQMP. Therefore, impacts would be less than significant.

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Less Than Significant Impact.

The SCAQMD has developed significance thresholds for regulated pollutants, as summarized in **Table 3, SCAQMD Air Quality Significance Thresholds**. The SCAQMD's CEQA Air Quality Significance Thresholds (April 2019) indicate that any projects in the SCAB with daily emissions that exceed any of the indicated thresholds should be considered as having an individually and cumulatively significant air quality impact.

Table 3
SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds [a]		
Pollutant	**Construction**	**Operation**
NO_x	100 pounds/day	55 pounds/day
VOC[b]	75 pounds/day	55 pounds/day
PM_{10}	150 pounds/day	150 pounds/day
$PM_{2.5}$	55 pounds/day	55 pounds/day
SO_x	150 pounds/day	150 pounds/day
CO	550 pounds/day	550 pounds/day
Lead	3 pounds/day	3 pounds/day
Toxic Air Contaminants and Odor Thresholds		
Toxic Air Contaminants (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
GHG	10,000 MT/yr CO2eq for industrial facilities	
Ambient Air Quality for Criteria Pollutants [c]		
NO_2 1-hour average Annual arithmetic mean	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM_{10} 24-hour average Annual average	10.4 µg/m^3 (construction)[d] & 2.5 µg/m^3 (operation) 1.0 µg/m^3	
$PM_{2.5}$ 24-hour average	10.4 µg/m^3 (construction)[d] & 2.5 µg/m^3 (operation)	
Sulfate 24-hour average	25 µg/m^3 (state)	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	

Notes: ppm = parts per million by volume; µg/m^3 = micrograms per cubic meter
a Source: SCAQMD CEQA Handbook (SCAQMD, 1993).
b The definition of VOC includes ROG compounds and additional organic compounds not included in the definition of ROG. However, for the purposes of this evaluation, VOC and ROG will be considered synonymous.
c Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, table A-2 unless otherwise stated.
d Ambient air quality threshold based on SCAQMD Rule 403.
Source: SCAQMD CEQA Handbook (SCAQMD, 1993), SCAQMD Air Quality Significance Thresholds, revised April 2019.

It should be noted that the SCAQMD provides a threshold for emissions of lead, however for purposes of this analysis no lead emissions are calculated as there are no substantive sources of lead emissions. Additionally, the air quality modeling program (discussed below) does not calculate any emissions of lead from typical construction or operational activities.

Short-Term (Construction) Emissions

Emissions are estimated using the CalEEMod (Version 2022.1) software, which is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant emissions from a variety of land use projects. CalEEMod was developed in collaboration with the air districts of California. Regional data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) have been provided by the various California air districts to account for local requirements and conditions. The model is considered to be an accurate and comprehensive tool for quantifying air quality impacts from land use projects throughout California and is recommended by the SCAQMD.[25]

Daily regional emissions during construction are forecasted by assuming a conservative estimate of construction activities (i.e., assuming all construction occurs at the earliest feasible date) and applying the mobile source and fugitive dust emissions factors. The input values used in this analysis were adjusted to be project-specific for the construction schedule and the equipment used was based on CalEEMod defaults. The CalEEMod program uses the EMFAC2021 computer program to calculate the emission rates specific for Orange County for construction-related employee vehicle trips and the OFFROAD2017 computer program to calculate emission rates for heavy truck operations. EMFAC2021 and OFFROAD2017 are computer programs generated by CARB that calculates composite emission rates for vehicles. Emission rates are reported by the program in grams per trip and grams per mile or grams per running hour. Daily truck trips and CalEEMod default trip length data were used to assess roadway emissions from truck exhaust. The maximum daily emissions are estimated values for the worst-case day and do not represent the emissions that would occur for every day of project construction. The maximum daily emissions are compared to the SCAQMD daily regional numeric indicators. Detailed construction equipment lists, construction scheduling, and emission calculations are available in the CalEEMod Output provided in **Appendix E.1** of this document.

Construction activities associated with the project would result in emissions of VOCs, NO_X, SO_X, CO, PM_{10}, and $PM_{2.5}$. Construction related emissions are expected from the following construction activities:

- Grading/Excavation
- Foundation and Building Construction
- Architectural Coating

Construction activities are expected to start no sooner than March 2024, take approximately 25 months and construction completion and occupancy is anticipated in March 2026. The construction schedule utilized in the analysis represents a “worst-case” analysis scenario even if construction was to occur any time after the respective dates since emission factors for construction decrease as time passes and the

[25] South Coast Air Quality Management District, California Emissions Estimator Model.

analysis year increases due to emission regulations becoming more stringent.[26] The construction activities for the project are anticipated to include: grading/excavation, foundation work and construction of an approximately 7,584.23 square foot single-family residential dwelling plus a 603.89 square foot garage, a 240.34 square foot mechanical area, and a 1,424.67 square foot deck area (for a total of 9,853.13 square feet), and application of architectural coatings. The irrigated landscape area would be comprised of a total area of 6,281.22 square feet and the site is 0.56 acres.

Dust is typically a major concern during demolition, site preparation and rough grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions." Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). CalEEMod was utilized to calculate fugitive dust emissions resulting from this phase of activity. The project would be required to comply with existing SCAQMD rules for the reduction of fugitive dust emissions. SCAQMD Rule 403 establishes these procedures. Compliance with this rule is achieved through application of standard best management practices in construction and operation activities, such as application of water or chemical stabilizers to disturbed soils, managing haul road dust by application of water, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 mile per hour (mph), sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph and establishing a permanent, stabilizing ground cover on finished sites. In addition, projects that disturb 50 acres or more of soil or move 5,000 cubic yards of materials per day are required to submit a Fugitive Dust Control Plan or a Large Operation Notification Form to SCAQMD. Based on the size of the project area (approximately 0.56 acres) a Fugitive Dust Control Plan or Large Operation Notification would not be required.

SCAQMD's Rule 403 minimum requirements require that the best available dust control measures are applied for all grading operations and include the application of water or other soil stabilizers in sufficient quantity to prevent the generation of visible dust plumes. Compliance with Rule 403 would require the use of water trucks during all phases where earth moving operations would occur and is incorporated into the emissions modeling for the project.

Construction emissions for construction worker vehicles traveling to and from the project site, as well as vendor trips (construction materials delivered to the project site) were estimated based on CalEEMod. SCAQMD Rules that are currently applicable during construction activity for this project include but are not limited to: Rule 1113 (Architectural Coatings) and Rule 403 (Fugitive Dust). Best Available Control Measures (BACMs) are considered standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The estimated maximum daily construction emissions are summarized in **Table 4, Construction-Related Regional Pollutant Emissions**. Detailed construction model outputs are presented in **Appendix E.1** to this document.

[26] As shown in the California Emissions Estimator Model (CalEEMod) User's Guide Version 2020.4.0, Section 4.3 "OFFROAD Equipment" as the analysis year increases, emission factors for the same equipment pieces decrease due to the natural turnover of older equipment being replaced by newer less polluting equipment and new regulatory requirements.

Table 4
Construction-Related Regional Pollutant Emissions

Activity	Pollutant Emissions (pounds/day)					
	ROG	**NOx**	**CO**	**SO_2**	**PM10**	**PM2.5**
Maximum Daily Emissions[1,2]	1.91	13.8	13.2	0.02	2.89	1.63
SCAQMD Thresholds	75	100	550	150	150	55
Exceeds Thresholds?	**No**	**No**	**No**	**No**	**No**	**No**

[1] Includes both on-site and off-site emissions. On-site emissions from equipment operated on-site that is not operated on public roads. Grading/excavation PM-10 and PM-2.5 emissions include compliance with SCAQMD Rule 403.
[2] Construction and painting phases may overlap.
*Source: CalEEMod Version 2022.1. Output, available in **Appendix E.1**.*

As shown in **Table 4, Construction-Related Regional Pollutant Emissions**, the maximum emissions resulting from the project construction would not exceed criteria pollutant thresholds established by the SCAQMD for emissions of any criteria pollutant. **Therefore, construction impacts would be less than significant**.

Long-Term (Operational) Emissions

Emissions were calculated for the project. Operational activities associated with the project would result in emissions of VOCs, NO_X, SO_X, CO, PM_{10}, and $PM_{2.5}$. Operational emissions would be expected from the following primary sources:

- Area Source Emissions
- Energy Source Emissions
- Mobile Source Emissions

Area Source Emissions

Architectural Coatings

Over a period of time the buildings that are part of this project would be subject to emissions resulting from the evaporation of solvents contained in paints, varnishes, primers, and other surface coatings as part of project maintenance. Rule 1113 (Architectural Coatings) limits paints applied to buildings to 50g/L VOC content.

Consumer Products

Consumer products include, but are not limited to detergents, cleaning compounds, polishes, personal care products, and lawn and garden products. Many of these products contain organic compounds which when released in the atmosphere can react to form ozone and other photochemically reactive pollutants.

Fireplaces

To be conservative, the CalEEMod default for gas 90 percent of dwelling units with gas fireplaces was retained. The single-family dwelling unit would include a fireplace and an outdoor BBQ area fueled by gas.

Landscape Maintenance Equipment

Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the project.

Energy Source Emissions

Combustion Emissions Associated with Natural Gas and Electricity

Electricity and natural gas are used by almost every project. Criteria pollutant emissions are emitted through the generation of electricity and consumption of natural gas. However, because electrical generating facilities for the project area are located either outside the region (State) or offset through the use of pollution credits (RECLAIM) for generation within the SCAB, criteria pollutant emissions from off-site generation of electricity are generally excluded from the evaluation of significance and only natural gas use is considered.

Mobile Source Emissions

Vehicles

Project mobile source air quality impacts are dependent on both overall daily vehicle trip generation and the effect of the project on peak hour traffic volumes and traffic operations in the vicinity of the project. The project-related operational air quality impacts are derived primarily from vehicle trips generated by the project. As there was no traffic study required for this project, CalEEMod default trip generation rates for a single-family dwelling use were used.

Fugitive Dust Related to Vehicular Travel

Vehicles traveling on paved roads would be a source of fugitive emissions due to the generation of road dust inclusive of tire wear particulates.

Operational Emissions Summary

The potential operations-related air emissions have been analyzed below for the criteria pollutants and cumulative impacts. The worst-case summer or winter criteria pollutant emissions created from the project's long-term operations have been calculated and are shown below in **Table 5, Regional Operational Pollutant Emissions.**

Table 5
Regional Operational Pollutant Emissions

Operational Activities	Pollutant Emissions (pounds/day)					
	VOC	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Maximum Daily Emissions	**0.53**	**0.06**	**0.88**	**<0.005**	**0.10**	**0.08**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**
*Source: CalEEMod Version 2022.1 the higher of either summer or winter emissions, available in **Appendix E.1**.*						

The results from **Table 5, Regional Operational Pollutant Emissions,** show that none of the SCAQMD regional emissions thresholds would be exceeded. **Therefore, operational impacts would be less than significant**.

Cumulative Air Quality Impacts

There are a number of cumulative projects in the project area that have not yet been built or are currently under construction. Since the timing or sequencing of the cumulative projects is unknown, any quantitative analysis to ascertain daily construction emissions that assumes multiple, concurrent construction projects would be speculative. Further, cumulative projects include local development as well as general growth within the project area. However, as with most development, the greatest source of emissions is from mobile sources, which travel well out of the local area. Therefore, from an air quality standpoint, the cumulative analysis would extend beyond any local projects and when wind patterns are considered would cover an even larger area. The SCAQMD recommends using two different methodologies: (1) that project-specific air quality impacts be used to determine the potential cumulative impacts to regional air quality;[27] and (2) that a project's consistency with the current AQMP be used to determine its potential cumulative impacts.

The project area is out of attainment for ozone, PM_{10}, and $PM_{2.5}$. Construction and operation of cumulative projects project site further degrade the local air quality, as well as the air quality of the basin. The greatest cumulative impact on the quality of regional air cell would be the incremental addition of pollutants mainly from increased traffic volumes from residential, commercial, and industrial development and the use of heavy equipment and trucks associated with the construction of these projects. Air quality project site be temporarily degraded during construction activities that occur separately or simultaneously. However, in accordance with the SCAQMD methodology, projects that do not exceed the SCAQMD criteria or can be mitigated to less than criteria levels are not significant and do not add to the overall cumulative impact. A significant impact may occur if a project would add a cumulatively considerable contribution of a federal or state non-attainment pollutant.

Project operations would generate emissions of NO_x, ROG, CO, PM_{10}, and $PM_{2.5}$, which would not exceed the SCAQMD regional thresholds and would not be expected to result in ground level concentrations that exceed the NAAQS or CAAQS. Therefore, the project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard. **Cumulative impacts would be less than significant.**

[27] South Coast Air Quality Management District, Potential Control Strategies to Address Cumulative Impacts from Air Pollution White Paper, 1993, http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact.

Short-Term (Construction) Localized Emissions

The SCAQMD has established that impacts to air quality are significant if there is a potential to contribute or cause localized exceedances of the federal and/or state ambient air quality standards (NAAQS/CAAQS). Collectively, these are referred to as localized significance thresholds (LSTs).

The significance of localized emissions impacts depends on whether ambient levels in the vicinity of any given project are above or below State standards. In the case of CO and NO_2, if ambient levels are below the standards, a project is considered to have a significant impact if project emissions result in an exceedance of one or more of these standards. If ambient levels already exceed a state or federal standard, then project emissions are considered significant if they increase ambient concentrations by a measurable amount. This would apply to PM_{10} and $PM_{2.5}$; both of which are non-attainment pollutants.

The SCAQMD established LSTs in response to the SCAQMD Governing Board's Environmental Justice Initiative I-4. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest residence or sensitive receptor. The SCAQMD states that lead agencies can use the LSTs as another indicator of significance in its air quality impact analyses.

To address the issue of localized significance, the SCAQMD adopted LSTs that show whether a project would cause or contribute to localized air quality impacts and thereby cause or contribute to potential localized adverse health effects. The analysis makes use of methodology included in the SCAQMD Final Localized Significance Threshold Methodology (LST Methodology). SCAQMD's Methodology clearly states that "off-site mobile emissions from the project should NOT be included in the emissions compared to LSTs."[28] Therefore, for purposes of the construction LST analysis, only emissions included in the CalEEMod "on-site" emissions outputs were considered. The CalEEMod output in **Appendix E.1** of this document show the equipment used for this analysis.

The local air quality emissions from construction were analyzed using the SCAQMD's Mass Rate Localized Significant Threshold Look-up Tables and the methodology described in LST Methodology prepared by SCAQMD (revised July 2008). The Look-up Tables were developed by the SCAQMD in order to readily determine if the daily emissions of CO, NO_X, PM_{10}, and $PM_{2.5}$ from the project could result in a significant impact to the local air quality. The emission thresholds were calculated based on the Central Orange County Coastal source receptor area (SRA) 20 and a disturbance value of one acre per day (as the site is approximately 0.56 acres).

According to LST Methodology, any receptor located closer than 25 meters (82 feet) shall be based on the 25-meter thresholds. The nearest sensitive receptors to the project site include: the residential uses adjacent to the northern and southern boundaries of the project site and the residential uses located across the Coast Highway, approximately 85 feet (26 meters) from the site; therefore, the SCAQMD Look-up Tables for 25 meters was used. Other air quality sensitive land uses located further from the project

[28] South Coast Air Quality Management District, Final Localized Significance Thresholds Methodology, 2003 (Revised July 2008).

site and would experience lower impacts. **Table 6, Local Construction Emissions at the Nearest Receptors,** shows the on-site emissions from the CalEEMod model for the different construction phases and the LST emissions thresholds.

The data provided in **Table 6**, **Local Construction Emissions at the Nearest Receptors,** shows that none of the analyzed criteria pollutants would exceed the local emissions thresholds at the nearest sensitive receptors.

Table 6
Local Construction Emissions at the Nearest Receptors

Activity	On-Site Pollutant Emissions (pounds/day)			
	NO_x	CO	PM_{10}	$PM_{2.5}$
Grading/Excavation	13.5	12.4	2.7	1.58
Foundation and Building Construction	8.71	10.2	0.38	0.35
Architectural Coating	1.42	1.72	0.03	0.03
SCAQMD Thresholds[a]	**92**	**647**	**4**	**3**
Exceeds Threshold?	**No**	**No**	**No**	**No**

[a] The nearest sensitive receptors to the project include: the residential uses adjacent to the northern and southern boundaries of the project site and the residential uses located across the Coast Highway, approximately 85 feet (26 meters) from the Site; therefore, the 25 meter threshold was used.

Source: Calculated from CalEEMod and SCAQMD's Mass Rate Look-up Tables for 1 acre at a distance of 25 m in SRA 20 (Central Orange County Coastal).

Construction-Related Toxic Air Contaminants (TACs)

With respect to TACs, the greatest potential for TAC emissions resulting from construction of the project would involve diesel particulate emissions associated with trucks and heavy equipment. Based on SCAQMD guidance, health effects from TACs are usually described in terms of individual cancer risk, which is the likelihood that a person exposed to TACs over a 70-year lifetime will contract cancer. Project construction activity would not result in long-term substantial sources of TAC emissions (i.e., 30 or 70 years) and would not generate ongoing construction TAC emissions. Given the temporary and short-term construction schedule (approximately 25 months), the project would not result in a long-term (i.e., lifetime or 30-year) exposure as a result of project construction. Furthermore, as shown above, construction-based particulate matter (PM) emissions (including diesel exhaust emissions) do not exceed any local or regional thresholds.

In addition, the construction activities associated with the project would be similar to other development projects in the City, and would be subject to the regulations and laws relating to toxic air pollutants at the regional, State, and federal level that would protect sensitive receptors from substantial concentrations of these emissions. The project would be consistent with applicable AQMP requirements for control strategies intended to reduce emissions from construction equipment and activities. The project would comply with the CARB Air Toxics Control Measure that limits diesel powered equipment and vehicle idling to no more than five (5) minutes at a location, and the CARB In-Use Off-Road Diesel Vehicle Regulation;

compliance with these would minimize emissions of TACs during construction. The project would also comply with the requirements of SCAQMD Rule 1403 if asbestos is found during the demolition activities.

Long-Term (Operational) Localized Emissions

Project-related air emissions from on-site sources such as architectural coatings, landscaping equipment, onsite usage of natural gas appliances as well as the operation of vehicles on-site may have the potential to exceed the State and federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the Air Basin. According to SCAQMD LST methodology, LSTs would apply to the operational phase of a project, if the project includes stationary sources, or attracts mobile sources (such as heavy-duty trucks) that may spend long periods queuing and idling at the site; such as industrial warehouse/transfer facilities. The project involves the construction and operation of a single-family residential use. However, due to the lack of on-site/stationary source emissions, no long-term localized significance threshold analysis is warranted.

CO Hot Spots

CO is the pollutant of major concern along roadways because the most notable source of CO is motor vehicles. For this reason, CO concentrations are usually indicative of the local air quality generated by a roadway network and are used as an indicator of potential local air quality impacts. Local air quality impacts can be assessed by comparing future without and with project CO levels to the State and federal CO standards which were presented above.

To determine if the project could cause emission levels in excess of the CO standards discussed above, a sensitivity analysis is typically conducted to determine the potential for CO "hot spots" at a number of intersections in the general project vicinity. Because of reduced speeds and vehicle queuing, "hot spots" potentially can occur at high traffic volume intersections with a Level of Service E or worse.

The analysis prepared for CO attainment in the South Coast Air Basin by the SCAQMD can be used to assist in evaluating the potential for CO exceedances in the South Coast Air Basin. CO attainment was thoroughly analyzed as part of the SCAQMD's 2003 Air Quality Management Plan (2003 AQMP) and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan). As discussed in the 1992 CO Plan, peak carbon monoxide concentrations in the South Coast Air Basin are due to unusual meteorological and topographical conditions, and not due to the impact of particular intersections. Considering the region's unique meteorological conditions and the increasingly stringent CO emissions standards, CO modeling was performed as part of 1992 CO Plan and subsequent plan updates and air quality management plans. In the 1992 CO Plan, a CO hot spot analysis was conducted for four busy intersections in Los Angeles at the peak morning and afternoon time periods. The intersections evaluated included: South Long Beach Boulevard and Imperial Highway (Lynwood); Wilshire Boulevard and Veteran Avenue (Westwood); Sunset Boulevard and Highland Avenue (Hollywood); and La Cienega Boulevard and Century Boulevard (Inglewood). These analyses did not predict a violation of CO standards. The busiest intersection evaluated was that at Wilshire Boulevard and Veteran Avenue, which has a daily traffic volume of approximately 100,000 vehicles per day. The Los Angeles County Metropolitan Transportation Authority evaluated the Level of Service in the vicinity of the Wilshire Boulevard/Veteran Avenue intersection and found it to be Level of Service E during the morning peak hour and Level of Service F during the afternoon peak hour.

The project proposes the construction and operation of a single-family dwelling and did not meet the minimum threshold to require any kind of traffic study. Per the CalEEMod output, the default trip

generation rate is 9.44 trips per weekday. Therefore, as the project is not anticipated to generate a significant number of trips, the traffic volume would fall far short of 100,000 vehicles per day. No CO "hot spot" modeling was performed and no significant long-term air quality impact is anticipated to local air quality with the on-going operation of the project. As shown above, the project would not expose sensitive receptors to substantial pollutant concentrations. **Therefore, impacts would be less than significant.**

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less Than Significant Impact.

Short-Term (Construction) Emissions

Construction activities could result in minor amounts of odor compounds associated with diesel heavy equipment exhaust and architectural coatings. These compounds would be emitted in various amounts at various locations during construction and potentially effect nearby sensitive receptors. However, odors are highest near the source and would quickly dissipate away from the source. Such odors are temporary and generally occur at magnitudes that would not affect a substantial number of people. **Therefore, construction impacts would be less than significant**.

Long-Term (Operational) Emissions

As the project involves no operational elements related to industrial projects, no long-term operational objectionable odors are anticipated. **Therefore, operational impacts would be less than significant**.

Mitigation Measures

None required.

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

The following analysis in this section is based on the Biological Resources Assessment (Biological Report) that was prepared for 31451 Coast Highway, Laguna Beach, Orange County, California by LSA, dated January 18, 2023. The full Biological Report is available in **Appendix C** of this document.

Regulatory Setting

Regulations exist at federal, state, and local levels with regard to biological resources and include:

a) Federal Endangered Species Act
b) Federal Migratory Bird Treaty Act
c) Federal Clean Water Act
d) U.S. Army Corps of Engineers

e) California Coastal Zone
f) California Endangered Species Act
g) California Fish and Game Code
h) Natural Community Conservation Planning Act
i) Porter-Cologne Water Quality Control Act
j) Laguna Beach General Plan Open Space Conservation Element
k) Laguna Beach Municipal Code

Environmental Setting

Current electronic database records reviewed included the California Natural Diversity Database Information (CNDDB-RareFind 5), the California Native Plant Society (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants, the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) Online System, the USFWS Critical Habitat Mapper, and the USFWS National Wetlands Inventory.

The project site occurs in a developed, residential neighborhood of the City, on the west side of Coast Highway in a primarily urbanized landscape. The project site is located approximately 0.7-mile southwest of Aliso Canyon and the Pacific Ocean is approximately 50 feet west of the project site. Species that have adapted to human-dominated landscapes are able to take greatest advantage of the developed, landscaped, and remaining open areas in Laguna Beach and the region.

The 0.56-acre project site is currently undeveloped and covered with low lying vegetation.

Land Cover

Existing vegetation on-site is comprised of low lying vegetation. The field survey concluded there are no "high value" or "very high value" habitats, as designated by the Laguna Beach General Plan, Open Space Conservation Element[29] mapped within or adjacent to the proposed project area limits. With the exception of coastal bluff scrub, which in this case is considered a "moderate value" habitat, the other existing habitats (described in further detail below) are considered "low value" habitats.

Soils

Based on available mapping, the project site is underlain by Bosanko clay, Cieneba sandy loam, and Modjeska gravelly loam soils.[30]

Wildlife

The disturbed vegetation occurring on the majority of the project site is considered low-quality habitat for most native wildlife species. The westernmost portion of the parcel contains coastal bluff scrub that provides marginally suitable foraging, breeding, and sheltering habitat for native wildlife species. A total

[29] "High value" habitats are defined by the City of Laguna Beach as extensive areas dominated by indigenous plant communities that possess good species diversity and are often linked to extensive open space areas. Habitats having the characteristics of "high value" habitats may be considered "very high value" when associated with the occurrence of endangered, rare, or locally unique native species and/or their habitats.

[30] United States Department of Agriculture Natural Resources Conservation Service. 2019. Web Soil Survey. https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed August 2019.

of 15 wildlife species were observed on or near the project site during the field survey). All of these species are commonly encountered in and around developed areas within Orange County.

Checklist Discussion

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Less than Significant Impact with Mitigation. A significant impact may occur if a project were to remove or modify habitat for any species identified or designated as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the State or federal regulatory agencies cited.

Prior to beginning field surveys LSA consulted conducted a literature review and records search to identify the existence and potential for occurrence of special-status[31] plant and animal species and sensitive natural communities in the vicinity of the project site. Federal and State lists of special-status species were also examined. Current electronic database records reviewed included the following:

- **CNDDB—RareFind 5** is administered by the California Department of Fish and Wildlife (CDFW). This database covers special-status plant and animal species as well as sensitive natural communities that occur in California. Records from eight USGS quadrangles surrounding the project site (Laguna Beach, San Juan Capistrano, Canada Gobernadora, Dana Point, San Clemente, Tustin, El Toro, and Santiago Peak) were obtained from this database to inform the field survey.

- **CNPS Electronic Inventory of Rare and Endangered Vascular Plants** utilizes four specific categories or "lists" of special-status plant species to assist with the conservation of rare or endangered botanical resources. All of the plants constituting California Rare Plant Ranks (CRPRs) 1A, 1B, 2A, and 2B are intended to meet the status definitions of "threatened" or "endangered" in CESA and the California Department of Fish and Game Code, and are considered by CNPS to be eligible for State listing. At the discretion of the CEQA Lead Agency, impacts to these species may be analyzed as such, pursuant to the State CEQA Guidelines Sections 15125(c) and 15380. Plants that are CRPR 3 (limited information; review list) or CRPR 4 (limited distribution; watch list) or that are considered Locally Unusual and Significant may be analyzed under CEQA if there is sufficient information to assess potential significant impacts. Records from the eight USGS quadrangles surrounding the project area were obtained from this database to inform the field survey.

[31] For the purposes of this report, the term "special-status species" refers to those species that are listed or proposed for listing under the California Endangered Species Act and/or Federal Endangered Species Act; California Fully Protected Species; plants with a California Rare Plant Rank of 1, 2, or 3; California Species of Special Concern; and California Special Animals. It should be noted that "Species of Special Concern" and "California Special Animal" are administrative designations made by the California Department of Fish and Wildlife and carry no formal legal protection status. However, Section 15380 of the State CEQA Guidelines indicates that these species should be included in an analysis of project impacts if they can be shown to meet the criteria of sensitivity outlined therein.

- **USFWS IPaC Online System** lists all proposed, candidate, threatened, and endangered species managed by the Endangered Species Program of the USFWS that have the potential to occur on or near a particular site. This database also lists known critical habitats, national wildlife refuges, jurisdictional wetlands, and migratory birds that could potentially be impacted by activities from a proposed project. An IPaC Trust Resource Report was generated for the project site and was used to inform the field survey.

- **USFWS Critical Habitat Mapper** was reviewed to determine whether critical habitat has been designated within or in the vicinity of the project area.

- **USFWS National Wetlands Inventory** was reviewed to determine whether any wetlands or surface waters of the United States have been previously identified in the project area.

In addition to the databases listed above, historic and current aerial imagery, existing environmental reports for developments in the project vicinity, and regional habitat conservation plans and local land use policies related to biological resources were reviewed.

A general biological survey of the project site was conducted on January 14, 2020, and surveyed on foot, and all biological resources observed were noted and mapped. Suitable habitat for any species of interest or concern was noted, and general site conditions were photographed. The field survey took place on a sunny afternoon with weather conditions conducive to the detection of plant and animal species. A follow-up springtime special-status plant survey was conducted, to confirm the presence or absence of special-status plant species during the typical blooming season. The project site was surveyed on foot to determine locations and quantities of any special-status plant species occurring on site. It was determined that the April 24, 2020, survey date would be the optimal time to survey for those special-status plant species having a reasonable probability of occurring on site. Those special-status plant species from the record searches having a blooming period after April were not considered to have a reasonable likelihood of occurring on site, primarily due to the lack of suitable conditions on site or past site disturbances. Therefore, additional focused plant surveys following the April 24 survey were not deemed to be necessary.

The study area is located on an undeveloped lot (Assessor's Parcel Number 056-032-26) situated in the southwest corner of the San Juan Capistrano, California 7.5-minute USGS topographic quadrangle map in Orange County. The project site is approximately 20 to 120 feet above mean sea level in elevation and is surrounded by residential land uses to the north and south, residential and commercial land uses to the east, and coastal bluffs and beaches along the Pacific Ocean to the west. Representative photos of the study area are provided in Attachment C of the Biological Report (available in **Appendix C** of this document).

Vegetation Communities and Land Cover Types

Descriptions of the vegetation and land cover types occurring within the project site are listed below, using the Orange County Habitat Classification System (HCS) as articulated by Jones & Stokes Associates, Inc.[32] The acreages of each vegetation community and land cover type occurring in the project parcel are shown in **Table 7, Vegetation and Land Cover Types within the Project Area**, and **Figure 13, Vegetation**

[32] Jones & Stokes Associates, Inc. 1993. Methods Used to Survey the Vegetation of Orange County Parks and Open Space Areas and the Irvine Company Property. February 10.

Types and Special-Status Plant Occurrences, for a map of vegetation and land cover types within the project parcel boundary.

A complete list of plant species identified within and adjacent to the proposed project site is available in Attachment B of the Biological Report, and representative site photographs taken during the field survey are provided in Attachment C of the Biological Report (available in **Appendix C** of this document). There are no "high value" or "very high value" habitats, as designated by the Laguna Beach General Plan, Open Space Conservation Element[33] mapped within or adjacent to the proposed project area limits. With the exception of coastal bluff scrub, which in this case is considered a "moderate value" habitat (see the description below), the other existing habitats described below are considered "low value" habitats.

Table 7
Vegetation and Land Cover Types within the Project Area

Vegetation/Land Cover Type	Acreage
Coastal Bluff Scrub	0.27
Disturbed Encelia Scrub	0.04
Disturbed Sage Scrub-Grassland Ecotone	0.02
Ruderal	0.23
Total Project Area	**0.56**
Source: LSA, January 2020.	

Coastal Bluff Scrub (2.1 of the HCS): Areas classified as coastal bluff scrub have at least 20 percent cover by native perennial shrubs and occur on the slopes seaward of the undeveloped parcel, downslope of disturbed vegetation. Dominant plant species in this mixed scrub community include California encelia (Encelia californica) and lemonade berry (Rhus integrifolia). Other native components of this habitat type observed on site include cliff spurge (Euphorbia misera) (a special-status species having a CNPS California Rare Plant Rank of 2B.2), coastal prickly pear (Opuntia littoralis), lance-leaved dudleya (Dudleya lanceolata), wild cucumber (Marah macrocarpus), California wishbone bush (Mirabilis laevis var. crassifolia), seacliff wild buckwheat (Eriogonum parvifolium), bushrue (Cneoridium dumosum), California box-thorn (Lycium californicum), and salt grass (Distichlis spicata). Several cliff spurge individuals were observed on site within coastal bluff scrub during the field surveys.

Several nonnative species were also observed within coastal bluff scrub habitat, including hottentot-fig (Carpobrotus edulis), coppery mesembryanthemum (Malephora crocea), crystal iceplant (Mesembryanthemum crystallinum), Australian saltbush (Atriplex semibaccata), Russian-thistle (Salsola tragus), pig's ear (Cotyledon orbiculata), acacia (Acacia sp.), tree tobacco (Nicotiana glauca), Mexican fan palm (Washingtonia robusta), and pampas grass (Cortaderia selloana).

[33] "High value" habitats are defined by the City of Laguna Beach as extensive areas dominated by indigenous plant communities that possess good species diversity and are often linked to extensive open space areas. Habitats having the characteristics of "high value" habitats may be considered "very high value" when associated with the occurrence of endangered, rare, or locally unique native species and/or their habitats.



Source: LSA, January 2023.

Figure 13
Vegetation Types and Special-Status Plant Occurrences

The coastal bluff scrub habitat occurring on-site is a mixture of native and nonnative (ruderal and ornamental) plant species, as described above. Moreover, the project site is surrounded by urban development and is fragmented or isolated from larger open space areas. As such, the faunal carrying capacity and native floral diversity is lower than that of "high value" or "very high value" habitats described previously.

In addition, the remaining habitats described below have an even greater degree of previous disturbance and overall habitat degradation than the "moderate value" coastal bluff scrub habitat on site, and native plant species diversity is lower. Therefore, the following habitats are considered "low value." Because of the fragmentation of habitats on site and lack of connectivity to larger open space habitats in the region, the impacts associated with development of the site are not expected to have an adverse effect on higher-value habitats in the vicinity.

Disturbed Encelia Scrub (2.3.13 of the HCS): Areas mapped as disturbed encelia scrub were dominated by California encelia. Lemonade berry was also present in small numbers. The understory in these areas comprised weedy, nonnative species including hottentot-fig, redstem filaree (Erodium cicutarium), common burclover (Medicago polymorpha), and common sow-thistle (Sonchus oleraceus), among many others.

Disturbed Sage Scrub-Grassland Ecotone (2.8 of the HCS): The area classified as disturbed sage scrub-grassland ecotone has approximately 15 percent cover by shrubs including coastal goldenbush (Isocoma menziesii var. vernonioides) and California encelia. There is also an understory composed of subshrubs and forbs including coastal deerweed (Acmispon glaber), redstem filaree, hottentot-fig, and various nonnative grasses including ripgut grass (Bromus diandrus), red brome (Bromus madritensis ssp. rubens), hare barley (Hordeum murinum ssp. leporinum), and Mediterranean grass (Schismus barbatus).

Ruderal (4.6 of the HCS): Ruderal areas consist of early successional grassland dominated by pioneering herbaceous plants that readily colonize disturbed ground. Areas mapped as ruderal look to have been graded in the past. These areas consist of nonnative annual grasses and herbaceous plants including purple false brome (Brachypodium distachyon), red brome, hare barley, redstem filaree, sourclover (Melilotus indicus), scarlet pimpernel (Anagallis arvensis), Russian-thistle, common burclover, sow thistles (Sonchus spp.), tocalote (Centaurea melitensis), shortpod mustard (Hirschfeldia incana), and sweet fennel (Foeniculum vulgare). Patches of escaped ornamental species including hottentot-fig, coppery mesembryanthemum, and crystal iceplant occur throughout areas mapped as ruderal. Isolated native and nonnative shrubs also occur in these areas.

Wildlife

The disturbed vegetation occurring on the majority of the project site is considered low-quality habitat for most native wildlife species. The westernmost portion of the parcel contains coastal bluff scrub that provides marginally suitable foraging, breeding, and sheltering habitat for native wildlife species. A total of 15 wildlife species were observed on or near the project site during the field survey: American crow (Corvus brachyrhynchos), northern mockingbird (Mimus polyglottos), western gull (Larus occidentalis), Heermann's gull (Larus heermanni), brown pelican (Pelecanus occidentalis), red-shouldered hawk (Buteo lineatus), Anna's hummingbird (Calypte anna), rufous/Allen's hummingbird (Selasphorus rufus/sasin), California towhee (Melozone crissalis), black phoebe (Sayornis nigricans), Say's phoebe (Sayornis saya), white-crowned sparrow (Zonotrichia leucophrys), western fence lizard (Sceloporus occidentalis),

European honeybee (Apis mellifera), and California ground squirrel (Otospermophilus beecheyi). All of these species are commonly encountered in and around developed areas within Orange County.

Special-Status Species

Attachment D of Biological Report (available in **Appendix C** of this document) contains tables that identify those special-status plant and animal species known to occur or that potentially occur in the vicinity of the project site and includes detailed information about each species' habitat and distribution, activity period, State and federal status designations, and probability of occurrence within the construction footprint and associated fuel modification areas. These species were compiled from the CNPS and CNDDB records search from the eight USGS quadrangles surrounding the project site and from through extensive knowledge and experience in the region.

One special-status species—i.e., cliff spurge—was observed during the January and April field surveys. While cliff spurge does have a California Rare Plant Rank of 2B.2 (considered rare, threatened, or endangered in California but more common elsewhere) by CNPS, this plant species is neither federally listed nor State-listed and is not proposed for either federal or State listing status. The project would result in the permanent loss of 40 cliff spurge individuals out of a total of 45 individuals within the project area limits (see **Figure 14, Impacts to Vegetation Types and Special-Status Plant Occurrences**). Due to the rarity ranking, cliff spurge, as well as California box-thorn and bushrue (both of which are of local interest to the City of Laguna Beach), should be added to the plant palette of the Landscape and Planting Plans as an impact minimization measure (see Mitigation Measures MM-BIO-5, below).

Wetlands and Potential Jurisdictional Drainage Features

There are no records or maps of any wetlands, potentially jurisdictional waterbodies, riparian resources, or significant drainage courses within or adjoining the project area, and none were observed during the site surveys. The Pacific Ocean, a jurisdictional navigable water of the United States, does occur to the west of the project site but is outside of the proposed project disturbance limits.

Conclusion

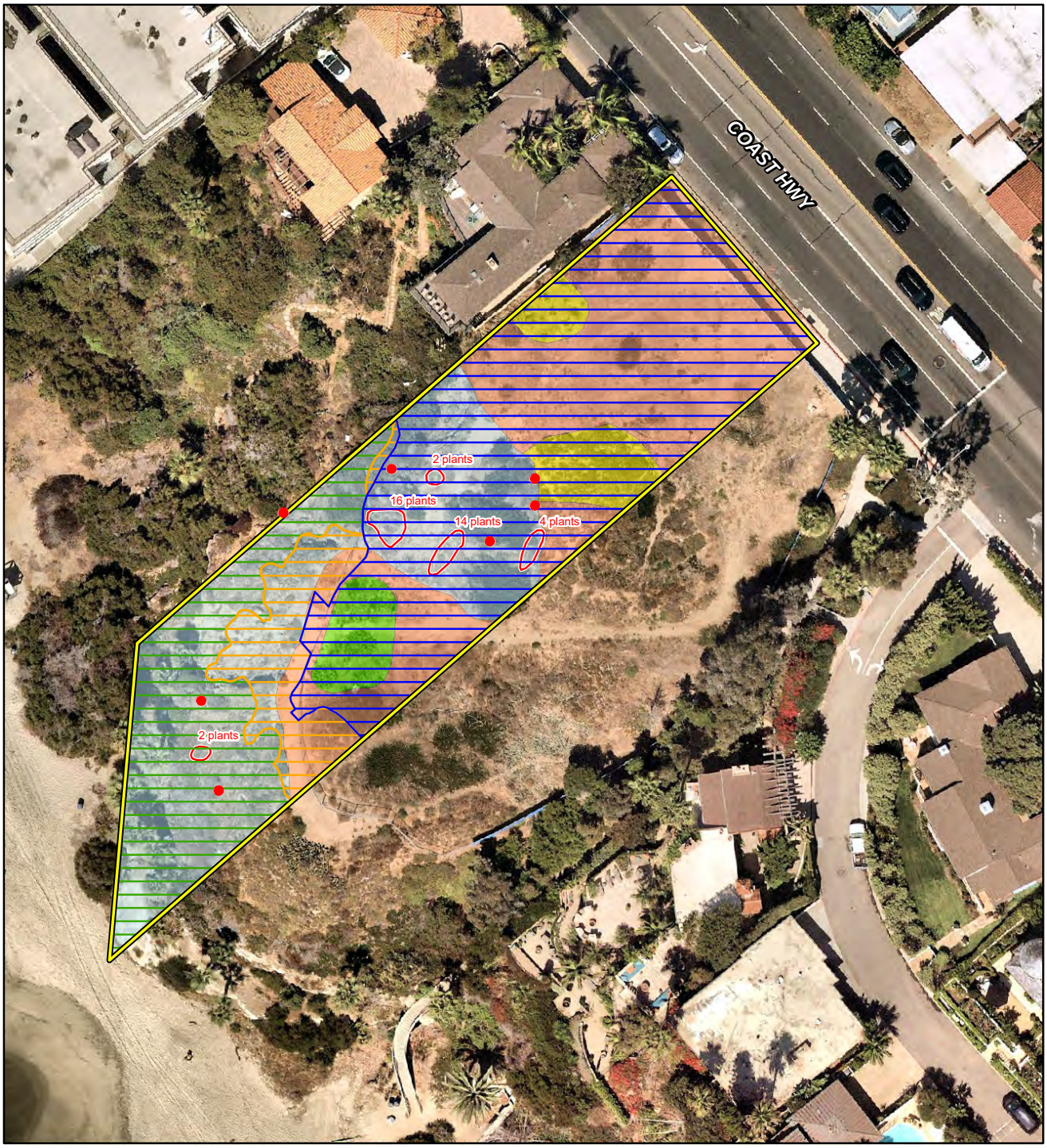
The project construction activities would result in permanent direct impacts to coastal bluff scrub, disturbed encelia scrub, disturbed sage scrub-grassland, and ruderal habitats (see **Figure 14, Impacts to Vegetation Types and Special-Status Plant Occurrences**). The permanent impact area shown on **Figure 14** includes all areas corresponding to the proposed residential footprint (e.g., structures, hardscape) as well as associated irrigated landscape areas. Temporary impact areas shown on **Figure 14** correspond to nonirrigated landscape areas where native plants (consisting of native plant species occurring on site) would be planted and established. Watering of the new plants in these temporary impact areas would be conducted manually and only as needed initially to establish the plants. The remainder of the Project Site (0.14 acre of coastal bluff scrub) would be preserved in place. **Table 8, Impacts to and Preservation of Vegetation and Land Cover Types within the Project Area**, provides a summary of permanent and temporary impacts to vegetation types identified on the Project Site and identifies the vegetation (i.e., coastal bluff scrub) to be preserved in place. Due to the highly disturbed habitat quality and regionally isolated nature of the disturbed encelia scrub and disturbed sage scrub-grassland, permanent impacts to these habitat types are not expected to require mitigation.

Table 8
Impacts to and Preservation of Vegetation and Land Cover Types within the Project Area

Vegetation/Land Cover Type	Permanent Impacts (ac.)	Temporary Impacts (ac.)	Preserved In Place (ac.)
Coastal Bluff Scrub	0.09	0.04	0.14
Disturbed Encelia Scrub	0.04	--	--
Disturbed Sage Scrub-Grassland Ecotone	0.02	--	--
Ruderal	0.21	0.02	--
Total Project Area	**0.36**	**0.06**	**0.14**
Source: LSA, January 2023.			

While the coastal bluff scrub existing on site is a "moderate value" habitat, it is also regionally isolated from other larger, contiguous habitat and open space areas. The habitat is degraded due to the prevalence of nonnative weeds and ornamental species. Because of the degraded and fragmented nature of the coastal bluff scrub existing on the project site, this habitat is considered low-quality habitat for most native wildlife species. Furthermore, the project as proposed would permanently impact only a small quantity of coastal bluff scrub (0.09 acre), and more than twice as much coastal bluff scrub (0.20 acre) would be either restored to equal or greater quality habitat or preserved in place. Therefore, permanent impacts to coastal bluff scrub are not expected to warrant mitigation.

In addition, it is anticipated that construction activities on-site would result in temporary impacts to biological resources/habitats adjacent to permanent impact areas, as shown in **Figure 14, Impacts to Vegetation Types and Special-Status Plant Occurrences**. However, in such cases the temporarily impacted areas which correspond to non-irrigated landscape areas, would be restored in place to predisturbance conditions of equal or greater quality in order to avoid adverse impacts to these resources. This would involve the planting and establishment of additional native plant species (including cliff spurge, California box-thorn, bushrue, and other native species identified **Figures 11 and 12** the landscape plans) in these temporary impact areas. Mitigation Measures MM-BIO-1 through MM-BIO-5 would minimize any potential project-related impacts on adjacent native habitat, wildlife, water quality, and nesting birds during construction activities. **Therefore, impacts would be less than significant with implementation of mitigation measures**.



LEGEND

- Project Location
- Permanent Impact Area
- Temporary Impact Area (Native Vegetation Planting)
- Conditions/Resources Preserved in Place

Special-Status Plants

- *Euphorbia misera* (Multiple Plants)
- *Euphorbia misera* (Single Plant)

Vegetation Type

- Coastal Bluff Scrub
- Disturbed Encelia Scrub
- Disturbed Sage Scrub-Grassland
- Ruderal

N

0 25 50
FEET

Source: LSA, January 2023.

Figure 14
Impacts to Vegetation Types and Special-Status Plant Occurrences

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Less Than Significant Impact. A significant impact may occur if riparian habitat or any other sensitive natural community identified locally, regionally, or by the State and federal regulatory agencies cited were to be adversely modified without adequate mitigation.

Coastal Zone

The project site is located within the Coastal Zone. Therefore, through provisions of the California Coastal Act, the California Coastal Commission is empowered to issue a Coastal Development Permit for many projects located within the Coastal Zone. In areas where a local entity has a certified Local Coastal Program (LCP), the local entity (e.g., the City) can issue a Coastal Development Permit only if it is consistent with the LCP. The project may require authorization under the City's LCP. However, there are no "high value" or "very high value" habitats or designated or proposed Environmentally Sensitive Habitat Areas (ESHAs) within the project site limits. In addition, there are no significant drainages courses on site or within 100 ft of the project limits. Consequently, the project would be considered consistent with the California Coastal Zone Act.

Critical Habitat

No portion of the project site is within designated or proposed critical habitat for any federally listed species. Thus, no impacts to critical habitat would result from project implementation.

No riparian or other sensitive natural communities exists on the project site or in the surrounding area.[34] Furthermore, the project site and surroundings are not located in or adjacent to a High Value Habitat as defined by the City or in the Biology Report.[35] In addition, there are no other sensitive natural communities identified by the CDFW.[36] Implementation of the project would not result in any adverse impacts to riparian habitat or other sensitive natural communities. **Therefore, impacts would be less than significant**.

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No Impact. A significant impact may occur if state or federally protected wetlands are modified or removed without adequate mitigation. There are no records or maps of any wetlands, potentially jurisdictional waterbodies, riparian resources, or significant drainage courses within or adjoining the project area, and none were observed during the site surveys. The Pacific Ocean, a jurisdictional navigable

[34] US EPA, NEPAssist, https://nepassisttool.epa.gov/nepassist/nepamap.aspx. Accessed October 2022.

[35] Laguna Beach GIS Map, https://lagunabeach.maps.arcgis.com/apps/webappviewer/index.html?id=75a3aa3236c7475bb5e81925d130a763. Accessed October 2022.

[36] California Department of Fish and Wildlife, CDFQ Lands, website: https://apps.wildlife.ca.gov/lands/, accessed: May 2020.

water of the United States, does occur to the west of the project site but is outside of the project disturbance limits. **Therefore, no impacts would occur**.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Less Than Significant Impact with Mitigation. A significant impact may occur if a project would interfere or remove access to a migratory wildlife corridor or impede the use of native wildlife nursery sites.

The project site is located in a developed urban area and surrounded by urbanized uses in each direction, including roads and residential uses and does not function as a wildlife corridor or linkage, or as a native wildlife nursery site. The nearest potential wildlife corridor occurs in the undeveloped natural areas associated with Aliso Canyon area approximately 0.5 mile east of the site, which would not be affected by project implementation.

Nesting Birds

The project site and immediate vicinity contain vegetation that provides suitable nesting habitat for a variety of native and migratory bird species. To ensure compliance with the Federal Migratory Bird Treaty Act and California Fish and Game Code Sections 3500–3516, preconstruction nesting bird surveys are recommended to occur prior to any vegetation clearing or construction activities planned to occur during the nesting bird season (February 15 through August 31). **Therefore, with successful implementation of the Mitigation Measure MM-BIO-3, impacts to nesting birds would be avoided.**

Wildlife Movement

Because the project site is adjacent to existing residential developments outside of any known wildlife movement corridor, project implementation would not have a substantial impact on wildlife movement.

Therefore, the project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species. The project would not interfere with established native resident or migratory wildlife corridors, nor would the project impede the use of native wildlife nursery sites. **Therefore, impacts would be less than significant**.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (e.g., oak trees or California walnut woodlands)?

No Impact. A project-related significant adverse effect could occur if a project is inconsistent with local regulations pertaining to biological resources.

While the project site is located in the Coastal Zone, it is not located in or adjacent to any area designated by the City's General Plan Open Space Conservation Element as potentially having high or very high value habitat. Chapter 12.06, Tree Removal Permit Process, of the LBMC regulates the removal of trees on public and private property in the City. In addition, Chapter 12.08, Preservation of Heritage Trees, provides for the protection of original native tree stands and historically and scenically important trees. There are no trees currently on the project site. Therefore, no conflict with local policies or ordinances protecting

biological resources would occur and construction of the project would not affect any protected trees. **Therefore, no impacts would occur**.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Less Than Significant Impact. A significant impact may occur if a project is inconsistent with resource policies of any conservation plans of the types cited above.

The project site is within the Orange County Central-Coastal Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP) Planning Area. However, the City is not a signatory jurisdiction under the NCCP/HCP. Nonparticipating landowners within a nonsignatory jurisdiction in the Planning Area may satisfy the requirements of FESA and CESA with respect to potential incidental take of listed species in either of the following ways: (1) on-site avoidance of take; or (2) satisfaction of applicable FESA and CESA provisions under the consultation and permit provisions of these statutes (e.g., Section 10(a)(1)(B) of FESA or Section 2081(b) of the California Fish and Game Code, respectively).

The project site is not located within a designated NCCP/HCP Reserve Area or Existing Use Area, or otherwise restricted/conservation area. While cliff spurge is mentioned in the NCCP/HCP as a covered species, coverage for incidental take/management applies only to the Dana Point Headlands property. Therefore, the project is not anticipated to adversely impact any species covered under the NCCP/HCP or other regional/local plans. **Thus, implementation of the project would not conflict with any adopted State, regional, or local conservation plan, and impacts would be less than significant**.

Mitigation Measures

MM-BIO-1 **Invasive Species Control**: Prior to ground disturbance and during construction activities, measures should be included to ensure that invasive plant material is not spread to areas outside the proposed project limits by tracking seed on equipment, clothing, and/or shoes. Equipment/material imported from an area where invasive plants exist must be identified, and measures (e.g., equipment cleaning) must be implemented to prevent importation and spreading of nonnative plant material within and outside the proposed project limits. All construction equipment accessing unpaved areas would be cleaned with water to remove dirt, seeds, vegetative material, or other debris that could contain or hold seeds of noxious weeds before arriving at and leaving the proposed project limits. Only certified weed-free straw, mulch, and/or fiber rolls would be used for erosion control.

MM-BIO-2 **Construction Site Housekeeping**:

A. Prior to ground disturbance, the project Contractor should install adequate erosion and sedimentation barriers (e.g., silt fencing) at the project site boundaries to prevent any sediment-laden runoff or debris from reaching the coastal bluffs and Pacific Ocean located to the west of the project site.

B. The project disturbance limits should be clearly marked with construction fencing (or other highly visible material), and vehicle/equipment maintenance and fueling areas should be located at least 100 ft away from the western project site boundaries.

C. To prevent inadvertent entrapment of animals during the construction phase of the proposed project, all excavated, steep-walled holes or trenches more than 2 ft deep should be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen fill or wooden planks should be installed. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals. In the case of trapped animals, escape ramps or structures should be installed immediately to allow the animal(s) to escape.

D. For the duration of construction activities, all food-related trash items such as wrappers, cans, bottles, and food scraps should be disposed of in securely closed containers and removed at least daily from the construction site.

E. Use of rodenticides and herbicides in project sites should be restricted. This is necessary to prevent primary or secondary poisoning of predators and the depletion of prey populations on which they depend. All uses of such compounds should observe label and other restrictions mandated by the United States Environmental Protection Agency, California Department of Food and Agriculture, and other State and federal legislation.

Construction site housekeeping measures would effectively minimize temporary construction effects on biological resources by limiting construction equipment and personnel from entering areas where wildlife may be impacted; limiting the potential for erosion, fuel, or chemical spills that could adversely impact water quality and adjacent aquatic habitats; reducing the likelihood of attracting or introducing predators of special-status species; and preventing the primary or secondary poisoning of wildlife in the project vicinity.

MM-BIO-3 **Preconstruction Nesting Bird Surveys and Active Nest Avoidance Buffers**: If vegetation removal, construction, or grading activities are planned to occur within the active nesting bird season (February 15 through August 31), a qualified biologist should conduct a preconstruction nesting bird survey no more than 3 days prior to the start of such activities. The nesting bird survey should include the project site and areas immediately adjacent to the site that could potentially be affected by project-related activities such as noise, vibration, increased human activity, and dust. If active bird nests are found within areas that could be directly or indirectly impacted by project-related activities, the qualified biologist should establish an appropriate buffer zone around the active nest(s). The appropriate buffer should be determined by the qualified biologist based on species, location, and the nature of the proposed activities. Project activities should be avoided within the buffer zone until the nest is deemed no longer active by the qualified biologist.

MM-BIO-4 **Restoration of Temporary Impact Areas**: Where construction activities on site would result in temporary impacts to biological resources/habitats adjacent to permanent impact areas, the temporarily impacted areas, which correspond to non-irrigated landscape areas, would be restored in place to predisturbance conditions of equal or greater quality in order to avoid adverse impacts to these resources. This includes the restoration of 0.02 acre of ruderal habitat to coastal bluff scrub and the enhancement, or improvement, of 0.04 acre of coastal bluff scrub by augmenting the existing conditions

with a variety of native species that occur on site, including cliff spurge, California box-thorn, bushrue, and other native species identified on the Landscape and Planting Plans. The restoration plan shall include cliff spurge individuals be replaced on site at a 3:1 ratio.

MM-BIO-5 **Add Select Plants to Landscape and Planting Plans**: To offset any potential impacts to cliff spurge, California box-thorn, and bushrue, these three species would be added to the plant palette identified on the Landscape and Planting Plans for the project.

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

The following analysis in this section is based on the Extended Phase I and Phase II Cultural Resources Assessment (Phase I and II) that was prepared for 31451 Coast Highway Project, City of Laguna Beach, California by ESA, dated November 2022. The Phase I and II is available in **Appendix F.1** of this document.

Regulatory Setting

Regulations exist at federal, state, and local levels with regard to cultural resources and include:

a) National Historic Preservation
b) National Register of Historic Places
c) Federal Native American Graves Protection and Repatriation Act
d) California Register of Historic Resources
e) CEQA Guidelines Section 15064.5
f) California Native American Graves Protection and Repatriation Act
g) California Health and Safety Code Section 7050.5
h) California Public Resources Code Section 5097
i) California Government Code Section 6254
j) Assembly Bill 52
k) Senate Bill 18
l) Orange County General Plan Resources Element

Environmental Setting

The City of Laguna Beach, which was incorporated on June 29, 1927, has a history dating back to the late 1870's. In 1871, George Thurston and his family were the first to arrive in South Laguna and settle in Aliso Canyon where they cultivated melons and vegetable for selling in Los Angeles. In 1876, Nathaniel and William Brooks arrived at Laguna Beach and because they stayed for more than a summer, they were considered the original pioneers. William claimed 170 acres at Arch Beach and built houses. Nathaniel worked to bring water via a series of pipes from Bluebird Canyon to Arch Beach. Arch Beach was later sold to Hubbard Goff. In 1905, the Thumb Brothers, LC McKnight, and Howard Heisler began to develop North Laguna with streets the bisect at right angles. Water was brought from Laguna Canyon. In the 1920s, Laguna Beach became known as an artist colony.

Checklist Discussion

a. Cause a substantial adverse change in the significance of a historical resource pursuant to State CEQA Guidelines §15064.5?
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to State CEQA Guidelines §15064.5?

***Less Than Significant Impact with Mitigation*.** Section 15064.5 of the State CEQA Guidelines defines an historical resources as: 1) a resource listed in or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources; 2) a resource listed in a local register of historical resources or identified as significant in an historical resource survey meeting certain state guidelines; or 3) an object, building, structure, site, area, place, record or manuscript which a lead agency determines to be significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided that the lead agency's determination is supported by substantial evidence in light of the whole record. A project-related significant adverse effect would occur if the project were to adversely affect a historical resource meeting one of the above definitions.

Section 15064.5 of the State CEQA Guidelines defines significant archaeological resources as resources which meet the criteria for historical resources, as discussed above, or resources which constitute unique archaeological resources. A project-related significant adverse effect could occur if the project were to affect archaeological resources which fall under either of these categories. Archaeological sites (such as are most often recommended eligible under Criterion 4 of the California Register, which is the potential for a resource to contribute information important to the study of history or prehistory. This is also known as the potential for a given resource to answer specific research questions (or its inherent "data or information potential"). In addition to meeting the Criteria for Evaluation, a property must have integrity. "Integrity is the ability of a property to convey its significance," (U.S. Department of the Interior 2002:44). For properties eligible under Criterion 4, less attention is given to their overall condition, than if they were being considered under Criteria 1, 2, or 3. Archeological sites, in particular, do not exist today exactly as they were formed as there are always cultural and natural processes that alter the deposited materials and their spatial relationships. For properties eligible under Criterion 4, integrity is based upon the property's potential to yield specific data that addresses important research questions.

Historical Structures

Generally, properties eligible for listing in the National Register are at least 50 years old. The California Office of Historic Preservation generally recommends an evaluation of buildings and structures older than 45 years of age by professionals meeting the Secretary of the Interior Standards Professional Qualifications for Architectural History and Archeology. The project site is currently undeveloped with the exception of an existing electrical utility box and an associated three-foot high retaining wall along the northern margin of the project site. Other than these current uses and the presence of a few dirt access roads in the more recent past, it appears to have never been improved based on review of aerials and topographic maps. The residence adjacent to the northwest of the project site was constructed between 1946 and 1952, while Coast Highway was constructed through Laguna Beach in 1926. The project site appears to have been bound by seaward trending drainages prior to the construction of Coast Highway. In particular, it appears that a relatively well-developed northeast/southwest trending drainage extended from east of Coast Highway and through the general southern portion of the project site to the beach. Furthermore, the project site, nor immediate surrounding uses were found eligible for listing in the

National Register of Historic Places (NRHP),[37] California Register of Historic Resources (CRHR),[38] and local designation.

Previous Cultural Resources Investigation at the Project Site

Previous cultural resource investigations identified two cultural resources (P-30-177513 and CA-ORA-842) within the project site. Resource P-30-177513 is described as the South Coast Water District Beach Interceptor Sewer and Tunnel, which is a two-mile subterranean tunnel constructed in 1954 that extends from just north of Aliso Point to the south point of Mussel Cove at South La Senda Drive. A subterranean segment of this linear resource crosses through the project site at the base of the cliffs where no construction activities are proposed; therefore, P-30-177513 would not be impacted by the project. CA-ORA-842 (West Locus), located in the northern portion of the project site, is discussed in further detail below.

Archeological Setting and Major Excavations

The South Central Coastal Information Center (SCCIC) records search conducted as part of the Phase I and II identified four previously recorded prehistoric archaeological sites (three habitation sites and one shell midden deposit) within a half-mile radius of the project site. CA-ORA-8/108/110, three major prehistoric habitation sites, are located approximately 0.75 miles northwest of the project site, just north of the Aliso Creek Estuary, and CA-ORA-3, a major archaeological excavation site at another prehistoric shell midden site, is located five miles northwest of the project site.

CA-ORA-8/108/110 Excavations

CA-ORA-8/108/110 (or the Goff's Island site) had been looted by locals and amateur archaeologists prior to major excavations by the Works Progress Administration (WPA). It was officially recorded by a sponsored survey in 1935 and described then as having a deep shell midden deposit that was nearly four feet in thickness an extended to the coastal bluff with a probable burial mound in the vicinity. The WPA conducted excavations at the site in 1939 and 1940 and recovered hundreds of lithics, bone and shell artifacts, and features, including burials with grave goods. Subsequent construction work in the area yielded isolated finds, including several burials. Archaeological test excavations in the 1990s produced shell fragments and isolated artifacts in disturbed contexts while more than 200 artifacts were recovered during archaeological construction monitoring in the early 2000s.

Two cultural components were identified at the resource consisting of a lower deposit which was called "Culture I," and an upper deposit which was called "Culture II." The inhabitants of Culture I used manos and metates for seed grinding while mortars and pestles appeared to be absent. Only a few projectile points were present and those that were had been regarded by Winterbourne as older, crudely made concave base and leaf-shaped styles. Shellfish remains were abundant and dominated by California mussel while very limited animal bone, indicative of hunting, was identified. Burials associated with Culture I were in a flexed position, with the head oriented towards the west or southwest, and generally lacked grave goods, which are traits that have been attributed to the later Millingstone horizon (8,000–

[37] National Parks Service, National Register of Historic Places, https://www.nps.gov/subjects/nationalregister/database-research.htm#table. Accessed October 2022.

[38] California State Parks, Office of Historic Preservation, https://ohp.parks.ca.gov/?page_id=21445. Accessed October 2022.

3,000 BP). Five radiocarbon dates collected by Scientific Resources Surveys, Inc. (SRS) in 1996 at the resource produced dates between 5050 and 4340 BP, consistent with the terminal Millingstone period.

The assemblage from the upper deposit, or Culture II, included the addition of the mortar and pestle for soft seed grinding while steatite objects and raw steatite were present. Side-notched projectile points (Gypsum and Elko), burials with grave goods, and house floors were present in much higher quantities than Culture I. These traits have been attributed to the Intermediate horizon, approximately 3,000 to 1,250 BP. Shellfish harvesting was still present and now included large amounts of abalone and fish and terrestrial mammal bone are abundant. Deep-water ocean resources were increasingly being utilized and more evidence for trade was present. SRS obtained two more radiocarbon samples that produced dates of 2980 and 2550 BP, which places this later occupation during the early Intermediate period.

CA-ORA-3 Excavations

A handful of archaeological excavations were carried out at CA-ORA-3 between the late 1970s and early 1990s, including those undertaken by Magalousis (1978a, 1978b, 1978c, and 1979a), Breece (1987), and Macko (1991). The following paragraphs summarize the previous excavations, providing insight into what the subsurface archaeological deposits associated with CA-ORA-842 (West Locus) may contain and what their vertical extent might be. CA-ORA-3 is located in the Crescent Bay neighborhood in northern Laguna Beach approximately five miles northwest of the project site.

Magalousis (1978-1979)

The Magalousis excavations were undertaken for residential development and improvements within lots 9, 17, and 40 (1978a, 1978b, and 1978c) of the Crescent Bay neighborhood which presently overlaps the east-central portion of resource CA-ORA-3, as well as the development of Crescent Bay Point Park (1979a), which overlaps the southern portion of the resource. A variety of methods were employed by Magalousis over the course of the four excavations and included mechanical trenching and the excavation of test units ranging in size from 1 meter by 1 meter to 4 meters by 4 meters. The excavations conducted within lots 9, 17, and 40 extended to a maximum depth of 140 centimeters (cm) and the midden deposits were highly disturbed as a result of historic land use and bioturbation. Cultural materials recovered include shellfish remains dominated by the presence of mussel, as well as lithic debitage and ground stone. No radiocarbon dates are provided for these excavations.

Magalousis' archaeological investigation at Crescent Bay Point Park (1979a) included the excavation of nine test units, which covered approximately 40 percent of the site's intact deposits within the investigation area. As a result of the excavations, Magalousis identified an intact midden deposit that extended from a depth of 50 cm to 70 cm and was characterized by a stable surface with narrow bands of sterile wind-blown sediments suggesting the site was occupied seasonally (Magalousis 1979a). Cultural material recovered from these intact deposits included 1,210 grams of lithic debitage and 93,755 grams of shellfish remains, as well as ground stone fragments, projectile points, stone discs ("gamestones"), and fish hooks. The lithic assemblage was largely comprised of locally derived materials such as quartz, rhyolite, basalt, and chert. The shellfish assemblage was comprised of rocky intertidal species and was dominated by mussel (approx. 90-95 percent), but also contained abalone, barnacle, limpet, and oyster. The intact deposit was overlain by disturbed midden soil containing fewer artifacts and shellfish remains

and exhibiting a lack of internal structure as a result of plowing and rodent burrowing. No radiocarbon dates are provided for this excavation.

Breece (1987)

In 1987, Breece undertook Phase II and data recovery excavations within a 10.5-acre residential lot located within the central portion of CA-ORA-3. At the time of the excavations, the parcel was developed with a main residence, a guest house, and landscaping. Breece excavated 15 1 meter by 1 meter units within the portions of the parcel exhibiting the least amount of previous disturbance. The excavations extended to a maximum depth of 120 cm and soils primarily consisted of semi-compact to compact dark brown silty to sandy loam. As a result of the excavations, 19,334 grams of shellfish and 471 artifacts were recovered. The large majority of the shellfish assemblage was comprised of mussel shell, with lesser amounts of abalone and barnacle. Artifacts recovered included one biface fragment, two hammerstones, three manos, one shell ornament, three cores, three utilized flakes, two metates, and 456 pieces of lithic debitage. The lithic assemblage largely consisted of quartz debitage, but included other lithic materials such as chert and chalcedony.

Macko (1991)

In 1991, Macko undertook excavations within a 10.5-acre lot in the western half of CA-ORA-3 in support of a residential development project. Macko employed a number of excavation methods, including mechanical trenching, test unit excavation, and post-hole excavation. Seven 1x1 m test units were excavated as were three 50 cm by 50 cm post holes. The excavations recovered 240,000 grams of shellfish, 185 grams of faunal bone, 15 pieces of ground stone, and 789 pieces of lithic debitage. The shellfish assemblage was largely comprised of mussel, but 36 additional species were also identified and included abalone, barnacle, *Chione* spp., and chiton.

The faunal assemblage was comprised of 2,029 specimens totaling 185 grams and representing 30 species of terrestrial mammals (deer, rabbit, jackrabbit, coyote), fish (jacksmelt, spotted sand bass, surfperch, California Corbina, yellowfin croaker, blacksmith, Pacific mackerel, and sheephead), shark (soupfin shark), and bird (duck). Three otoliths (fish ear bones) were identified within the faunal assemblage and analysis of the three specimens was undertaken to determine the season in which the fish were procured. The analysis is based on the presence of annual growth rings, similar to tree rings, which accumulate incrementally around the bone at a predictable rate allowing researchers to discern the season in which the fish died. The otolith analysis indicates the fish were procured sometime in the early summer (May or June).

The ground stone assemblage consisted of seven manos, two metates, and six undifferentiated ground stone. The ground stone was recovered from 12 separate units spread throughout the investigation area.

The lithic assemblage recovered by Macko included 789 pieces of debitage primarily comprised of quartz, but also included basalt, chert, rhyolite, and two pieces of obsidian. The debitage represents tool

manufacture and maintenance at the site indicating that lithic material procurement and initial core reduction activities were carried elsewhere, presumably closer to the lithic sources.

Macko obtained radiocarbon dates on a sample eight shell fragments consisting of hinge pieces collected from a broad cross section of the investigation area's horizontal and vertical extent. The radiocarbon dates range from 3080 BP to 5280 BP, indicating the site was used throughout the Middle Holocene.

Interpretations

The interpretations of all three researchers regarding the site's function are broadly similar given the assemblages produced by the respective investigations within CA-ORA-3 were largely consistent. The general consensus is that the site represents a series of seasonal resource-specific camp sites focused on the harvesting and processing of shellfish gathered from the rocky intertidal coastal zone immediately south of the bluffs on which the site is located. This is reflected in the preponderance of mussel shell coupled with the lack of diversity in the respective artifact assemblages. The presence of only a handful of artifact types indicates the site was used for a small set of specific tasks (i.e., shellfish harvesting and processing) requiring only a relatively small tool kit and does not represent long-term habitation, which would result in the accumulation of a broader set of artifacts types. Furthermore, the intact deposit identified by Magalousis (1979a) at Crescent Bay Point Park was layered with narrow bands of wind-blown sediments that may have accumulated during hiatuses in the site's use. This, coupled with Macko's (1991) otolith analysis indicating an early summer occupation, suggests that the site was occupied on a seasonal basis and does not represent permanent habitation.

The lack of diagnostic artifacts from all excavations within CA-ORA-3 made it difficult to determine the site's placement within the regional prehistoric chronology prior to the eight radiocarbon dates obtained by Macko, which place the site solidly within the Middle Holocene. As noted above in the *Prehistoric Setting*, the Middle Holocene's La Jolla Complex was characterized by subsistence practices focused on bays and estuaries of the Orange and San Diego County coastlines where shellfish and plant resources were abundant. This is reflected by the respective assemblages identified at CA-ORA-3, which point to shellfish collection and processing as the primary subsistence activity.

Previous Research

Resource CA-ORA-842 was originally recorded in 1979 as a prehistoric archaeological site consisting of a midden deposit with shell and lithic fragments on two non-contiguous parcels; an East Locus located at 31441 South Coast Highway (across Coast Highway from the project site) and a West Locus within the project site at 31451 South Coast Highway. The East Locus consists of a shell midden deposit that is currently visible in the profile of an exposed cut at the intersection of West St. and Coast Highway. It is possible that this cut was made during construction of West Street. and Coast Highway. Visible portions of the midden deposit are located within a 14 meter x 6 meter area within the southwest corner of a vacant lot. This locus was not analyzed as part of the Phase I and II. The West Locus is located approximately 70 meters southwest of the East Locus. The Archaeological Site Survey Record indicates that only a small portion of the midden was present at the West Locus within the Dolley property (current project site), that most has been destroyed, and that the remaining midden can be found under the house and property adjacent to the project site. The midden at the West Locus is described as encompassing an area of 25 by 25 meters with a depth of 50 centimeters (cm).

In July of 1979, an archaeological excavation [consisting of five test pits (Test Pits) of unreported size] was conducted within a portion of CA-ORA-842 West Locus in the project site and outside the project site. One Test Pit was placed in section A, one in section B and three in section C and that the "precise metric locations… may be acquired from official field notes"; however, no field notes were found attached to the testing report. Review of an Assessor's Map found in the testing report shows numbers 1 through 5 (with an asterisk next to each number) within the project site and within the adjacent parcel to the southeast, which was under construction at the time of the Phase I and II excavation efforts. Therefore, it is possible that these are the general locations of Test Pits #1 through #5. If that is the case, then Test Pits #3, #4, and #5 were excavated within the project site and within the current boundaries of CA-ORA-842 while Test Pits #1 and #2 were excavated on the adjacent parcel outside of the boundaries of the resource. Additionally, the letters A, B, and C are observed in the Assessor's Map, but no delineation is observed, so as to ascertain the boundaries of the sections. Moreover, the testing report first presents the results per section, but later goes into detail about Test Pits #4 and #5. For instance, it is mentioned that the Test Pits in sections A and B yielded sterile soils within the first 10 cm and that Section C was highly disturbed by bulldozing/dumping and yielded no in situ midden. The report then mentions that a "second TP (#4) was established in this section [which appears to refer to section C] … here light midden soil was detected 0–30 cm; shell was highly fragmented… no definable lithics or other cultural materials were found, with the exception of a glass fragment on sterile soil in association with the midden-like soil". Lastly, the report indicates that Test Pit #5 (which appears to be located on the southwest portion of the project site and adjacent to the 31441 South Coast Highway property) was excavated near the cliff's edge, which yielded a midden deposit down to 50 cm that extends west onto the adjacent home. The shell identified (consisting of abalone, barnacle, and mussel) was highly fragmented and appeared to be of "great antiquity." An abalone shell from Test Pit #5 was reportedly obtained for radiocarbon analysis.

In August of 1979, a site was recorded consisting of a shell midden and three artifacts (one quartz core, one possible ground stone fragment, and one bifacial hammer stone) within a vacant lot at the southeast corner of Coast Highway and West Street. The site (encompassing a 40 by 100-foot area) was described as a remnant of a larger site likely destroyed during construction of Coast Highway.

In 2004, an archaeological excavation was the first to identify both site loci (the location identified in 1979 [East Locus] and the location at 31441/31451 South Coast Highway identified in 1979 [West Locus]) as part of the same site (CA-ORA-842). Only shell was observed at the East and West loci.

In 2018 an updated site record was completed for CA-ORA-842 during a survey for the California Department of Transportation. The survey encompassed Coast Highway plus a 30-foot radius and yielded the identification of highly fragmented shell and fire affected rock (in a 10 by 10-meter area) at the East Locus. No cultural material was observed near the highway and within the easternmost portion of the project site.

In 2020, a Phase I Cultural Resources Assessment was conducted of the project site that included a records search through the SCCIC and a pedestrian survey of the project site. During the pedestrian survey, West Locus of CA-ORA-842 was relocated and some fire-affected rock, one quartz core, and a well-developed shell midden composed primarily of California mussel (Mytilus californianus) within a 35-meter by 20-meter area was identified in the northern portion of the project site.

Existing Conditions of CA-ORA-842

In 2021, a similar well-developed shell midden was identified on an elevated terrace within the northwestern portion of the project site. The area was undeveloped and mostly devoid of surface vegetation and therefore ground surface visibility was excellent (i.e., 80 to 100 percent visibility), although a few scattered shrubs and some patches of ice plant were observed. There is evidence of a recent fire on the surface in several locations due to the presence of torched trunks and root systems (of what appear to be shrubs) in close association with charred soils. The shell midden deposit appears to be isolated to the flatter areas of the terrace while dispersed and scattered shell was observed eroding down the south-facing slope. No shell midden was observed on the lower terrace of any other areas of the project site. The shell midden deposit is visible in the vertical cliff face of the upper terrace near the southern boundary of the resource. The deposit is visible in the cliff face for approximately 50 linear feet and extends into the adjacent property underneath the existing single-family residence there (31441 South Coast Highway). A rocky stratum underlies the shell midden deposit. Partially buried concrete chunks were observed in several locations including chunks that were eroding out of the aforementioned cliff face within the uppermost portion of the shell midden deposit. There was also the occurrence of concrete debris and "rubble" across the resource in 1979. Refer to the Phase I and II for photos of the project site (available in **Appendix F.1** of this document).[39]

In order to identify the vertical and horizontal boundaries of this resource and to determine whether it qualifies as a historical resource or a unique archaeological resource in accordance with CEQA, 13 shovel test pits (STPs) were excavated and three test units (TEUs) were excavation across the resource and subsequent laboratory processing and analysis was conducted of the materials that were excavated. The assessment also included an impact analysis and recommended mitigation measures to reduce potentially significant impacts to cultural resources to a less than significant level under CEQA.

The results revealed that resource CA-ORA-842 (West Locus) is composed of a multi-component prehistoric archaeological site that consists of a well-developed prehistoric shell midden deposit. The resource appears to contain two principal periods of occupation associated with the late Holocene, represented by Stratum II (between ~2500 BP and ~1000 BP or between ~1450 BP and ~1000 BP) and Stratum IIA (around ~3400 BP). One radiocarbon date from Stratum III produced a date of ~5600 BP, suggesting an even earlier occupation well into the middle Holocene; however, very limited archaeological materials were recovered from this otherwise culturally sterile stratum. Stratum II appears to represent an occupation that principally functioned as a shellfish processing station that was primarily focused on processing California mussel and was utilized on a seasonal basis.

Both occupations appear to have principally functioned as shell processing areas focused on processing California mussel and where stone manufacture activities, such as core reduction and biface reduction, took place. It appears that quartz was a favored raw material for stone tools and may have been quarried within the project site or vicinity based on the quartz clasts that are known to occur in the San Onofre Breccia geologic unit that is exposed at the project site. Although the vertebrate faunal collection is too fragmented and small in size and number to provide detailed information about subsistence practices at the resource, it does appear that late stage kill processing occurred within later occupation of the resource

[39] A Department of Parks and Recreation (DPR Site) Site Form update for CA-ORA-842 was prepared describing the current condition of the resource as observed and includes the results of the Phase I and II. The DPR Site form update is provided in Appendix B of the Phase I and II, available in **Appendix F.1** of this document.

(Stratum II). The occupants may have selected this location given its proximity to marine, terrestrial, and estuarine environments that would have supported a variety of flora and fauna and fresh water resources to exploit. The lack of features such as house floors or roasting pits suggests that CA-ORA-842 (West Locus) may not have been a residential base, and instead functioned as a satellite camp that was utilized on a temporary basis.

Moreover, future stable oxygen isotope analysis of shell specimens within Stratum II and IIA could determine which season the shellfish remains were harvested in and, in turn, the season of occupation for the resource. Future macrobotanical analysis of the light fraction materials (e.g., plant parts and seeds) produced form the floatation of the column samples could yield macrobotanical remains indicating seasonally available plant resources and could illuminate whether additional subsistence activities occurred at the resource. This could also lead to more insight on settlement mobility and resource intensification.

In summary, the results of the test excavations at CA-ORA-842 (West Locus) indicate the site retains data potential sufficient to address research questions regarding the prehistory of the Orange County coast during the middle and late Holocene, and is therefore eligible for listing in the California Register under Criterion 4 and qualifies as a historical resource under CEQA. In particular, it is recommended that the specific areas around TEU 1 and 2 contain the components of the resource that contribute to its eligibility given that the shell midden deposits in these areas were most intact (i.e., have structural "integrity"), relatively undisturbed, and the deepest. The area containing eligible deposits is discrete, measuring only approximately 17 meters x 5 meters (56 feet x 16 feet). All other areas of the resource are recommended as non-contributing components given their apparent poor integrity that is demonstrated by their lack of intact shell midden deposits or their heavily disturbed condition.

Project Design

Proposed cuts in some areas of the project site are anticipated to extend from 10 feet to 20 feet maximum below the ground surface (feet bgs) while other areas would either have no cuts at all or very shallow cuts. Original site plans had included proposed excavation cuts up to 10 to 12 feet bgs in some areas where the significant contributing components of resource CA-ORA-842 West Locus are located. However, the Applicant has revised the site plans to avoid the significant contributing components of resource. Specifically, the Applicant is proposing a larger 16-foot setback along the side yard (the original plans proposed a 12-foot setback) that would not require any extensive grading or cutting in the area. Instead, this area would be improved with St. Augustine grass, which is a Fire Department-approved ground cover, and would be utilized as a firefighter access route. Moreover, any shallow ground-disturbance or clearing associated with installing the grass and any subsequent root system associated with the grass would only impact the disturbed upper portions of the resource. The root system of the grass would also provide more support for the undisturbed intact portions of the resource by preventing future impacts from natural erosion. Therefore, the project would avoid the significant contributing components of resource CA-ORA-842 West Locus and would not cause a substantial adverse change to the significance of a historical resource under CEQA.

Conclusion

The results of the Phase I and II has revealed that resource CA-ORA-842 (West Locus) is composed of a multi-component prehistoric archaeological site that consists of a well-developed prehistoric shell midden deposit. Therefore, it is recommended that CA-ORA-842 (West Locus) is eligible for listing in the California

Register under Criterion 4 because it contains sufficient data important in prehistory. As a result, CA-ORA-842 (West Locus) qualifies as a historical resource under CEQA. Eligibility of the resource is limited to a discrete area around TEU 1 and 2 where shell midden deposits were deep and largely intact. All other areas of the resource are recommended as non-contributing elements given their lack of intact shell midden deposits or their heavily disturbed condition. However, the Applicant has revised the site plans to avoid the significant contributing components of resource and; therefore, the project would not cause a substantial adverse change to the significance of a historical resource under CEQA and mitigation measures related to the resource are not warranted.

Nonetheless, given the presence of CA-ORA-842 (West Locus) within the project site, the identification of several prehistoric archaeological resources in the immediate vicinity, and the presence of favorable natural conditions (e.g., proximity to Pacific Ocean and other marine, estuarine, and terrestrial habitats) that would have attracted prehistoric inhabitants to the area, there is a high potential to encounter previously unknown archaeological resources during construction of the project. Based on these results, it is recommended that archaeological and Native American monitoring occur during project-related ground disturbing activities. Mitigation measures MM-CULT-1 through MM-CULT-7 for the archaeological and Native American construction monitoring are provided below. With implementation of these mitigations measures (MM-CULT-1 through MM-CULT-7), impacts to previously unknown historical resources, archaeological resources, and human remains would be less than significant under CEQA.[40] **Therefore, impacts to previously unknown historical resources, archaeological resources, and human remains would be less than significant with implementation of mitigation measures**.

c. Disturb any human remains, including those interred outside of dedicated cemeteries?

***Less Than Significant Impact*.** A significant adverse effect may occur if grading or excavation activities associated with a project were to disturb previously interred human remains. No known human remains have been documented within the project site or the immediate vicinity. While the project site is unlikely to contain human remains, should human remains be encountered unexpectedly during grading or construction activities, State Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98. Pursuant to PCR Section 5097, if human remains of Native American origin are discovered during project construction, compliance with State laws, which fall within the jurisdiction of the Native American Heritage Commission, relating to the disposition of Native American burials would be required (refer to MM-CULT-7, which has been included to further reduce impacts). **Considering the low potential for any human remains to be located on the project site and that compliance with regulatory standards described above would ensure appropriate treatment of any human remains unexpectedly encountered during grading activities, the project's impact on human remains would be less than significant**.

[40] An evaluation of the resource under Criterion 1, 2, and 3 is not included in the Phase I and II nor an evaluation of whether the resource qualifies as a tribal cultural resource under CEQA, the latter of which was determined based on government-to-government consultations between the City and Native American Tribes who have requested consultation and could lead to additional mitigation measures for the project. The inclusion of Assembly Bill (AB) 52 consultation results was required for preparation of this document.

Mitigation Measures

MM-CULT-1 **Retain Qualified Archaeologist**: Prior to the issuance of a demolition or grading permit, the Applicant shall retain a qualified Archaeologist who meets the Secretary of the Interior's Professional Qualifications Standards for professional archaeology (Qualified Archaeologist) to carry out and ensure proper implementation of mitigation measures that address archaeological resources. The Applicant shall submit a letter of retention to the City of Laguna Beach (City) no fewer than 60 days before construction activities commence to demonstrate to the City that the Applicant has retained a Qualified Archaeologist who meets the Secretary of the Interior's Professional Qualifications Standards. The letter shall include a resume for the Qualified Archaeologist. The letter shall also demonstrate that a Native American Monitor has been retained.

MM-CULT-2 **Training Session for Construction Personnel**: Prior to the commencement of ground-disturbing activities, a Sensitivity Training shall be given by the Qualified Archaeologist and Native American Monitor for construction personnel. The training session will include a brief review of the cultural sensitivity of the project site and the surrounding area, what resources could potentially be identified during ground-disturbing activities, and the procedures to follow in the event of discovery during construction. A sign in sheet for attendees of this training shall be included in the monitoring technical report as described in MM-CULT-6.

MM-CULT-3 **Archaeological Construction Monitoring**: The Qualified Archaeologist shall oversee an archaeological monitor who has a bachelor's degree in a relevant field of study and either two months of archaeological construction monitoring experience or two months of supervised training with prehistoric archaeological materials in a field or laboratory setting. The archaeological monitor shall be present during construction activities on the project Site deemed by the Qualified Archeologist to have the potential for encountering archeological resources, such as demolition, clearing/grubbing, drilling/auguring, grading, trenching, excavation, or other ground- disturbing activity associated with the project. The activities to be monitored may also include off-site improvements in the vicinity of the project site, such as utilities, sidewalks, or road improvements. The archeological monitor and Native American Monitor (as required under MM-CULT-4) shall have the authority to direct the pace of construction equipment activity in areas of higher sensitivity and to temporarily divert, redirect or halt ground disturbance activities to allow identification, evaluation, and potential recovery of archaeological resources in coordination with the Qualified Archaeologist. Full-time monitoring may be reduced to part-time inspections, or ceased entirely, if determined appropriate by the Qualified Archaeologist.

MM-CULT-4 **Native American Construction Monitoring**: Prior to issuance of a demolition permit or grading permit, the Applicant shall retain a Native American Monitor. The appropriate Native American Monitor shall be selected based on ongoing consultation under AB 52 and shall be identified on the most recent contact list provided by the Native American Heritage Commission. The Native American Monitor shall be present during construction activities on the project site deemed by them to have the potential for encountering archeological resources, such as demolition, clearing/grubbing, drilling/auguring, grading, trenching, excavation, or other ground- disturbing activity associated with the project.

The activities to be monitored may also include off-site improvements in the vicinity of the project site, such as utilities, sidewalks, or road improvements. The Native American Monitor, in coordination with the Qualified Archaeologist and archaeological monitor as identified in Mitigation Measure CULT-3, shall have the authority to direct the pace of construction equipment activity in areas of higher sensitivity and to temporarily divert, redirect or halt ground disturbance activities to allow identification, evaluation, and potential recovery of tribal cultural resources. Full-time monitoring may be reduced to part-time inspections, or ceased entirely, if determined appropriate by the Native American Monitor in the event there appears to be little to no potential for impacting tribal cultural resources

MM-CULT-5 **Inadvertent Discovery of Resources:** In the event that historic (e.g., bottles, foundations, refuse dumps/privies, railroads, etc.) or prehistoric (e.g., hearths, stone tools, shell and faunal bone remains, etc.) resource are encountered, ground-disturbing activities shall be halted or diverted away from the vicinity of the find so that the find can be evaluated. An appropriate buffer area shall be established by the Qualified Archaeologist around the find where construction activities shall not be allowed to continue. Work shall be allowed to continue outside of the buffer area. All archaeological resources unearthed by project construction activities shall be evaluated by the Qualified Archaeologist and the Native American tribal monitor. If the resources are prehistoric or Native American in origin, the Native American Monitor shall consult with the City and Qualified Archaeologist regarding the treatment and curation of any prehistoric archaeological resources. If a resource is determined by the Qualified Archaeologist to constitute a "historical resource" pursuant to CEQA Guidelines Section 15064.5(a) or a "unique archaeological resource" pursuant to Public Resources Code Section 21083.2(g), the Qualified Archaeologist shall coordinate with the Applicant and the City to develop a formal treatment plan that would serve to reduce impacts to the resources. The treatment plan established for the resources shall be in accordance with CEQA Guidelines Section 15064.5(f) for historical resources and Public Resources Code Sections 21083.2(b) for unique archaeological resources. The treatment plan shall incorporate the Native American tribal monitor's treatment and curation recommendations. Preservation in place (i.e., avoidance) is the preferred manner of treatment. If preservation in place is not feasible, treatment may include implementation of archaeological data recovery excavations to remove the resource along with subsequent laboratory processing and analysis. The treatment plan shall include measures regarding the curation of the recovered resources. The prehistoric or Native American resources may be placed in the custody of the Native American Tribe who may choose to use them for educational purposes or they may be curated at a public, non-profit institution with a research interest in the materials, such as the Cooper Center. If the Native American Tribe or an institution does not accept the resources, they may be donated to a local school or historical society in the area (such as the Laguna Beach Historical Society) for educational purposes.

MM-CULT-6 **Prepare Memo and Monitoring Technical Report**: Within 14 days of concluding the archaeological monitoring, the Qualified Archaeologist shall prepare a memorandum stating that the archaeological monitoring requirement of the mitigation measure has been fulfilled and summarize the results of any archaeological finds. The memorandum shall be submitted to the Applicant and City. Following submittal of the memorandum,

the Qualified Archaeologist shall prepare a technical report the follows the format and content guidelines provided in California Office of Historic Preservation's Archaeological Resource Management Reports (ARMR). The technical report shall include a description of resources encountered during construction monitoring, if any, treatment of the resources, results of the artifact processing, analysis, and research, and evaluation of the resources with respect to the California Register of Historical Resources and CEQA. Appropriate California Department of Parks and Recreation Site Forms (Site Forms) shall also be prepared and provided in an appendix to the report. The technical report shall be prepared under the supervision of the qualified Archaeologist and submitted to the City within 150 days of completion of the monitoring. The final draft of the report shall be submitted to the South Central Coastal Information Center.

MM-CULT-7 **Inadvertent Discovery of Human Remains**: If human remains are encountered unexpectedly during implementation of the project, State Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the Native American Heritage Commission (NAHC). The NAHC shall then identify the person(s) thought to be the Most Likely Descendent (MLD). The MLD may, with the permission of the land owner, or his or her authorized representative, inspect the site of the discovery of the Native American remains and may recommend to the owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The MLD shall complete their inspection and make their recommendation within 48 hours of being granted access by the land owner to inspect the discovery. The recommendation may include the scientific removal and nondestructive analysis of human remains and items associated with Native American burials. Upon the discovery of the Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred, as prescribed in this mitigation measure, with the MLD regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.

If the NAHC is unable to identify a MLD, or the MLD identified fails to make a recommendation, or the landowner rejects the recommendation of the MLD and the mediation provided for in subdivision (k) of Section 5097.94, if invoked, fails to provide measures acceptable to the landowner, the landowner or his or her authorized representative shall inter the human remains and items associated with Native American human remains with appropriate dignity on the facility property in a location not subject to further and future subsurface disturbance.

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

The following analysis of potential energy impacts of the project is based, in part, on the CalEEMod model outputs prepared as part of the AQ/GHG Study and energy consumption worksheets prepared for the project. The CalEEMod outputs are included in **Appendix E.1** of this document.

Regulatory Setting

Regulations exist at federal, state, and regional levels with regard to energy and include:

a) Federal Corporate Average Fuel Economy (CAFE) Standards
b) Federal Energy Independence and Security Act
c) California Building Energy Efficiency Standards (Title 24, Part 6)
d) California Green Building Standards (Title 24, Part 11)
e) California's Renewable Portfolio Standard
f) CEQA Guidelines Appendix F
g) Senate Bill 350
h) Senate Bill 100
i) Assembly Bill 32 (California Global Warming Solutions Act of 2006) and Senate Bill 32
j) Assembly Bill 1493 (Pavley I)
k) Executive Order S-1-07 (California Low Carbon Fuel Standard)
l) California Air Resources Board:
m) Advanced Clean Car Regulation
n) Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling
o) Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen, and other Criteria Pollutants from In-Use Heavy-Duty Diesel-Fueled Vehicles
p) Sustainable Communities Strategy (SB 375)
q) Assembly Bill 758
r) Senate Bill 1389
s) California Environmental Quality Act

Environmental Setting

Electricity

Electricity is provided to the southern portion of the City, where the project site is located, by San Diego Gas and Electric (SDG&E). SDG&E provides electric power to more than 3.7 million persons, within a service area encompassing approximately 4,100 square miles.[41] SDG&E derives electricity from varied energy resources including fossil fuels, hydroelectric generators, nuclear power plants, geothermal power plants, solar power generation, and wind farms. SDG&E also purchases power from independent power producers and utilities, including out-of-state suppliers.[42] In 2020, California used 272,576 gigawatt-hours (GWh) of electricity, of which 33 percent was from renewable resources.[43] **Table 9, Electricity Consumption in the SDG&E Service Area for 2020**, shows the electricity consumption by sector and total for SDG&E.

Table 9
Electricity Consumption in the SDG&E Service Area for 2020

Agriculture and Water Pump	Commercial Building	Commercial Other	Industry	Mining and Construction	Residential	Streetlight	Total Usage (GWh)
349	7,150	1,803	1,351	360	6,350	81	17,445
Source: California Energy Commission, Electricity Consumption by Entity, https://ecdms.energy.ca.gov/elecbyutil.aspx. Accessed October 2022.							

Natural Gas

Natural gas is provided to the City by Southern California Gas (SoCalGas). California also consumed approximately 12,332 million U.S. therms (MMthm) of natural gas in 2020.[44] **Table 10, Natural Gas Consumption in the SoCalGas Service Area for 2020**, shows the natural gas consumption by sector and total for SoCalGas.

Table 10
Natural Gas Consumption in the SoCalGas Service Area for 2020

Agriculture and Water Pump	Commercial Building	Commercial Other	Industry	Mining and Construction	Residential	Total Usage (MMthm)
74	802	88	1,616	226	2,426	5,231
Source: California Energy Commission, Natural Gas Consumption by Entity, https://ecdms.energy.ca.gov/gasbyutil.aspx. Accessed October 2022.						

41 San Diego Gas and Electric, Sustainability Strategy Update, October 2021.

42 San Diego Gas and Electric, About Us, https://www.sdge.com/more-information/our-company/about-us. Accessed October 2022.

43 California Energy Commission, 2020 Total System Electric Generation, https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2020-total-system-electric-generation/2020. Accessed October 2022.

44 California Energy Commission, Natural Gas Consumption by Entity, https://ecdms.energy.ca.gov/gasbyutil.aspx. Accessed October 2022.

Transportation Energy

Petroleum fuels are primarily consumed by on-road and off-road equipment in addition to some industrial processes. In 2019, approximately 39 percent of the State's energy consumption was used for transportation activities.[45] Californians presently consume over 19 billion gallons of motor vehicle fuels per year. Though California's population and economy are expected to grow, gasoline demand is projected to decline from roughly 15.6 billion gallons in 2017 to between 12.1 billion and 12.6 billion gallons in 2030, or a reduction of more than 19 percent. This decline comes in response to both increasing vehicle electrification and higher fuel economy for new gasoline vehicles.[46]

California is one of the top producers of petroleum in the nation with drilling operations occurring throughout the State. A network of crude oil pipelines connects production areas to oil refineries in the Los Angeles area, the San Francisco Bay area, and the Central Valley. California oil refineries also process Alaskan and foreign crude oil received at ports in Los Angeles, Long Beach, and the San Francisco Bay area. California requires all motorists use California Reformulated Gasoline, which is sourced almost exclusively from in-state refineries. Gasoline, which is used by light-duty cars, pickup trucks, and sport utility vehicles, is the most used transportation fuel in California with 15.4 billion gallons sold in 2019. Diesel, which is used primarily by heavy duty-trucks, delivery vehicles, buses, trains, ships, boats and barges, farm equipment, and heavy-duty construction and military vehicles, is the second most used fuel in California with 1.8 billion gallons sold in 2019.[47]

Checklist Discussion

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less Than Significant Impact. A significant impact may occur if a project were to consume energy resources in a wasteful, inefficient, or unnecessary way during construction or operation. In order to determine if the project would result in a potentially significant environmental impact due to the wasteful, inefficient, or unnecessary consumption of energy resources during the construction or operation of the project, an analysis of the project's energy use for all stages of the project has been provided. Section 15126.2(b) of the CEQA Guidelines refers to Appendix F of the CEQA Guidelines as guidance for the information to be provided in the analysis. Appendix F provides the following factors that a lead agency may consider in the discussion of energy use:

1. The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project including construction, operation, maintenance, and/or removal (If appropriate, the energy intensiveness of materials may be discussed);

[45] California Energy Commission, Transportation Energy Demand Forecast, 2018-2030. Page 1. Note that due to atypical fuel consumption during 2020 as a result of the Covid-19 pandemic, 2019 data were utilized on for this analysis.

[46] California Energy Commission, Transportation Energy Demand Forecast, 2018-2030. Page 85. Note that due to atypical fuel consumption during 2020 as a result of the Covid-19 pandemic, 2019 data were utilized on for this analysis.

[47] California Energy Commission, California Retail Fuel Outlet Annual Reporting (CEC-A15) Results, 2019. Diesel is adjusted to account for retail (49%) and non-retail (51%) diesel sales. Note that due to atypical fuel consumption during 2020 as a result of the Covid-19 pandemic, 2019 sales data were utilized on for this analysis.

2. The effects of the project on local and regional energy supplies and on requirements for additional capacity;

3. The effects of the project on peak and base period demands for electricity and other forms of energy;

4. The degree to which the project complies with existing energy standards;

5. The effects of the project on energy resources; and

6. The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

In accordance with the considerations above, the following analysis evaluates the potential energy impacts of the project with a particular emphasis on whether the project would result in the inefficient, wasteful, or unnecessary consumption of energy. The energy analysis does not include a full life cycle analysis of energy usage that would occur over the production/transport of materials used during project construction or operation, or the end of life for the materials and processes that would occur as an indirect result of the project (i.e. "the energy intensiveness of materials"). Estimating the energy usage associated with these processes would be too speculative for meaningful consideration, would require analysis beyond the current state-of-the-art in impact assessment, and may lead to a false or misleading level of precision in reporting. Manufacture and transport of materials related to project construction and operation are expected to be regulated under regulatory energy efficiency requirements. Therefore, it is assumed that energy usage related to construction and operational materials would be consistent with current regulatory requirements regarding energy usage.

Construction

Construction activities, including the construction of new buildings and facilities, typically do not involve the consumption of natural gas. In addition, construction of the project would not require electricity to power most construction equipment as the majority of construction equipment during demolition and grading would be gas- or diesel-powered. Additionally, it is anticipated that most of the electric-powered construction equipment would be hand tools (e.g., power drills, table saws, compressors) and lighting, which would result in minimal electricity usage during construction activities.

However, during project construction, energy would be consumed in the form of petroleum-based fuels used to power off-road construction vehicles and equipment on the project site, construction worker travel to and from the project site, and vehicles used to deliver materials to the site. As taken from the CalEEMod modeling prepared for the project, diesel-powered construction equipment (such as off-road equipment and hauling and vendor trucks) would result in approximately 480.47 metric tons of carbon dioxide ($MTCO_2$) while gasoline-powered construction equipment (such as worker automobiles) would result in approximately 9.09 $MTCO_2$.[48] According to CO_2 emission factors for transportation fuels published by the U.S. Energy Information Administration, burning one gallon of diesel fuel generates approximately 22.4 pounds of CO_2 and burning one gallon of gasoline produces approximately 19.6 pounds of CO_2.[49] Based on the U.S. Energy Information Administration fuel consumption factors, and the project's

[48] See Construction Transportation Energy Worksheet included as **Appendix E.2** to this document.

[49] U.S. Energy Information Administration, Environment Carbon Dioxide Emissions Coefficients, February 2, 2016.

estimated "total CO_2" emissions presented in the CalEEMod output sheets, it is estimated that the project's construction activities would consume a total of approximately 47,843 gallons of diesel fuel and approximately 1,022 gallons of gasoline. According to fuel sales data from the California Energy Commission, fuel consumption in Orange County was approximately 1.16 billion gallons of gasoline and 91 million gallons of diesel fuel in 2021 (the most recent year of reported data).[50] Accordingly, the project's transportation-energy consumption during construction would represent a negligible portion of annual gasoline and diesel consumption within Orange County.

Energy use during construction would be temporary in nature, and construction equipment used would be typical of similar-sized construction projects in the region. In addition, the project would utilize construction contractors who demonstrate compliance with applicable CARB regulations that restrict the idling of heavy-duty diesel motor vehicles and govern the accelerated retrofitting, repowering, or replacement of heavy-duty diesel on- and off-road equipment. Construction activities would utilize fuel-efficient equipment consistent with state and federal regulations and would comply with state measures to reduce the inefficient, wasteful, or unnecessary consumption of energy. In addition, per applicable regulatory requirements, the project would comply with construction waste management practices to divert construction and demolition debris. These practices would result in efficient use of transportation-energy necessary to construct the project. Furthermore, in the interest of cost efficiency, construction contractors would not utilize fuel in a manner that is wasteful or unnecessary. As such, the project would not involve the inefficient, wasteful, and unnecessary use of energy during construction. **Therefore, impacts during construction would be less than significant and no mitigation measures would be required.**

Operation

Transportation-Energy

Transportation-related energy in the form of gasoline and diesel fuel would also be consumed during project operations related to water usage, solid waste disposal, and vehicle trips to and from the project site by residents and visitors. According to the project's CalEEMod modeling (see **Appendix E.1** of this document), the project would result in 37,489 annual VMT. According to CARB's On-Road Emissions Factor (EMFAC) model, in Orange County, diesel-powered vehicles will account for 4.23 percent of all on-road VMT and will have an average fuel efficiency weighted for percentage of miles traveled of 14 miles per gallon (mpg) in 2025, while gasoline-powered vehicles will account for 89.05 percent of on-road VMT with a fuel efficiency of 27 mpg; electric-powered vehicles, natural-gas-powered vehicles, and plug-in hybrid vehicles will account for the remaining on-road VMT.[51] Accordingly, using the same percentages of VMT and average fuel economy projected by EMFAC, operation of the project would consume approximately

[50] California Energy Commission, California Retail Fuel Outlet Annual Reporting (CEC-A15) Results, 2021. Diesel is adjusted to account for retail (50.3%) and non-retail (49.7%) diesel sales.

[51] California Air Resources Board, EMFAC2021 on-road vehicle emissions factor model, EMFAC2021 (Modeling input: Orange County; Fleet Aggregate; Annual; 2025). The modeling input values are considered generally representative of conditions for the region and representative of the majority of vehicles associated with project-related VMT. See EMFAC Operational Transportation Energy Worksheet in **Appendix E.2** of this document. Energy analysis reflects a March 2023 start date for construction and a March 2025 buildout year. The project construction date has since been revised to March 2024 and will be comprised of the same construction timeframe (25 months).

126 gallons of diesel fuel and 1,236 gallons of gasoline per year.[52] According to CARB's EMFAC model, on-road vehicles in Orange County will consume 136 million gallons of diesel and 1.11 billion gallons of gasoline in 2025.[53] Accordingly, fuel consumption by residents and visitors during operation of the project would represent a negligible portion of fuel consumed in the County.

The project's residents and visitors would utilize vehicles that comply with CAFE fuel economy standards and the Pavley standards, which are designed to result in more efficient use of transportation fuels. Additionally, as detailed in response to Checklist Question II.17(a), the project would not conflict with circulation system plans.

Electricity and Natural Gas

During operation of the project, electricity and natural gas would be consumed for multiple purposes, including, but not limited to, HVAC, refrigeration, water heating, lighting, and the use of electronics, equipment, and appliances. According to the CalEEMod outputs (see **Appendix E.1**), the project would have an electrical demand of 6,895 kilowatt-hours (kWh/yr), or 0.0069 gigawatt-hours (GWh) per year, and a natural gas demand of 39,332 cubic-feet (cf) per year, or 108 cf per day.[54] Electricity would be provided to the project site by SDG&E, which projects that its total sales in 2025-2026 fiscal year (the project's operational year) will be 18,228 gigawatt-hours (GWh).[55] Natural gas would be provided to the project site by Southern California Gas Company (SoCalGas), which projects that natural gas consumption within SoCalGas' planning area will be approximately 2,327 million cf per day in 2024.[56] As such, the project's electrical demand would represent 0.00004 percent of SDG&E's available supplies. The project's natural gas demand would represent 0.005 percent of the natural gas consumption within SoCalGas' area.

The project would be required to comply with all standards set in California Building Code (CBC) Title 24, which would minimize the wasteful, inefficient, or unnecessary consumption of energy resources during operation. California's Green Building Standards Code (CALGreen; Title 24, Part 11) requires implementation of energy efficient light fixtures and building materials into the design of new construction projects. Furthermore, the 2019 Building Energy Efficiency Standards of the California Energy Code (CBC Title 24, Part 6) requires newly constructed buildings to meet energy performance standards set by the Energy Commission. These standards are specifically crafted for new buildings to result in energy efficient performance so that the buildings do not result in wasteful, inefficient, or unnecessary consumption of energy. The standards are updated every three years and each iteration is more energy

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52 Calculated as follows for diesel: 4.69 percent of total 37,489 VMT = 1,758 diesel VMT / 14 diesel mpg = 126 gallons of diesel. Calculated as follows for gasoline: 89.05 percent of total 37,489 VMT = 33,384 gasoline VMT / 27 gasoline mpg = 1,236 gallons of gasoline.

53 California Air Resources Board, EMFAC2021 on-road vehicle emissions factor model, EMFAC2021 (Modeling input: Orange County; Fleet Aggregate; Annual; 2025). The modeling input values are considered generally representative of conditions for the region and representative of the majority of vehicles associated with project-related VMT. See EMFAC Operational Transportation Energy Worksheet in **Appendix E.2** of this document. Energy analysis reflects a March 2023 start date for construction and a March 2025 buildout year. The project construction date has since been revised to March 2024 and will be comprised of the same construction timeframe (25 months).

54 Note that the CalEEMod outputs present the project's operational natural gas demand as 38,335 kilo-British thermal units (kBTU) per year. 1 kBTU = 1.026 cubic feet; 38,335 kBTU per year x 1.026 = 39,332 cf per year; 39,332 cf per year / 365 days per year = 108 cf per day.

55 California Energy Commission, California Energy Demand 2019-2030 Baseline Forecast –LSE and BA Tables Mid Demand Case, Form 1.1c: Electricity Deliveries to End Users by Agency (GWh), Corrected February 2020, TN No. 232307, Docketed March 4, 2020.

56 California Gas and Electric Utilities, 2022 California Gas Report, page 185.

efficient than the previous standards. Furthermore, the project would continue to reduce its use of nonrenewable energy resources as the electricity generated by renewable resources provided by SDG&E continues to increase to comply with State requirements through Senate Bill 100 (SB 100), which requires electricity providers to increase procurement from eligible renewable energy resources to 60 percent by 2030 and 100 percent by 2045.

Summary

Based on the above, the project would not involve the inefficient, wasteful, and unnecessary use of energy during operation. **Therefore, impacts would be less than significant**.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Less Than Significant Impact. A significant impact may occur if a project were to conflict with a state or local plan for renewable energy or energy efficiency.

The energy conservation policies and plans relevant to the project include the California Title 24 energy standards and CALGreen. As these conservation policies are mandatory, the project would not conflict with applicable plans for renewable energy or energy efficiency. With regard to transportation related energy usage, as discussed in greater detail in Section 8, Greenhouse Gas Emissions, the project would not conflict with the goals of SCAG's 2020-2045 RTP/SCS. Overall, the project would be designed and constructed in accordance with applicable state and local green building standards that would serve to reduce the energy demand of the project. In addition, as discussed above, the demand for electricity during construction and operation of the project would represent a small fraction SDG&E's projected and planned sales. Similarly, petroleum-based fuels during construction would also represent a small fraction of the projected fuel use in Orange County. Therefore, the project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. **Therefore, impacts would be less than significant**.

Mitigation Measures

None required.

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

The following analysis in this section is based on the following:

- Discussion of Coastal Hazards (Coastal Hazards) for 31451 Coast Highway, City of Laguna Beach, Orange County, California, prepared by GeoSoils, Inc., dated April 23, 2020;
- Coastal Bluff Edge Evaluation (Bluff Evaluation) for the Proposed Single-Family Development, for the 31451 S. Coast Highway, Laguna Beach, Orange County, California 92651, Assessor's Parcel Number (APN) 056-032-26 prepared by GeoSoils, Inc., dated May 15, 2020;

- Preliminary Geotechnical Investigation (Geotechnical Report) that was prepared for Proposed Single-Family Residence 31451 South Coast Highway, Laguna Beach, California prepared by Coastal Geotechnical, dated September 16, 2004.
- Geotechnical Update that was prepared for Proposed Single-Family Residence, 31451 S. Coast Highway, Laguna Beach, California prepared by Coastal Geotechnical, dated April 20, 2021.

The Geotechnical Reports are available in **Appendix D** of this document.

Regulatory Setting

Regulations exist at state and local levels with regard to geology and soils and include:

a) National Pollutant Discharge Elimination System Permit
b) California Alquist-Priolo Earthquake Fault Zoning Act
c) California Building Code
d) California Public Resources Code Section 21083.2
e) California Seismic Hazards Mapping Act
f) Orange County General Plan Resources Element
g) Laguna Beach Open Space Conservation Element
h) Laguna Beach Municipal Code

Environmental Setting

Faulting and Seismicity

There are no major fault zones located within the City of Laguna Beach. However, there are several faults within the region that could have an impact on the City. The nearest fault of significance to the project site is the mapped extension of the Laguna Canyon fault, which passes approximately 2000-feet northeast of the site. Other active faults in the region are the Newport-Inglewood, San Joaquin Hills Blind Thrust, Palos Verdes, and the Elsinore, which are located approximately 2-miles southwest, 3.5 to 4-miles below, 17-miles southwest, and 21.5-miles northeast of the site, respectively. Strong ground motion could also be expected from earthquakes occurring along the San Jacinto and San Andreas fault zones, which lie northeast of the site at distances of approximately 45.5-miles and 55 to 60-miles, respectively. The San Clemente fault, which lies approximately 58-miles southwest of the site, as well as numerous other offshore faults, could also provide strong ground motion. These faults are all close enough or expected to generate strong enough shaking that could affect the City. However, the level of seismicity in the City, both as to maximum credible earthquake intensity and likely earthquake occurrences, is the same as for the rest of Orange County.

The City is not at significant hazard from surface rupture as the nearest fault is the Newport-Inglewood, which is two miles offshore.

Terrain and Soil Conditions

The City is situated along an irregular trending stretch of coastline that is characterized by numerous coves and pocket beaches that are backed by a landward succession of steep to near vertical sea cliffs, typically gently to moderately seaward sloping terrace terrain, and ultimately by moderately to steeply sloping resistant hills that comprise the western flank of the San Joaquin Hills. The Coastal Fringe, where the

project site is located, is characterized by fill, colluvium, regressive marine and continental terrace deposits that were laid down during glacio-eustatic changes in sea level in the Pleistocene, and ultimately marine sedimentary bedrock assigned to the middle Miocene San Onofre Breccia. These soils are not considered susceptible to liquefaction due to a lack of shallow groundwater.

Paleontological Resources

As stated in Orange County's General Plan, Resources Element, the City has the potential and sensitivity for paleontological resources.[57]

Checklist Discussion

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving?

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

Less Than Significant Impact. A significant impact may occur if a project is located within a State-designated Alquist-Priolo Zone or other designated fault zone, and appropriate building practices are not employed. Active earthquake faults are faults where surface rupture has occurred within the last 11,000 years. The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazards of surface faulting and fault rupture to built structures. Surface rupture of a fault generally occurs within 50 feet of an active fault line.

The site is not located within the presently defined boundaries of an Alquist-Priolo Earthquake Fault Zone. According to the California Geological Society, the nearest Alquist-Priolo Earthquake Fault Zone is the Newport-Inglewood Fault Zone, an approximately 47-mile long zone running roughly parallel the coastline until just south of Newport Bay, where it heads offshore, located approximately 2.1 miles to the southwest of the project site. Other nearby active faults are the Elsinore Fault Zone and the Palos Verdes Fault (Offshore Segment) located approximately 23.2-miles northeast and 17-miles southwest of the site, respectively. Strong ground motion could also be expected from earthquakes occurring along the San Jacinto and San Andreas fault zones which lie northeast of the site at distances of approximately 45-miles and 54-miles, respectively.

The San Clemente Fault, which lies approximately 58-miles southwest of the site, as well as numerous other offshore faults, could also provide strong ground motion.

Several buried thrust faults, commonly referred to as blind thrusts, underlie the Los Angeles Basin and the Orange County Coastal Plain at depth. These faults are not exposed at the ground surface and are typically identified at depths greater than 3.0-kilometers. The October 1, 1987, Mw 5.9 Whittier Narrows earthquake and the January 17, 1994, Mw 6.7 Northridge earthquake were a result of movement on the Puente Hills Blind Thrust and the Northridge Thrust, respectively. The San Joaquin Hills Blind Thrust underlies the site at depth. This thrust fault and others in the greater Los Angeles/Orange County are not exposed at the surface and do not present a potential surface fault rupture hazard at the site, however,

[57] Orange County General Plan, Resources Element, Figure VI-9.

these deep thrust faults are considered active features capable of generating future earthquakes that could result in moderate to significant ground shaking at the site. However, the risk of surface rupture due to active faulting is considered low due to the absence potential for fault rupture at the project site.

The project would be required to comply with applicable State and local building and seismic codes and implement all site- and project-specific design recommendations contained in the Geotechnical Report (see **Appendix D.1** to this document) that was prepared for the project. Final design-level soils and geological reports would be submitted to the Laguna Beach Building Division for review and approval as part of the standard building permit submittal package prior to project construction. The project would comply with State of California standards for building design through the California Building Standards Code (California Code of Regulations, Title 24) which requires various measures of all construction in California to account for hazards from seismic shaking. Conformance with current CBC requirements and site-specific design recommendations in the Geotechnical Report would minimize the potential for people on the project site to sustain loss, injury, or death as a result of fault rupture. **Accordingly, less than significant impacts related to fault rupture would occur under the project**.

ii. Strong seismic ground shaking?

Less Than Significant Impact. A significant impact may occur if a project represents an increased risk to public safety or destruction of property by exposing people, property or infrastructure to seismically induced ground shaking hazards that are greater than the average risk associated with locations in the Southern California region.

The project site is located in the seismically active region of Southern California, and therefore, is susceptible to ground shaking during a seismic event. The localized faulting within the bedrock mapped and/or reported in the site vicinity appear confined to the middle Miocene strata and are not considered active or construction limiting features. Localized and unnamed faults lie approximately 1000-feet and 1,900-feet west and east of the site, respectively. Recent activity on these faults have not been established within the last 11,700 years, consequently, they are not considered active. The closest surface trace of an active fault to the site is the Newport-Inglewood Fault Zone located approximately 2.1-miles to the southwest. Other nearby active faults are the Elsinore Fault Zone and the Palos Verdes Fault (Offshore Segment) located approximately 23.2-miles northeast and 17-miles southwest of the site, respectively. Strong ground motion could also be expected from earthquakes occurring along the San Jacinto and San Andreas fault zones which lie northeast of the site at distances of approximately 45-miles and 54-miles, respectively. The San Clemente fault, which lies approximately 58-miles southwest of the site, as well as numerous other offshore faults, could also provide strong ground motion.

The most significant probable earthquake to effect the project site would be a 6.9 magnitude earthquake on the Newport-Inglewood fault. Depiction of probabilistic seismic hazard analysis utilizing a consensus of historical seismic data and the respective regional geologic conditions indicates that peak ground accelerations of about 0.30 to 0.40 g are possible with a 10 percent probability of being exceeded in 50 years. Therefore, the Geotechnical Reports prepared for the project provided site-specific seismic design parameters based on the use proposed and soil conditions at the project site. Further, to reduce geologic and seismic impacts, the City regulates development through the requirements of the CBC. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety, and general welfare through structural strength, means of egress, and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. The earthquake design requirements of the CBC consider the

occupancy category of the structure, site class, soil classifications, and various seismic coefficients. The CBC provides standards for various aspects of construction, including but not limited to excavation, grading, earthwork, construction, preparation of the site prior to fill placement, specification of fill materials, fill compaction and field testing, retaining wall design and construction, foundation design and construction, and seismic requirements. It includes provisions to address issues such as (but not limited to) construction on expansive soils and soil strength loss. In accordance with California law, project design and construction would be required to comply with provisions of the CBC. Accordingly, the Geotechnical Report prepared for the project concluded that development of the project is feasible from a geotechnical engineering standpoint, provided that the advice and recommendations contained in the report are included in the project plans and implemented during construction. **Therefore, impacts related to seismic ground shaking would be less than significant**.

iii. Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. A significant impact may occur if a project is located in an area identified as having a high risk of liquefaction and mitigation measures required within such designated areas are not incorporated into the project. Liquefaction describes a phenomenon where cyclic stresses, which are produced by earthquake-induced ground motions, create excess pore pressures in cohesionless soils. As a result, the soils may acquire a high degree of mobility, which can lead to lateral spreading, consolidation and settlement of loose sediments, ground oscillation, flow failure, loss of bearing strength, ground fissuring, and sand boils, and other damaging deformations. This phenomenon occurs only below the water table, but after liquefaction has developed, it can propagate upward into overlying, non-saturated soils as excess pore water escapes. The possibility of liquefaction occurring at a given site is dependent upon the occurrence of a significant earthquake in the vicinity, sufficient groundwater to cause high pore pressures, and on the grain size, relative density, and confining pressures of the soil at the site. Additional various general types of ground failures which might occur as a consequence of severe ground shaking at the site include landslides, ground subsidence, ground lurching and shallow ground rupture.

Based on the Geotechnical Report evaluation of the project site, review of the State of California Seismic Hazard Zones for the San Juan Capistrano quadrangle indicates that the site is not located within an area considered susceptible to liquefaction. The risk of seismically induced liquefaction is considered low due to the dense underlying geologic materials and lack of shallow groundwater. Compliance with the CBC would reduce impacts associated with seismic-related ground failure, including liquefaction. **Impacts would be less than significant**.

iv. Landslides?

Less Than Significant Impact. A significant adverse effect may occur if a project is located in a hillside area with soil conditions that would suggest high potential for sliding.

Review of geologic literature indicates that the project site has no previously mapped deep seated landslide deposits. The State of California Seismic Hazard Zone Map for the San Juan Capistrano Quadrangle indicates that the bluff zone in this area has been identified as a zone of required investigation for earthquake-induced landslides. This zone, established by the State, takes into account the gradient of the slopes, but does not consider the local orientation of the geologic structure. The terrace deposits are considered essentially massive, while bedding attitudes observed or reported in the site vicinity have a northeast strike with dips ranging from 5 to 26-degrees to the southeast. These conditions are considered neutral or favorable with respect to the slope face. Additionally, historical aerials were reviewed for the

site and vicinity and no significant slope failures were observed. While the gross stability of the project site would not be an issue during or after construction, the surficial stability of the bluff top may be impacted if site drainage (during or after construction) is not directed to the city streets and is allowed to flow over the top of the bluff. **Conformance with current CBC requirements and site-specific design recommendations in the Geotechnical Report would minimize the risk of earthquake-induced landslides at the project site and impacts would be less than significant**.

b) Result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact with Mitigation. A significant impact may occur if a project exposes large areas to the erosional effects of wind or water for a protracted period of time.

Construction

During construction, project grading and excavation would expose soil for a limited time, allowing for possible erosion. However, due to the temporary nature of the soil exposure during the grading and excavation processes, substantial erosion is unlikely to occur. Soil erosion caused by strong wind and/or earth-moving operations during construction would be minimized through compliance with SCAQMD Rule 403, which prohibits visible particulate matter from crossing property lines. Standard practices to control fugitive dust emissions include watering of active grading sites, covering soil stockpiles with plastic sheeting, and covering soils in haul trucks with secured tarps.

During construction, the project would be required to prevent the transport of sediments from the site by stormwater runoff and winds through the required compliance of LBMC Section 22.17.010, Construction Project Erosion and Sediment Control Maintenance Requirements, as well as adherence to requirements provided in the National Pollutant Discharge Elimination System (NPDES) permit, and MM-Bio-2, Construction Site Housekeeping. The LBMC requires standard construction Best Management Practices (BMPs) and as discussed further in Section 10, Hydrology and Water Quality, implementation of these erosion control measures would avoid or minimize potential impacts related to soil erosion during project construction. As outlined in Section 3, Biological Resources, MM-BIO-2 incorporates installation of adequate erosion and sedimentation barriers at the project site boundaries to prevent a sediment-laden runoff or debris from reaching the coastal bluffs and Pacific Ocean located to the west of the project site.

Operation

During operation, the project site would only be partially covered with development of a single-family residential use with outdoor deck areas, totaling approximately 0.27 acre of the 0.56 acre site. However, as outlined in the Biological Report, the biological resources/habitats adjacent to permanent developed areas, would be restored in place to predisturbance conditions of equal or greater quality in order to avoid adverse impacts.[58] Therefore, there would be no exposed soil that would be susceptible to erosion on the cliffside. Furthermore, as discussed in the Coastal Hazards Report, it was determined that it would be unlikely that wave runup would reach the bluff top development. The beach fronting the site is relatively

[58] Biological Resources Assessment for 31451 Coast Highway, Laguna Beach, Orange County, California, prepared by LSA, May 21, 2020 (Available in **Appendix C** of this document).

stable and the project is, therefore, reasonably safe from shoreline erosion due to the erosion resistant bedrock material at the beach elevation.

Accordingly, the project would not have the potential to result in substantial soil erosion or the loss of topsoil. **Impacts would be less than significant with implementation of mitigation measures**.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Less than Significant Impact. A significant impact may occur if a project is built in an unstable area without proper site preparation or design features to provide adequate foundations for project buildings, thus posing a hazard to life and property. Potential impacts with respect to liquefaction and landslide potential are evaluated in Sections 6(a)(iii) and (iv) above.

The property lies within a promontory of the shoreline approximately 700-feet northwest of a prominent headland known as Table Rock, and is fronted by a seasonally variable but typically wide sandy beach. The geology of the project site is characterized by locally deep fills associated with a pre-existing drainage, regressive marine and continental terrace deposits that were laid down during glacio-eustatic changes in sea level in the Pleistocene, and ultimately marine sedimentary bedrock assigned to the middle Miocene San Onofre Breccia. Geological units are as follows:

a. **Fill** – The southern portion of the subject site is mantled by approximately 10 to 15-feet of fill that consists generally of porous, damp to moist, loose, dark brown silty fine sand with minor scattered roots. The fill is not considered suitable for support of the proposed improvements in its existing condition.

b. **Colluvium** – The site has an approximate 3 to 6-feet thick deposit of colluvium. The colluvium consists generally of damp, loose, light brown to orange brown silty fine to medium sand with locally abundant sub-angular gravel to cobble sized fragments of metamorphic rock clasts. The colluvium is not considered suitable for support of the proposed improvements in its existing condition.

c. **Terrace Deposits** – The fill and colluvium are underlain by continental and marine terrace deposits. The terrace deposits consist generally of damp to moist, medium dense to dense, reddish brown to orange brown slightly clayey and silty fine to medium sand with locally abundant sub-angular gravel to cobble metamorphic rock clasts that grade at depth to friable fine to coarse sand with a scattered basal gravel zone along the contact with the underlying bedrock. Moderate to heavy caving was observed within the lower section of the terrace deposits during the drilling operations for CGB-1 through CGB-4 (2004).

d. **San Onofre Breccia** – Sedimentary bedrock deposits assigned to the middle Miocene San Onofre Breccia were encountered beneath the terrace deposits in all exploratory borings and crop-out along the seacliff backing the site and vicinity. The section of bedrock observed consists generally of damp, dense to very dense, olive gray silty fine to coarse sandy breccia and sandstone. Gravel to boulder-size metamorphic rock clasts are typical in the breccia, and general drilling refusal was encountered in the 2004 and 2021 borings in the breccia.

The geology of the project site is characterized by locally deep fills on the south side of the lot associated with a pre-existing drainage, regressive marine and continental terrace deposits that were laid down during glacio-eustatic changes in sea level in the Pleistocene, and ultimately marine sedimentary bedrock assigned to the middle Miocene San Onofre Breccia. Based on the subsurface exploration and review of the available geologic reports it appears that two wave-cut platforms, representing essentially two ancient high sea-level stands, exist within the property. The wave-cut platforms and associated geologic contacts between the terrace deposits and San Onofre Breccia lie approximately 5 to 48-feet below the existing lot grade and at approximate elevations of 55 and 110-feet (msl). Structurally, the terrace deposits are considered essentially massive, while bedding attitudes observed or reported in the underlying San Onofre Breccia within the site and vicinity indicate a general northeast strike with dips ranging from approximately 5 to 26-degrees to the southeast. Fracture sets have generally northerly strikes and dips between 36 to 80-degrees to the northeast, southeast, and southwest. Review of the referenced aerial photographs and the results of the subsurface exploration indicates the subject property appears to have been essentially bound by seaward trending drainages prior to the construction of South Coast Highway in the late 1920's. In particular, it appears that a relatively well-developed northeast/southwest trending drainage extended from east of South Coast Highway and through the general southern portion of the site to the beach (see Geologic Map, Figure 2 in **Appendix D.2** to this document). No evidence of sea caves within the property boundaries was observed during our site observations and mapping.

Topographic evidence of several apparent surficial failures was observed within the fill slope that bounds the general seaward portion of the property along with an apparent block fall within the northwest portion of the seacliff. These failures are shown on the attached Geologic Map, Figure 2 in **Appendix D.2** to this document.

Based on the results of the subsurface exploration, geologic mapping, and review of the referenced geologic and geotechnical documents, the project site appears to be underlain by variable, but locally deep fill soils associated with the infilling of a drainage course and creation of the existing lower-level pad area, variably thick surficial soils consisting of colluvium, and ultimately by a succession of Pleistocene terrace deposits and middle Miocene San Onofre Breccia bedrock. Accordingly, the Geotechnical Report prepared for the project concluded that development of the project is feasible from a geotechnical engineering standpoint, provided that the advice and recommendations contained in the report are included in the project plans and implemented during construction. **Therefore, impacts related to soil instability would be less than significant.**

d) Be located on expansive soil, as defined in Table 18 1 B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Less than Significant Impact. A significant impact may occur if a project is built on expansive soils without proper site preparation or design features to provide adequate foundations for project buildings, thus posing a hazard to life and property. Expansive soils are clay-based soils that tend to expand as they absorb water and shrink as water is drawn away.

Subsurface exploration conduction as part of the Geotechnical Report (see **Appendix D.1** to this document) determined that the soils beneath the project site are artificial fills that were encountered at a maximum depth of 3 to 4-feet below existing ground surface. The project site is underlain by fill soil and older colluvium. The artificial fill generally consists of porous, damp to moist, loose, dark brown silty fine sand with minor scattered roots. The fill is likely associated with the infilling of a drainage course and creation of the existing lower level pad area. The colluvium is undocumented fill material and the natural terrain of the

project site is mantled by a variable but approximate 3 to 6-feet deposit of colluvium. The colluvium consists generally of damp, loose, light brown to orange brown silty fine to medium sand with locally abundant sub-angular gravel to cobble metamorphic rock clasts. The fill/colluvium is not considered suitable for support of the proposed new construction in its existing condition.

The fill and colluvium are underlain by continental and marine terrace deposits. The terrace deposits consist generally of damp to moist, medium dense to dense, reddish brown to orange brown slightly clayey and silty fine to medium sand with locally abundant sub-angular gravel to cobble metamorphic rock clasts that grade at depth to friable fine to coarse sand with a scattered basal gravel zone along the contact with the underlying bedrock. Moderate to heavy caving was observed within the lower section of the terrace deposits during the drilling operation.

Sedimentary bedrock deposits assigned to the middle Miocene San Onofre Breccia were encountered beneath the terrace deposits in both exploratory borings and crop-out along the seacliff backing the site and vicinity. The section of bedrock observed consisted generally of damp, dense to very dense, olive gray silty fine to coarse sandy breccia and sandstone. Gravel to boulder-size metamorphic rock clasts are typical in the breccia, and general drilling refusal was encountered in both borings in the breccia.

The on-site geologic materials are in the low expansion range. The Expansion Index was found to be 18 for bulk samples taken from a depth of one to five feet below ground surface. Furthermore, the CBC provides standards for various aspects of construction, including but not limited to excavation, grading, earthwork, construction, preparation of the site prior to fill placement, specification of fill materials, fill compaction and field testing, retaining wall design and construction, foundation design and construction, and seismic requirements. It includes provisions to address issues such as (but not limited to) construction on expansive soils and soil strength loss. In accordance with California law, project design and construction would be required to comply with provisions of the CBC. Accordingly, the Geotechnical Report prepared for the project concluded that development of the project is feasible from a geotechnical engineering standpoint, provided that the advice and recommendations contained in the report are included in the project plans and implemented during construction. **Therefore, impacts from expansive soil would be less than significant**.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. A significant impact may occur if a project is located in an area not served by an existing sewer system. The project site is located in a developed area of the City, which is served by a wastewater collection, conveyance, and treatment system operated by the South Coast Water District (SCWD). Therefore, no septic tanks or alternative disposal systems would be necessary, nor are they proposed. **Accordingly, no impacts related to inadequate septic tank support would occur**.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less than Significant Impact. A significant impact may occur if a project directly or indirectly destroys a unique paleontological resource or site or unique geologic feature. Paleontological resources are the fossilized remains, imprints, or traces of past life preserved in the geologic record. This can include bones, teeth, soft tissues, shells, plant material, microscopic organisms, footprints, trackways, and burrows. Fossils are the only record of the natural history of life on this planet. Despite the frequency of

sedimentary rock in the geologic record, and the number of organisms that have lived throughout the planet's history, only a very small number of remains have been preserved in the fossil record. Fossils are important scientific resources, allowing the study of:

- The evolutionary history of extinct organisms, including their lifestyle, interrelationships, distribution, speciation, extinction, and relation to modern groups.
- The taphonomic agents responsible for fossil preservation, including biases in the fossil record.
- Ancient environments, in which these organisms lived, and the distribution and change in these environments and their organisms through time.
- The temporal relationships of rock deposits from one area to another, and the timing of geologic events.

A Vertebrate Paleontology Records Check was conducted by the Los Angeles County Natural History Museum for paleontological resources on the project site and vicinity. The research did not find any recorded paleontological resources within the project site boundaries. The research did find that there are localities of resources nearby from the same sedimentary deposits occurring at depth in the project area.[59] **Table 11, Paleontology Records Check,** shows fossil localities identified in the local and regional area.

Table 11
Paleontology Records Check

Locality Number	Location	Formation	Taxa	Depth
LACM VP 4166	Between N. Hampton Rd and Crown Valley Pkwy, north of intersection with Playa Blanca	Capistrano Formation	Requiem shark (*Carcharrhinus*), mackerel shark (*Isurus*), aquatic mammal (*Cetacea*), seals/sea lions (*Otariidae*), porpoise (*Phocoenidae*)	Unknown
LACM VP 1115	Near Salt Creek Trail in Salt Creek Corridor Regional Park; San Joaquin Hills	Pleistocene terrace deposit	Mammoth (*Mammuthus*)	Unknown
LACM IP 10032-10036	Monarch Beach Development, near intersection of Niguel Rd and Camino del Avion	Pleistocene terrace deposits	Decapods indeterminate (*Decapoda*), barnacles (*Sessila*), gastropods (*Borsonella*, Fissurella, Hipponix, (*Lottia*), (*Tellina*), bivalves (*Tivela*, *Tresus*, *Yoldia*)	Unknown collected during trenching
LACM VP 4950	29482 Ana Maria Lane; Laguna Niguel	Capistrano Formation (light yellow sand & gray clay)	Baleen whale (*Mysticeti*)	Unknown (found in a trench being excavated)
LACMP VP 4337	Alicia Parkway, NE of Clipper Cove Park; Laguna Niguel	Capistrano Formation	Whale clade (*Cetacea*)	Unknown
LACMP VP 4979-4983	Shea Homes, housing development along cliff northeast of the	Capistrano Formation	Uncatalogued vertebrates	Unknown

[59] Correspondence from Alyssa Bell, Ph.D., Natural History Museum of Los Angeles County, October 16, 2022. Refer to **Appendix G** to this document.

Table 11
Paleontology Records Check

Locality Number	Location	Formation	Taxa	Depth
	intersection of Golden Lantern and Camino los Padres, San Juan Capistrano			
*Correspondence from Alyssa Bell, Ph.D., Natural History Museum of Los Angeles County, October 16, 2022. Refer to **Appendix G** to this document.*				

Furthermore, according to the Orange County Resources Element, the project site is located in the San Joaquin Hills District, which is considered a sensitive paleontological area.[60] The project would require excavations up to approximately 10 to 12 feet for development of the stepped down residential structure. Deeper excavations could uncover significant fossil vertebrate remains. The project would be required to comply with the City of Laguna Beach Open Space Conservation Element's Site Protection policies regarding designation of a paleontologist and notification, assessment, and removal or protection of paleontological resources that may be encountered during excavation.[61] Found deposits would be treated in accordance with federal, State, and local guidelines, including those set forth in California Public Resources Code Section 21083.2. Therefore, the project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. **Accordingly, impacts would be less than significant.**

Mitigation Measures

Refer to MM-BIO-2.

[60] Orange County, General Plan, Resources Element, Adopted December 17, 1993. Figure VI-9.
[61] City of Laguna Beach, General Plan, Open Space Conservation Element, Adopted December 17, 1993. Page 58a.

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

Regulatory Setting

Regulations exist at federal, state, regional, and local levels with regard to GHGs and include:

- Federal Clean Air Act
- Light Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards
- California Code of Regulations, Title 24, Part 6
- California Green Building Standards Code
- Executive Order S-3-05
- Assembly Bill 32 – Global Warming Solution Act of 2006
- Senate Bill 375
- Senate Bill 743
- Senate Bill 97
- Executive Order B-30-15
- Senate Bill 32 and Assembly Bill 197
- Assembly Bill 1493 – Vehicular Emissions of Greenhouse Gases
- Assembly Bill 341
- Executive Order S-01-07
- Senate Bill 350
- Senate Bill 100
- California Air Resources Board: Scoping Plan

Environmental Setting

Global temperatures are moderated by naturally occurring atmospheric gases. These gases are commonly referred to as greenhouse gases (GHGs) because they function like a greenhouse, allowing solar radiation (sunlight) into the Earth's atmosphere but prevent heat from escaping, thus warming the Earth's atmosphere. GHGs, as defined under California's Assembly Bill (AB) 32, include carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6). GHGs are emitted by natural processes and human (anthropogenic) activities. Anthropogenic GHG emissions are primarily associated with (1) the burning of fossil fuels during motorized transport, electricity generation, natural gas consumption, industrial activity, manufacturing, and other activities; (2) deforestation; (3) agricultural activity; and (4) solid waste decomposition. GHG

emissions from human activities are the most significant driver of observed climate change since the mid-20th century.[62] Global climate change refers to changes in average climatic conditions over the entire Earth, including temperature, wind patterns, precipitation, and storms.

Local Regulations

City of Laguna Beach Climate Protection Action Plan (CPAP)

The City of Laguna Beach adopted the Laguna Beach CPAP in 2009. The goal of the plan was to reduce GHG emissions seven percent below 1990 levels by 2012. The plan provides recommendations for achieving the GHG emissions reduction, including increasing energy efficiency, increasing the use of public transit and active transportation, and providing public outreach and education. The CPAP is geared towards City government action, such as City outreach to local businesses and residents to encourage sustainable practices, the adoption of local guidance and policies to reduce energy and water use, and the adoption of practices to reduce GHG emissions in government operations. The CPAP contains a chapter on reducing GHG emissions from government operations, which includes GHG emissions reduction measures like providing natural and day lighting, increased reliance on natural ventilation, installation of solar panels in government buildings, use of fuel-efficient vehicles, installation of water-efficient appliances, and planting drought-tolerant landscaping.

General Plan

The Land Use Element of the General Plan includes the goal to "Create a community that is sustainable, resilient, and regenerative," which intends to guide the City towards a more sustainable future through a reduction in GHG emissions and conservation of natural resources.[63] To achieve this goal, the Land Use Element includes the following policies and actions related to GHG emissions:

Policy 1.1 Reduce greenhouse gas (GHG) emissions 80% below 1990 levels by 2050.

Action 1.1.1 Protect natural assets and open-space areas to maintain their role as "carbon sinks."

Action 1.1.2 Revise and update the Transportation, Circulation, and Growth Management Element and continue to encourage and promote the use of mass transit and other high-occupancy vehicles, bicycling walking, and telecommuting as a means to reduce the City's greatest local contributor to global warming.

Action 1.1.3 Create a Sustainability/Conservation Element with policies that promote energy and resource efficiency, water efficiency, conservation, recycling, and the protection of ground and surface waters.

[62] United Nations Intergovernmental Panel on Climate Change, Climate Change 2013: The Physical Science Basis, Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, 2013.

[63] General Plan Land Use Element. http://www.lagunabeachcity.net/civicax/filebank/blobdload.aspx?BlobID=8066. Accessed January 2023.

Action 1.1.4 Support technology and business practices that enable people to reduce vehicle miles traveled from home to work. These include the use of home office and technology such as wireless communication and video conferencing.

Action 1.1.5 Support State and/or Federal action to implement vehicle emission standards that would reduce greenhouse gas emissions.

Action 1.1.6 Evaluate and consider eliminating or significantly reducing the cost of parking permits for fuel-efficient or alternative-fuel vehicles.

Action 1.1.7 Make fuel efficiency and clean air important criteria in the acquisition of all city vehicles, including fire engines, buses, trucks, etc., and for non-specialty uses consider instituting a policy of purchasing only highly fuel-efficient or alternative-fuel vehicles.

Action 1.1.8 Continue to offer incentives to businesses that encourage employees to use buses, bikes, and carpools (or vanpools) to commute to work. Facilitate telecommuting and/or allow employees to work extended hours for fewer days per week.

Action 1.1.9 Maintain the existing free trolley/bus service and pursue extension throughout the year.

Action 1.1.10 Coordinate with surrounding cities and governmental agencies to maximize the use of public transportation including buses and metro line.

Action 1.1.11 Work with the Laguna Beach Unified School District and private schools to promote the use of clean bus or trolley transportation and discourage the use of private vehicles for trips to and from school.

Action 1.1.12 Provide public education and information about options for reducing greenhouse gas emissions.

Action 1.1.13 Encourage preservation of historic structures and adaptive reuse of buildings.

Action 1.1.14 Establish a City climate-friendly purchasing procedure.

Action 1.1.15 Evaluate establishing lighting and "dark sky" ordinances.

Policy 1.2 Support design strategies and construction standards that maximize use of alternative energy sources and passive solar architecture in buildings.

Action 1.2.1 Modify building codes and design guidelines to permit, encourage, and/or require integration of passive solar design, green roofs, active solar, and other renewable energy sources and/or provide incentives for development projects that meet or exceed silver LEED certification or better (or equivalent standards, if developed by the State).

Action 1.2.2 Revise or eliminate zoning and development standards that act as a barrier to use of renewable energy systems (except for standards required to assure protection of coastal resources.

Action 1.2.3 Construct and renovate public facilities to demonstrate green building practices and renewable energy systems.

Action 1.2.4 Establish incentives to encourage installation of renewable energy systems by homeowners and businesses including, but not limited to, the installation of energy-rated appliances, programmable thermostats, solar-electric and solar-thermal systems, cool roofs and roofing materials, and sustainable landscaping.

Action 1.2.5 Require, where feasible, all new buildings to be designed and oriented to take maximum advantage of the sun and wind for natural heating and cooling.

Action 1.2.6 Require developers and contractors to take action to minimize greenhouse gas emissions by using low-emission vehicles and equipment.

Action 1.2.7 Ensure that all development projects and major remodels implement sustainable landscaping strategies such as use of low or ultra-low water use plants and non-invasive plants.

Action 1.2.8 Evaluate establishing an air conditioning "carbon offset" fee for all permits.

Policy 1.3 Support planning and design solutions that reduce water consumption and implement water conservation practices.

Action 1.3.1 Continue to equip all city restrooms with low-flow toilets.

Action 1.3.2 Encourage or require the use of xeriscape in new construction and major remodels.

Action 1.3.3 Review existing ordinances to allow/encourage water reuse in public and private construction and remodels.

Significance Thresholds

Appendix G of State CEQA Guidelines

The CEQA Guidelines recommend that a lead agency consider the following when assessing the significance of impacts from GHG emissions on the environment:

- The extent to which the project may increase (or reduce) GHG emissions as compared to the existing environmental setting;
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project;
- The extent to which the project complies with regulations or requirements adopted to implement an adopted statewide, regional, or local plan for the reduction or mitigation of GHG emissions.[64]

[64] The Governor's Office of Planning and Research recommendations include a requirement that such a plan must be adopted through a public review process and include specific requirements that reduce or mitigate the project's incremental contribution of GHG emissions. If there is substantial evidence that the possible effects of a particular project are still

Consistent with recent CEQA analyses published by the City, the most appropriate threshold for the project is the bright line threshold of 3,000 MT of CO2e/year established by SCAQMD.[65] As such, the project would result in a significant impact if project-generated emissions exceed the bright line threshold provided by the SCAQMD's GHG CEQA Significance Threshold Working Group in September 2010.[66]

Checklist Discussion

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less Than Significant Impact. A project may have a significant impact if project-related emissions would exceed federal, State, or regional standards or thresholds.

The project is anticipated to generate GHG emissions from area sources, energy usage, mobile sources, waste, water/wastewater, and construction equipment. The following provides the methodology used to calculate the project-related GHG emissions and the project impacts.

CalEEMod Version 2022.1 was used to calculate the GHG emissions from the project. The CalEEMod Annual Output for year 2025 for the project is available in **Appendix E.1** of this document. Each source of GHG emissions is described in greater detail below.

Area Sources

Area sources include emissions from consumer products, landscape equipment and architectural coatings. No changes were made to the default area source emissions.

Energy Usage

Energy usage includes emissions from the generation of electricity and natural gas used on-site. No changes were made to the default energy usage parameters.

Mobile Sources

Mobile sources include emissions from the additional vehicle miles generated from the project. The emissions from the vehicle trips associated with the project have been analyzed in the manner described above in the Air Quality Section.

Emissions of GHGs associated with mobile sources from operation of the project are based on the average daily trip generation rate, trip distance, the GHG emission factors for the mobile sources, and the GWP

cumulatively considerable, notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

65 Laguna Canyon Unified Fuel Modification and Habitat Restoration Project Initial Study and Mitigated Negative Declaration. https://www.lagunabeachcity.net/civicax/filebank/blobdload.aspx?blobid=23242. Accessed January 2023 and Pacific Edge Hotel Remodel Revised Initial Study/Mitigated Negative Declaration. https://www.lagunabeachcity.net/civicax/filebank/blobdload.aspx?blobid=26873. Accessed January 2023.

66 Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #15. http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqasignificance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-minutes.pdf. Accessed January 2023.

values for the GHGs emitted. The types of vehicles that would visit the project site include all vehicle types including automobiles, light-duty trucks, delivery trucks, and waste haul trucks. Modeling for the project was conducted using the vehicle fleet mix for the Orange County portion of the South Coast Air Basin as provided in EMFAC2021 and CalEEMod.

Waste

Waste includes the GHG emissions generated from the processing of waste from the project as well as the GHG emissions from the waste once it is interred into a landfill. AB 341 required that 75 percent of waste be diverted from landfills by 2020. To be conservative, no changes were made to the default waste parameters and no reductions were taken.

Water/Wastewater

Water includes the water used for the interior of the building as well as for landscaping and is based on the GHG emissions associated with the energy associated with supplying and treating water and wastewater. California Green Building Standards require a 20 percent reduction in indoor water usage. To be conservative, no changes were made to the default water usage parameters and no reductions were taken.

Construction

The construction-related GHG emissions were also included in the analysis and were based on a 30-year amortization rate as recommended in the SCAQMD GHG Working Group meeting on November 19, 2009. The construction-related GHG emissions were calculated by CalEEMod.

The GHG emissions have been calculated based on the parameters as described above. A summary of the results is shown below in **Table 12, Project-Related GHG Emissions,** and the CalEEMod Model runs for the project are provided in **Appendix E.1** of this document. **Table 12, Project-Related GHG Emissions,** shows that the project's emissions would be 33.23 $MTCO_2e$ per year.

Table 12
Project-Related GHG Emissions

Emissions Source	Estimated Project Generated CO_2e Emissions (Metric Tons per Year)
Maximum Annual Operations	16.9
Construction Emissions	16.33
Project Total	**33.23**
*Calculation sheets are provided in **Appendix E.1** of this document.* *Source: CalEEMod Version 2022.1 for Opening Year 2025 for the project.*	

According to the thresholds of significance established above, a cumulative global climate change impact would occur if the GHG emissions created from the on-going operations of the project would exceed the SCAQMD threshold of 3,000 MTCO2e per year for all land uses. Therefore, as emissions do not exceed 3,000 MTCO2e per year, operation of the project would not create a significant cumulative impact to global climate change. **Therefore, impacts would be less than significant**.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less Than Significant Impact.

A significant air quality impact may occur if a project is not consistent with the AB32 Scoping Plan or other applicable plans designed to reduce greenhouse gas emissions such as a Climate Action Plan, or would in some way represent a substantial hindrance to employing the policies or obtaining the goals of such a plan.

The project would not have the potential to conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs. The project's consistency with applicable plans is discussed below.

CARB Scoping Plan Consistency

In November 2017, CARB released the 2017 Scoping Plan. This Scoping Plan incorporates, coordinates, and leverages many existing and ongoing efforts and identifies new policies and actions to accomplish the State's climate goals, and includes a description of a suite of specific actions to meet the State's 2030 GHG limit. In addition, Chapter 4 provides a broader description of the many actions and proposals being explored across the sectors, including the natural resources sector, to achieve the State's mid and long-term climate goals.

Guided by legislative direction, the actions identified in the 2017 Scoping Plan reduce overall GHG emissions in California and deliver policy signals that will continue to drive investment and certainty in a low carbon economy. The 2017 Scoping Plan builds upon the successful framework established by the Initial Scoping Plan and First Update, while identifying new, technologically feasible, and cost-effective strategies to ensure that California meets its GHG reduction targets in a way that promotes and rewards innovation, continues to foster economic growth, and delivers improvements to the environment and public health, including in disadvantaged communities. The Plan includes policies to require direct GHG reductions at some of the State's largest stationary sources and mobile sources. These policies include the use of lower GHG fuels, efficiency regulations, and the Cap-and Trade Program, which constrains and reduces emissions at covered sources.

As the latest 2017 Scoping Plan builds upon previous versions, project consistency with applicable strategies of both the 2008 and 2017 Plan are assessed in **Table 13, Consistency with CARB 2008 and 2017 Scoping Plan Policies and Measures.** As discussed below, any future development that could occur due to land use and zoning changes proposed by the project is consistent with the applicable strategies of the CARB Scoping Plan.

Table 13
Consistency with CARB 2008 and 2017 Scoping Plan Policies and Measures

2008 Scoping Plan Measures to Reduce Greenhouse Gas Emissions	Project Compliance with Measure
California Light-Duty Vehicle Greenhouse Gas Standards – Implement adopted standards and planned second phase of the program. Align zero-emission vehicle, alternative and renewable fuel and	**Consistent**. These are CARB enforced standards; vehicles that access the project site (that are required to comply with the standards) would comply with the strategy.

Table 13
Consistency with CARB 2008 and 2017 Scoping Plan Policies and Measures

2008 Scoping Plan Measures to Reduce Greenhouse Gas Emissions	Project Compliance with Measure
vehicle technology programs with long-term climate change goals.	
Energy Efficiency – Maximize energy efficiency building and appliance standards; pursue additional efficiency including new technologies, policy, and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California.	**Consistent**. Any future development projects would be required to comply with the current Title 24 standards.
Low Carbon Fuel Standard – Develop and adopt the Low Carbon Fuel Standard.	**Consistent**. These are CARB enforced standards; vehicles that access the project site (that are required to comply with the standards) would comply with the strategy.
Vehicle Efficiency Measures – Implement light-duty vehicle efficiency measures.	**Consistent**. These are CARB enforced standards; vehicles that access the project site (that are required to comply with the standards) would comply with the strategy.
Medium/Heavy-Duty Vehicles – Adopt medium and heavy-duty vehicle efficiency measures.	**Consistent**. These are CARB enforced standards; vehicles that access the project site (that are required to comply with the standards) would comply with the strategy.
Green Building Strategy – Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.	**Consistent**. The California Green Building Standards Code (proposed Part 11, Title 24) was adopted as part of the California Building Standards Code in the CCR. Part 11 establishes voluntary standards, which are mandatory in the 2022 edition of the Code, on planning and design for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. The project is subject to these mandatory standards.
High Global Warming Potential Gases – Adopt measures to reduce high global warming potential gases.	**Consistent**. CARB identified five measures that reduce HFC emissions from vehicular and commercial refrigeration systems vehicles that access the project site (that are required to comply with the standards) would comply with the strategy.
Recycling and Waste – Reduce methane emissions at landfills. Increase waste diversion, composting, and commercial recycling. Move toward zero-waste.	**Consistent**. The state is currently developing a regulation to reduce methane emissions from municipal solid waste landfills. The project is required to comply with City programs and regulations related to solid waste, which comply with the 75 percent reduction required by 2020 per AB 341.
Water – Continue efficiency programs and use cleaner energy sources to move and treat water.	**Consistent**. The project is required to comply with all applicable City ordinances and CAL Green requirements.
2017 Scoping Plan Recommended Actions to Reduce Greenhouse Gas Emissions	**Project Compliance with Recommended Action**

Table 13
Consistency with CARB 2008 and 2017 Scoping Plan Policies and Measures

2008 Scoping Plan Measures to Reduce Greenhouse Gas Emissions	Project Compliance with Measure
Implement Mobile Source Strategy: Further increase GHG stringency on all light-duty vehicles beyond existing Advanced Clean Car regulations.	**Consistent**. These are CARB enforced standards; vehicles that access the project site (that are required to comply with the standards) would comply with the strategy.
Implement Mobile Source Strategy: At least 1.5 million zero emission and plug-in hybrid light-duty electric vehicles by 2025 and at least 4.2 million zero emission and plug-in hybrid light-duty electric vehicles by 2030.	**Consistent**. These are CARB enforced standards; vehicles that access the project site (that are required to comply with the standards) would comply with the strategy.
Implement Mobile Source Strategy: Innovative Clean Transit: Transition to a suite of to-be-determined innovative clean transit options. Assumed 20 percent of new urban buses purchased beginning in 2018 will be zero emission buses with the penetration of zero-emission technology ramped up to 100 percent of new sales in 2030. Also, new natural gas buses, starting in 2018, and diesel buses, starting in 2020, meet the optional heavy-duty low-NOX standard.	**Consistent**. These are CARB enforced standards; vehicles that access the project site (that are required to comply with the standards) would comply with the strategy.
Implement Mobile Source Strategy: Last Mile Delivery: New regulation that would result in the use of low NOX or cleaner engines and the deployment of increasing numbers of zero-emission trucks primarily for class 3-7 last mile delivery trucks in California. This measure assumes ZEVs comprise 2.5 percent of new Class 3–7 truck sales in local fleets starting in 2020, increasing to 10 percent in 2025 and remaining flat through 2030.	**Consistent**. These are CARB enforced standards; vehicles that access the project site (that are required to comply with the standards) would comply with the strategy.
Implement SB 350 by 2030: Establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas end uses by 2030.	**Consistent**. The project is required to comply with the current Title 24 standards.
By 2019, develop regulations and programs to support organic waste landfill reduction goals in the SLCP and SB 1383.	**Consistent**. The project is required to comply with City programs and regulations related to solid waste, which comply with the 75 percent reduction required by 2020 per AB 341.

Notes:
[1] Source: CARB Scoping Plan (2008 and 2017).

Executive Orders S-03-05 and B-30-15

Although the emissions levels of the future development in 2050 cannot be reliably quantified, statewide efforts are underway to facilitate the State's achievement of that goal and it is reasonable to expect the emissions profile of the proposed uses would only decline as the regulatory initiatives identified by CARB in the First Update are implemented, and other technological innovations occur. As such, given the reasonably anticipated decline in emissions once fully constructed and operational, the future development is consistent with the Executive Order's horizon-year goal.

Many of the emission reduction strategies recommended by CARB would serve to reduce the project's emissions level to the extent applicable by law and help lay the foundation "…for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050," as called for in CARB's First Update to the AB 32 Scoping Plan. As such, the project's emissions trajectory is expected to follow a declining trend, consistent with the 2030 and 2050 targets and Executive Order S-3-05 and B-30-15.

SCAG's RTP/SCS

SCAG's Regional Council approved and fully adopted the Connect SoCal (2020–2045 Regional Transportation Plan/Sustainable Communities Strategy) and the addendum to the Connect SoCal Program Environmental Impact Report in September 2020. Connect SoCal is a long-range visioning plan that builds upon and expands land use and transportation strategies established over several planning cycles to increase mobility options and achieve a more sustainable growth pattern. Connect SoCal is supported by a combination of transportation and land use strategies that help the region achieve state greenhouse gas emission reduction goals and federal Clean Air Act requirements, preserve open space areas, improve public health and roadway safety, support our vital goods movement industry, and utilize resources more efficiently. By integrating the Forecasted Development Pattern with a suite of financially constrained transportation investments, Connect SoCal can reach the regional target of reducing greenhouse gases, or GHGs, from autos and light-duty trucks by 8 percent per capita by 2020, and 19 percent by 2035 (compared to 2005 levels).

The project, which is comprised of a single-family residential use, would be developed within an existing urbanized area that provides an established network of roads and freeways that provide local and regional access to the area. Furthermore, the number of daily vehicle trips generated by the project is well below the threshold required by the City of Laguna Beach to perform a vehicle miles traveled analysis. Therefore, the project would not conflict with the applicable objectives of the 2019-2040 RTP/SCS.

Therefore, the project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases. Impacts would be less than significant.

Mitigation Measures

None required.

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
9. HAZARDS AND HAZARDOUS MATERIALS. Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonable foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles or a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☒	☐

Regulatory Setting

Regulations exist at federal, state, and local levels with regard to hazards and hazardous materials and include:

- Comprehensive Environmental Response, Compensation, and Liability Act
- Resources Conservation and Recovery Act
- Hazardous Materials Transportation Act
- Federal Aviation Regulations Part 77
- California Code of Regulations
- California Hazardous Material Management Act

- Emergency Response to Hazardous Materials Incidents
- California Government Code Section 65962.5
- County of Orange & Orange County Fire Authority Local Hazard Mitigation Plan
- Laguna Beach General Plan Safety Element
- Laguna Beach Municipal Code
- City of Laguna Beach ~~Wildfire~~ Egress Study

Environmental Setting

Hazardous Materials

Hazardous materials encompass a wide range of substances, some of which are naturally occurring and some of which are man-made. Examples of hazardous materials include pesticides, herbicides, petroleum products, metals (e.g., lead, mercury, arsenic), asbestos, and chemical compounds used in manufacturing. Hazardous materials are used for a variety of purposes, including service industries, various small businesses, medical uses, schools, and households. Many chemicals used in household cleaning, construction, dry cleaning, film processing, landscaping, and automotive maintenance and repair are considered hazardous. Small-quantity hazardous waste generators include facilities such as automotive repair, dry cleaners, and medical offices. Hazardous materials could pose a substantial present or future hazard to human health or the environment when improperly handled, disposed, or otherwise managed.

The area evaluated for hazards and hazardous materials impacts includes the project site and nearby properties with the potential to affect or be affected by the project. The project site is located approximately 9 miles from the nearest school and 22 miles from John Wayne Airport.

Checklist Discussion

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less Than Significant Impact. A significant impact may occur if a project involves use or disposal of hazardous materials as part of its routine operations and would have the potential to generate toxic or otherwise hazardous emissions that could adversely affect sensitive receptors.

Construction of the project would involve the temporary transport, use, and disposal of potentially hazardous materials. These materials include paints, adhesives, surface coatings, cleaning agents, fuels, and oils that are typically associated with development of any residential development project. All of these materials would be used temporarily during construction. Additionally, all potentially hazardous materials associated with construction activities would be used and stored in accordance with manufacturers' instructions and handled in compliance with applicable standards and regulations, which further minimizes the potential risk associated with construction-related hazardous materials, including the implementation of standard construction BMPs for the use and handling of such materials. Any use of potentially hazardous materials utilized during construction of the project would comply with all local, State, and federal regulations regarding the handling of potentially hazardous materials and risk of spills would cease after construction is completed. The transport, use, and storage of hazardous materials during the construction of the project would be conducted in accordance with all applicable state and federal laws, such as the Hazardous Materials Transportation Act, Resource Conservation and Recovery Act, California Hazardous Material Management Act, and CCR Title 2. Construction activities would be

contained on the project site and, thus, any emissions from the use of such materials would be minimal and localized to the project site. Therefore, construction of the project would not expose persons or the environment to a substantial risk resulting from the release of hazardous materials or exposure to health hazards in excess of regulatory standards.

Operation of the project would not involve the routine use, transport, or disposal of hazardous materials. The project includes the development of a single-family residential use. These typical urban use does not involve the routine use of hazardous materials**.** Instead, the operation of the project has limited hazardous materials that are similar to any other urban development such as cleaning solvents, paints, and pesticides for landscaping. As a result, the project generally would not produce significant amounts of hazardous waste, use or transport hazardous waste beyond those materials typically used in an urban development. Therefore, operation of the project would not expose persons or the environment to a substantial risk resulting from the release of hazardous materials or exposure to health hazards in excess of regulatory standards.

Moreover, the project would adhere to regulatory requirements for source hazardous waste reduction measures (e.g., recycling of used batteries, etc.) that would further minimize the generation of hazardous waste. The project would be required to comply with the applicable City ordinances regarding implementation of hazardous waste reduction efforts on-site (i.e., the City's Green Building Ordinance). The applicable regulatory requirements further ensure that the minimal amount of hazardous materials associated with the project are properly treated and disposed of at licensed resource recovery facilities or hazardous waste landfills. The potential transport of any hazardous materials and wastes, i.e., paints, adhesives, surface coatings, cleaning agents, fuels, and oils, if it occurs, would occur in accordance with federal and state regulations that govern the handling and transport of such materials. In accordance with such regulations, the transport of hazardous materials and wastes would only occur with transporters who have received training and appropriate licensing. **Therefore, impacts related to the transport, use, and disposal of hazardous materials would be less than significant**.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less Than Significant Impact. A significant impact may occur if a project could potentially pose a hazard to nearby sensitive receptors by releasing hazardous materials into the environment through accident or upset conditions.

California Government Code Section 65962.5 requires various State agencies to compile lists of hazardous waste disposal facilities, unauthorized releases from underground storage tanks, contaminated drinking water wells, and solid waste facilities where there is known migration of hazardous waste, and submit such information to the Secretary for Environmental Protection on at least an annual basis. Recognized environmental conditions (RECs) is the presence or likely presence or any hazardous substances or petroleum products in, on, or at the property due to release to the environment; under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment. A controlled REC is an REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, and a historic REC is a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls.

Regulatory databases such as those required by California Government Code Section 65962.5 were reviewed for the project site and properties within the standard search radii. The records search included federal, State, and tribal environmental record sources, and supplemental and local sources. The project site was not identified in the regulatory database reports. A review of such databases show that there are no known hazardous sites associated with the project site as according to California Department of Toxic Substances Control's (DTSC) EnviroStor database,[67] SWRCB's GeoTracker database,[68] and DTSC's current "Cortese" list.[69] In conclusion, there are no RECs, controlled RECs, or historical RECs on the project site. Therefore, construction and operation of the project would not pose an environmental hazard to surrounding sensitive uses or the environment as the project would not be located on a known hazardous waste site, and impacts would be less than significant.

Based on the above, compliance with regulatory requirements, the project would not result in a significant hazard to the public or the environment through the reasonably foreseeable upset or accident conditions involving the release of hazardous materials into the environment. **Impacts would be less than significant.**

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No Impact. A significant adverse effect may occur if a project site is located within one-quarter mile of an existing or proposed school site and is projected to release toxic emissions which pose a health hazard beyond regulatory thresholds.

There are no existing schools within a quarter-mile of the project site. The nearest school to the project site is approximately 9.0 miles to the north (Canyon Vista Elementary School at 27800 Oak View Drive), and there are no known proposed schools within one-quarter mile. **Therefore, no impact would occur**.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No Impact. California Government Code Section 65962.5 requires various State agencies to compile lists of hazardous waste disposal facilities, unauthorized releases from underground storage tanks, contaminated drinking water wells and solid waste facilities where there is known migration of hazardous waste and submit such information to the Secretary for Environmental Protection on at least an annual basis. A significant impact may occur if a project site is included on any of the above lists and poses an environmental hazard to surrounding sensitive uses.

As discussed above, regulatory databases such as those required by California Government Code Section 65962.5 were reviewed for the project site and properties within the standard search radii. The records search included federal, State, and tribal environmental record sources, and supplemental and local sources. The project site was not identified in the regulatory database reports. A recent review of such databases shows that there are no known hazardous sites associated with the project site as according to

[67] California Department of Toxic Substances Control, EnviroStor, http://www.envirostor.dtsc.ca.gov/public/. Accessed: October 2022.

[68] State Water Resources Control Board, GeoTracker, http://geotracker.waterboards.ca.gov. Accessed: October 2022.

[69] California Department of Toxic Substances Control, Hazardous Waste and Substances Site List (Cortese), http://www.envirostor.dtsc.ca.gov/public/mandated_reports.asp. Accessed: October 2022.

California DTSC EnviroStor database,[70] SWRCB's GeoTracker database,[71] and DTSC's current "Cortese" list.[72] In conclusion, there are no RECs, controlled RECs, or historical RECs on the project site. **Therefore, no impact would occur**.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

No Impact. A significant impact may occur if a project is located within a public airport land use plan area, or within two miles of a public airport, and subject to a safety hazard.

The project site is located approximately 22 miles south of the John Wayne Airport (18601 Airport Way). However, the project site is not located within the Planning Boundary/Influence Area of the John Wayne Airport including within the Airport Safety Zone or Airport Land Use Plan Noise Contour, which establishes the area susceptible to noise levels that would exceed the annoyance threshold for noise (defined as >65 CNEL for commercial airports such as the John Wayne Airport).[73] **Accordingly, no impacts associated with safety hazards or excessive noise from proximate airports would occur**.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact. A significant impact may occur if a project were to interfere with roadway operations used in conjunction with an emergency response plan or emergency evacuation plan or would generate traffic congestion that would interfere with the execution of such a plan.

As stated in the General Plan's Safety Element, as part of the City's preparedness initiatives, an Evacuation Analysis has been prepared that identifies the routes used for evacuation purposes. As identified in the General Plan's Safety Element the project site is located on a Critical Evacuation Roadway, Coast Highway.[74] Also, as indicated in the Wildfire Egress Study, which was prepared to examine anticipated traffic conditions and evacuation times associated with various rates of evacuation responses and alternative management strategies that could be used in response to them for the Emergency Management Zones (EMZs) within the City of Laguna Beach, Coast Highway is designated as an evacuation route.[75]

The project involves the development of a single-family residential use that would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. However, construction activities have the potential to temporarily impact traffic and vehicle speeds on Coast Highway. These impacts would be temporary and access to Coast Highway would not be blocked by project construction.

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70 California Department of Toxic Substances Control, EnviroStor, http://www.envirostor.dtsc.ca.gov/public/. Accessed: October 2022.

71 State Water Resources Control Board, GeoTracker, website: http://geotracker.waterboards.ca.gov. Accessed: October 2022.

72 California Department of Toxic Substances Control, Hazardous Waste and Substances Site List (Cortese), website: http://www.envirostor.dtsc.ca.gov/public/mandated_reports.asp. Accessed: October 2022.

73 Orange County, Airport Land Use Commission, Land Use Plan for John Wayne Airport, April 17, 2008.

74 Laguna Beach General Plan, Safety Element, October 2021. Figure S-1B.

75 City of Laguna Beach, Wildfire Egress Study, July 2021. Figure 11-1.

Operation of the project would not require the development of additional streets or introduce new features that would interfere with or obstruct an adopted emergency response plan. Additionally, as discussed further in Section 17, Transportation/Traffic, operation of the project would not result in a significant increase in daily trips to the site and the project site fronts Coast Highway, which has sufficient capacity to provide access to and from the project site. **Therefore, impacts would be less than significant**.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Less Than Significant Impact. A significant impact may occur if a project is located in proximity to wildland areas and poses a potential fire hazard, which could expose persons or structures, either directly or indirectly, in the area in the event of a fire.

As stated in the General Plan's Safety Element and defined by the California Department of Forestry and Fire Protection (Cal FIRE), all the canyon and hillside areas in Laguna Beach and some coastal terrace areas are classified within the VHFHSZ, which is the highest wildfire risk classification designated by Cal FIRE. Nearly 90 percent of the City is classified as VHFHSZ, including the project site.[76] As discussed further in Section 20, Wildfire, the project be developed in conformance with LBMC Chapter 15.01, California Fire Code, which adopts the 2019 California Fire Code and establishes provisions for fire safety related to construction, maintenance and design of buildings and land uses. Furthermore, the project has incorporated additional features that are non-conforming, which would result in the structure having improved survivability from fire and reduce the chance of ignition. With the implementation of MM-PUB-1, prescribed, the project is at least equivalent to, if not better than, what is prescribed in the 2019 California Fire Code in terms of quality, effectiveness, fire resistance, durability, and safety. The landscape plans for the project also provide for a low fuel planting scheme that would avoid fuel loading in future years.[77] In addition, the LBFD conducts strategic planning on a regular basis to ensure fire response capabilities and personnel can adequately address current service needs throughout the City and identifies potential issues to be addressed by the LBFD. **Therefore, the project would not result in increased wildfire risks at the site or lead to risk of loss injury or death involving wildland fires and impacts would be less than significant**.

Mitigation Measures

None required.

[76] Laguna Beach General Plan, Safety Element, October 2021. Page 11.

[77] AM&M Request for Joe Reyna, 718 The Strand, Hermosa Beach, CA 90254, prepared by FIREWISE 2000, LLC, January 27, 2022. Refer to **Appendix B** of this document.

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
10. HYDROLOGY AND WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i) result in substantial erosion or siltation on- or off-site?	☐	☒	☐	☐
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
iv) impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

The following analysis in this section is based on the Preliminary Water Quality Management Plan (WQMP), for 31451 South Coast Highway, Laguna Beach, CA 92651, prepared by Toal Engineering, Inc. on December 23, 2020 and revised February 1, 2022**.** The WQMP is available in **Appendix H** of this document.

Regulatory Setting

Regulations exist at federal, state, regional, and local levels with regard to hydrology and water quality and include:

- Clean Water Act/National Pollutant Discharge Elimination System Requirements
- National Flood Insurance Program

- NPDES Construction General Permit
- NPDES Groundwater Permit
- NPDES Municipal Permit
- Porter-Cologne Water Quality Control Act
- 2020 Urban Water Management Plan
- San Diego Regional Water Quality Control Board Water Quality Control Plan
- County of Orange & Orange County Fire Authority Local Hazard Mitigation Plan
- Laguna Beach Jurisdictional Runoff Management Program
- Laguna Beach Municipal Code

Environmental Setting

Groundwater

The City is located within the San Juan Basin. Natural recharge to the San Juan Basin includes streambed infiltration in San Juan Creek, Horno Creek, Oso Creek, and Arroyo Trabuco, subsurface inflows along boundaries at the head of the tributaries upstream and other minor subsurface inflows from other boundaries, precipitation and applied water, and flow from fractures and springs. The California State Water Resources Control Board (SWRCB) has determined that the San Juan Creek watershed is not a groundwater basin but is rather a surface and underground flowing stream. Therefore, it is subject to SWRCB jurisdiction and its processes with respect to the appropriation and use of waters within the watershed.[78]

Surface Water

The Pacific Ocean, a jurisdictional navigable water of the United States, does occur to the west of the City and the project site. Further, there are no direct surface water areas within SCWD, which includes the southern portion of the City.[79] There are no records or maps of any wetlands, potentially jurisdictional waterbodies, riparian resources, or significant drainage courses within or adjoining the project area.[80]

Flooding

The Federal Emergency Management Agency (FEMA) is mandated by the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 to evaluate flood hazards and provide Flood Insurance Rate Maps (FIRMs) for local and regional planners to promote sound land use and floodplain development. Further, the Flood Disaster Protection Act requires owners of all structures in identified Special Flood Hazard Areas to purchase and maintain flood insurance as a condition of receiving Federal or federally related financial assistance, such as mortgage loans from federally insured lending institutions. The National Flood Insurance Reform Act of 1994 further strengthened the National Flood Insurance Program (NFIP) by providing a grant program for State and community flood mitigation projects. The act also established a system (Community Rating System - CRS) for crediting communities that

[78] South Coast Water District 2020 Urban Water Management Plan, June 2021. Page 6-15.
[79] South Coast Water District 2020 Urban Water Management Plan, June 2021. Page 6-17.
[80] Biological Resources Assessment for 31451 Coast Highway, Laguna Beach, Orange County, California, prepared by LSA, May 21, 2020 (Available in **Appendix C** of this document).

implement measures to protect the natural and beneficial functions of their floodplains, as well as managing the erosion hazard.

According to the FEMA Laguna Beach is located within Zone X.[81] Zone X is areas of moderate or minimal hazard from the principal source of flood in the area.

Checklist Discussion

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less Than Significant Impact. A significant impact may occur if a project discharges water which does not meet the quality standards of agencies which regulate surface water quality and water discharge into storm water drainage systems. Significant impacts may also occur if a project does not comply with all applicable regulations with regard to surface water quality as governed by the SWRCB. These regulations include compliance with the Standard Urban Storm Water Mitigation Plan (SUSMP) requirements to reduce potential water quality impacts.

Construction

The project site is located in the Dana Point Coastal Streams Watershed – San Diego Region. Runoff discharged from the project site flows north westerly in Coast Highway and is discharged into Aliso Creek near the Pacific Ocean at Aliso Beach Park. Construction activities associated with the project have the potential to degrade surface water quality through the exposure of surface runoff (primarily rainfall) to exposed soils, dust, and other debris, as well as from runoff from construction equipment. As stormwater flows over a construction site, it can pick up sediment, debris, and chemicals, and transport them to receiving water bodies. The nearest receiving water body is the Pacific Ocean located immediately west of the project site; however, construction activities would be limited to the project site and not occur on the beach.

Due to the small size of the project site (approximately 0.56-acre), the project would not be required to obtain a Construction General Permit for stormwater. However, the project would be required to comply with LBMC Chapter 22.17, Construction Project Erosion and Sediment Control Maintenance Requirements. The LBMC requires that all construction projects implement erosion controls and BMPs, monitor and evaluate their performance after each rainstorm event, and revise and repair sediment control systems as needed. In addition, LBMC Chapter 16.01, Water Quality Control, requires project plan and BMP review prior to the issuance of construction permits and may impose additional BMPs or other requirements to ensure that the project would not adversely impact water quality. Accordingly, the construction contractor for the project would be required to implement BMPs that would meet or exceed federal, state, and local mandated guidelines for storm water treatment to control erosion and to protect the quality of surface water runoff during the construction period. BMPs utilized could include, without limitation, disposing of waste in accordance with all applicable laws and regulations; cleaning up leaks, drips, and spills immediately; conducting street sweeping during construction activities; limiting the

[81] Federal Emergency Management Agency, Flood Insurance Rate Map, City of Laguna Beach, California, FEMA Map Number 06059C0438K, effective March 21, 2019.

amount of soil exposed at any given time; covering trucks; keeping construction equipment in good working order; and installing sediment filters during construction activities.

In addition, construction activities would be subject to the requirements of the San Diego Regional Water Quality Control Board (SDRWQCB) Order No. R9-2013-0001, National Pollutant Discharge Elimination System (NPDES) No. CAS0109266, as amended by Order No. R9-2015-0001 and R9-2015-0100, effective November 18, 2015, Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the San Diego Region (the "MS4 Permit"), which controls the quality of runoff entering municipal storm drains in the San Diego Region. The MS4 Permit enforces implementation of BMPs, including, but not limited to, approval of an Erosion and Sediment Control Plan (ESCP) for all construction activities within their jurisdiction.[82]

The project site is located within the Coastal Zone. Therefore, through provisions of the California Coastal Act, the California Coastal Commission is empowered to issue a Coastal Development Permit for many projects located within the Coastal Zone. In areas where a local entity has a certified Local Coastal Program (LCP), the local entity (e.g., the City) can issue a Coastal Development Permit only if it is consistent with the LCP. The project may require authorization under the City's LCP. However, there are no significant drainages courses on site or within 100 feet of the project limits. Consequently, the project would be considered consistent with the California Coastal Zone Act.[83]

Operation

The existing site is entirely undeveloped and is surrounded by residential uses in a highly urbanized area. Under existing conditions, surface runoff flows across the site in a southwesterly direction and drains over the bluff edge onto the Pacific Ocean Shoreline. A portion of the surface runoff flows to the adjacent property at northwest side then discharges to the ocean. Currently, 100 percent of the project site is covered in impervious surface. The project would be comprised of the development of a single-family residential use, and would reduce impervious surfaces on the site to 48 percent.

The project would include a biofiltration raised planter box that would receive excess runoff collected by drain inlets and channel drains in site hardscape and landscape areas, which would then be treated and pumped into the Coast Highway via rectangular curb outlet. The storm water lift station would include a detention chamber to limit peak discharge into public street. Further, on-site slopes beyond the project limits would remain untouched in their natural, non-irrigated condition. The bulk of the pervious area within the project limits consist of reconstructed slopes, which would be planted with native, drought-tolerant species and then temporarily irrigated until the vegetation is established; once established, the temporary irrigation would be turned off and disconnected.

In addition, the project would be subject to the provisions of the City's Low Impact Development (LID), which is designed to mitigate the impacts of increases in runoff and stormwater pollution as close to the source as possible. LID comprises a set of site design approaches and BMPs that promote the use of

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[82] California Regional Water Quality Control Board – San Diego Region, National Pollutant Discharge Elimination System Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems Draining the Watersheds within the San Diego Region, Order No. R9-2013-0001, No. CAS0109266, as amended by Order No. R9-2015-0001 and R9-2015-0100, effective November 18, 2015.

[83] Biological Resources Assessment for 31451 Coast Highway, Laguna Beach, Orange County, California, prepared by LSA, May 21, 2020 (Available in **Appendix C** of this document).

natural systems for infiltration, evapotranspiration and use of stormwater. The LID Ordinance would require the project to incorporate LID standards and practices to encourage the beneficial use of rainwater and urban runoff; reduce stormwater runoff, promote rainwater harvesting; and provide increased groundwater recharge. Incorporation of these features would minimize the increase in stormwater runoff from the site.

Furthermore, operational activities that could affect water quality include spills of hazardous materials and leaking underground storage tanks. No underground storage tanks are currently operated at the project site nor would any be operated by the project. While the development of a new single-family residential use would increase the use of on-site hazardous materials, such as cleaning, maintenance, and landscaping supplies, compliance with all applicable existing regulations at the project site regarding the handling, storage, and potentially required cleanup of hazardous materials would prevent the project from affecting or expanding any potential areas of contamination, increasing the level of contamination, or causing regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations, Title 22, Division 4, Chapter 15 and the Safe Drinking Water Act.

With compliance with regulatory requirements, project construction and operation-related water quality impacts would be less than significant.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Less Than Significant Impact. A significant impact may occur if a project includes deep excavations resulting in the potential to interfere with groundwater movement or included withdrawal of groundwater or paving of existing permeable surfaces important to groundwater recharge.

According to the 2020 Urban Water Management Plan (UWMP), water supply in the area is provided by SCWD, which sources approximately 73 percent of its water from imported water provided by the Metropolitan Water District of Southern California (MWD), 13.5 percent from groundwater, and 13.5 percent from recycled water.[84] Groundwater seepage was observed at several locations within the promontory headland and seacliff at the general southern and northern portion of the site from what is believed to be the terrace deposit/bedrock contact. Localized perched groundwater conditions have been known to exist within the south Laguna area and site vicinity along the terrace/bedrock contact, with the perched water believed to be the consequence of lateral migration of water from off-site areas through the relatively permeable terrace deposits and along the relatively impermeable bedrock. However, as determined by boring samples taken from the project site, there is a lack of shallow groundwater. No groundwater was encountered at a depth of up to 23.3 feet.[85] Operation of the project would use a municipal water supply and does not propose the use of any wells or other means of extracting groundwater. The City imports the majority of its potable water supply from sources outside the Basin. The project would not extract groundwater or directly use wells. Further, according to the 2020 UWMP, SCWD expects to be able to provide reliable water supplies for an average year, single dry year, and multiple dry years for its existing and planned supplies. As discussed further in Section 19, Utilities and Service Systems, SCWD would have sufficient water supply to provide for the project's water use.

[84] South Coast Water District 2020 Urban Water Management Plan, June 2021. Page 6-1.

[85] Preliminary Geotechnical Investigation for Proposed Single-Family Residence 31451 South Coast Highway, Laguna Beach, California prepared by Coastal Geotechnical, dated September 16, 2004 (Available in **Appendix D.1** of this document).

Therefore, the project would not impede groundwater infiltration at the project site and project water use would not result in significant depletion of groundwater supplies. **Therefore, this impact would be less than significant**.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

i. Result in substantial erosion or siltation on- or off-site;

Less Than Significant Impact with Mitigation. A significant impact may occur if a project results in a substantial alteration of drainage patterns that would result in a substantial increase in erosion or siltation during construction or operation of the project.

Construction

Construction associated with the project would be subject to the requirements of SDRWQCB Order No. R9-2013-0001, National Pollutant Discharge Elimination System (NPDES) No. CAS0109266, as amended by Order No. R9-2015-0001 and R9-2015-0100, effective November 18, 2015, San Diego Region MS4 Permit, which controls the quality of runoff entering municipal storm drains in the County. The MS4 Permit enforces implementation of BMPs, including, but not limited to, approval of an ESCP for all construction activities within their jurisdiction.[86] ESCPs are required to include the elements of a SWPPP. Accordingly, the construction contractor for the project would be required to implement BMPs that would meet or exceed local, State, and federal mandated guidelines for stormwater treatment to control erosion and to protect the quality of surface water runoff during the construction period. BMPs utilized could include, without limitation: disposing of waste in accordance with all applicable laws and regulations; cleaning up leaks, drips, and spills immediately; conducting street sweeping during construction activities; limiting the amount of soil exposed at any given time; covering trucks; keeping construction equipment in good working order; and installing sediment filters during construction activities.

Furthermore, the project would not result in direct impacts to any delineated jurisdictional waters on the project site. Indirect temporary effects on water quality could occur during construction. Such effects include a potential increase in erosion and sediment transport into adjacent or downstream aquatic areas. Chemical spills or leaks of fuel, transmission fluid, lubricating oil, or motor oil from construction equipment could also contaminate waters and degrade their quality. These potential indirect effects to hydrology and water quality would be avoided or substantially minimized through the implementation of BMPs, project design features, and a water quality management plan and/or a storm water pollution and prevention plan (if required). With successful implementation of the recommended impact avoidance and minimization measures (MM-Bio-2), adverse indirect impacts on water quality (from erosion, runoff, etc.) would be effectively avoided.[87]

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[86] California Regional Water Quality Control Board – San Diego Region, National Pollutant Discharge Elimination System Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems Draining the Watersheds within the San Diego Region, Order No. R9-2013-0001, No. CAS0109266, as amended by Order No. R9-2015-0001 and R9-2015-0100, effective November 18, 2015.

[87] Biological Resources Assessment for 31451 Coast Highway, Laguna Beach, Orange County, California, prepared by LSA, May 21, 2020 (Available in **Appendix C** of this document).

Operation

During the project's operational phase all stormwater flows would be directed to storm drainage features and would be discharged to Coast Highway. As part of the project, a portion of the project site would be developed with a single-family residential use, including deck areas and landscaping. The proposed structure, pavement, and landscaping, which would include revegetation of the sloped areas with native, drought-tolerant plants, would prevent substantial erosion. Furthermore, the irrigation system would be designed and constructed to facilitate irrigation and avoid over-watering. The use of an automated timer system would control valve run times, and low precipitation heads would minimize the amount of water entering the landscape areas. The system would be equipped with a moisture detection system and/or rain shut-off trigger(s) to avoid unnecessary irrigation, which could lead to erosion. Furthermore, it was determined that it would be unlikely that wave runup would reach the bluff top development. The beach fronting the site is relatively stable and the project is therefore, reasonably safe from shoreline erosion due to the erosion resistant bedrock material at the beach elevation.[88]

Accordingly, impacts related to erosion and siltation would be less than significant with implementation of mitigation.

ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;

Less Than Significant Impact. A significant impact may occur if a project results in a substantial alteration of drainage patterns that would result in a substantial increase in erosion or siltation during construction or operation of the project.

Construction

As discussed under Section 10(ci), above, during construction of the project, a temporary alteration of the existing on-site drainage pattern may occur from site preparation and grading for construction. However, these changes would not result in a substantial increase in the rate or amount of surface runoff that could result in flooding due to stringent controls imposed under the NPDES MS4 Permit, including preparation of an ESCP and BMPs for the control of runoff.

Operation

Site drainage would be collected by drain inlets and channel drains in site hardscape and landscape areas to collect excess runoff and not allow surface water to accumulate and result in standing water/ponding situation, the collected runoff would then be conveyed to a storm water lift station and pumped into the Coast Highway via rectangular curb outlet. Furthermore, the on-site slopes outside of the project area (but within the property) would remain untouched. Therefore, the project would not substantially alter the existing drainage pattern of the site or area in a manner that would result in flooding on- or offsite. **Impacts related to flooding would be less than significant**.

[88] Discussion of Coastal Hazards (Coastal Hazards) for 31451 Coast Highway, City of Laguna Beach, Orange County, California, prepared by GeoSoils, Inc., dated April 23, 2020 (Available in **Appendix D.3** of this document).

iii. 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; or;

Less Than Significant Impact. A significant impact may occur if a project would increase the volume of storm water runoff to a level which exceeded the capacity of the storm drain system serving a project site. A project-related significant adverse effect may also occur if a project would substantially increase the probability that polluted runoff would reach the storm drain system.

Construction

As previously discussed, the project would prepare an ESCP and include BMPs for the control of runoff and water quality impacts during construction in accordance with the MS4 Permit. Therefore, stormwater runoff from the project site would not exceed the capacity of the existing or planned stormwater drainage systems during construction. However, should the City determine improvements to the stormwater drainage system are necessary during the normal permit review process, the Applicant would be responsible for the improvements, and such improvements would be conducted as part of the project either on-site or off-site within the right-of-way, and as such, any related construction activities would be temporary and of short duration, and would not result in any significant environmental impacts given the disturbed nature of the right-of-way. Furthermore, as the project would manage, capture, and treat runoff during construction, as required by regulatory compliance, implementation of the project would represent an improvement in water quality as compared to the existing condition where runoff sheet flows untreated to the drainage system.

Operation

Under existing conditions, surface runoff flows across the site in a southwesterly direction and drains over the bluff edge onto the Pacific Ocean Shoreline. A portion of the surface runoff flows to the adjacent property at northwest side then discharges to the ocean. Currently, 100 percent of the project site is covered in impervious surface. The project would be comprised of the development of a single-family residential use, and would reduce impervious surfaces on the site to 48 percent.

The post-development drainage plan is designed to treat and partially retain runoff via an enclosed planter box (biofiltration raised planter box) prior to discharge in order to eliminate direct discharge into the Pacific Ocean. Drain inlets would be provided in site hardscape and landscape areas to collect excess runoff and not allow surface water to accumulate and result in standing water/ponding situations. Drain lines would convey the collected runoff into a storm life station for treatment and storage prior to discharge. Drainage from paved areas would be directed to flow away from the building foundation and into turf or landscape areas, where possible prior to collection by the proposed area drain system. The proposed planter boxes would remove sediment and pollutants through volume reduction before the runoff enters the storm water lift station and is pumped to Coast Highway via rectangular curb outlet.

The WQMP notes that Design Capture Volume (DCV) can be met with a combination of infiltration, evapotranspiration, rainwater harvesting and/or biotreatment BMPs. The volume in biofiltration BMPs is at least 0.75 of the DCV (after accounting for retention achieved before using biofiltration BMPs). The calculated DCV is shown as following DCV = 0.75 x 0.51 x 0.355 x 43,560 x 1/12 = 493 cubic feet. The report notes that collected runoff occurs by a series of roof gutters and drain inlets and would be conveyed via underground drainpipes to a detention storage and then discharges to the biofiltration system at the rear yard. Treated runoff is then discharged to the pump system and pumped to the Coast Highway and

ultimately flows north westerly in Coast Highway and is discharged into Aliso Creek near the Pacific Ocean at Aliso Beach Park. The planter box would allow for surface ponding to a depth of 7 inches above the surface. The required ponding depth is 308 square feet and the proposed planter box has an area depth of 310 square feet, with a surface storage volume of 391 cubic feet. No runoff project site discharge directly to the ocean without being treated prior. Therefore, the project would not substantially create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff during construction or operation**. Impacts related to flooding would be less than significant.**

iv. Impede or redirect flood flows?

Less Than Significant Impact. A significant impact may occur if a project results in a substantial alteration of flood flows.

According to the FEMA Flood Insurance Rate Map, the project site is within Zone X, which is a designation for areas determined to have a minimal flood hazard.[89] No streams or rivers that may overflow or breech a levee are located on or near the project site and the project site is not located within any high-risk coastal areas. **Therefore, the potential for the project to impede or redirect flood flows would be less than significant**.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Less than Significant Impact. A significant impact may occur if a project site is sufficiently close to the ocean or other water body to be potentially at risk of the effects of seismically-induced tidal phenomena (seiche and tsunami) or if the project site is located adjacent to a hillside area with soil characteristics that would indicate potential susceptibility to mudslides or mudflows.

The project site is located within Zone X, as identified on the FIRM. Zone X is areas of moderate or minimal hazard from the principal source of flood in the area.[90] Therefore, the project site would only be subject to moderate or minimal risk from flooding.

The risk for seismically generated ocean waves to affect the site is considered low due to the elevation of the property above sea level.[91, 92] More specifically, allowing for a six feet rise in sea level over the next 75 years, the mean higher high water level would be at approximately 11.25 feet. The highest observed water elevation was on January 28, 1983 during the severe El Niño winter. This elevation was approximately 7.5 feet. If a sea level rise of six feet is added to this elevation, it is approximately 13.5 feet. This would be considered in excess of a 75-year recurrence interval water level. The existing site improvements are

89 Federal Emergency Management Agency, Flood Insurance Rate Map, City of Laguna Beach, California, FEMA Map Number 06059C0438K, effective March 21, 2019.

90 Federal Emergency Management Agency, Flood Insurance Rate Map, City of Laguna Beach, California, FEMA Map Number 06059C0438K, effective March 21, 2019.

91 Preliminary Geotechnical Investigation for Proposed Single-Family Residence 31451 South Coast Highway, Laguna Beach, California prepared by Coastal Geotechnical, dated September 16, 2004 (Available in **Appendix D.1** of this document).

92 Laguna Beach Safety Element, October 2021. Figures S-6 and S-8.

above approximately 80 feet, which are well above any potential ocean flood elevation. Therefore, the project site is safe from flooding from the ocean over the next 75 years.[93]

Wave runup may reach the back beach and bedrock bluff over the next 75 years. However, due to the elevation of the existing improvements (above approximately 69 feet) the wave runup would not impact the project site. Essentially, the erosion resistant bedrock shoreline is natural shore protection and prevents further movement of the shoreline landward over the next 75 years.[94] **Accordingly, impacts related to the risk from flooding would be less than significant**.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less Than Significant Impact. A significant air quality impact may occur if a project is not consistent with water quality control plans or sustainable groundwater management plans.

Water quality control plans applicable to the project include the SDRWQCB *Water Quality Control Plan, for the San Diego Basin* (Basin Plan) and the City's *Jurisdictional Runoff Management Program* (Management Plan). Adopted by SDRWQCB, the Basin Plan designates beneficial uses for surface and groundwaters, sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the State's anti-degradation policy, and describes implementation programs to protect all waters in the Santa Ana Region. In addition, the Basin Plan incorporates (by reference) all applicable State and Regional Board plans and policies and other pertinent water quality policies and regulations. The Management Plan was developed by the City of Laguna Beach Water Quality Department to help meet water quality regulations. The Management Plan identifies and describes the various watersheds in the City, summarizes the water quality conditions of the City's waters, identifies known sources of pollutants, describes the governing regulations for water quality, describes the BMPs that are being implemented by the City, discusses existing Total Maximum Daily Loads (TMDL).[95]

Implementation Plans and Watershed Management Plans

Construction and operation of the project would involve activities that have the potential to conflict with the water quality goals in the Basin Plan and Management Plan through the spread of contaminants into surface or groundwater supplies. As previously detailed, in Section 10(b), above, as determined by boring samples taken from the project site, there is a lack of shallow groundwater. No groundwater was encountered at a depth of up to 23.3 feet.[96] Furthermore, construction of the project would prevent the spread of contaminants into surface water through adherence to applicable regulations and BMPs for the handling and storing of hazardous materials, and the requirements of the MS4 Permit, including implementation of an ESCP for the prevention of erosion and spread of polluted runoff. These regulations and practices effectively control the potential stormwater pollution to surface water during construction.

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93 Discussion of Coastal Hazards (Coastal Hazards) for 31451 Coast Highway, City of Laguna Beach, Orange County, California, prepared by GeoSoils, Inc., dated April 23, 2020 (Available in **Appendix D.3** of this document).

94 Discussion of Coastal Hazards (Coastal Hazards) for 31451 Coast Highway, City of Laguna Beach, Orange County, California, prepared by GeoSoils, Inc., dated April 23, 2020 (Available in **Appendix D.3** of this document).

95 Total Maximum Daily Load (TMDL) is a regulatory term referring to the maximum amount of a pollutant that a body of water can receive per day while still meeting water quality standards.

96 Preliminary Geotechnical Investigation for Proposed Single-Family Residence 31451 South Coast Highway, Laguna Beach, California prepared by Coastal Geotechnical, dated September 16, 2004 (Available in **Appendix D.3** of this document).

Furthermore, the proposed residential use does not represent the type of use that would have the ability to adversely affect water quality. Anticipated and potential pollutants generated by operation of the project would be addressed through the implementation of approved LID BMPs. While the development of a new use would increase the use of on-site hazardous materials (i.e., those typically used on residentially zoned properties such as cleaning, maintenance, and landscaping supplies), compliance with all applicable existing regulations at the project site regarding the handling, storage, and potentially required cleanup of hazardous materials would prevent the project from affecting or expanding any potential areas of contamination, increasing the level of contamination, or causing regulatory water quality standards at an existing production well to be violated.

With regard to groundwater management plans, on September 16, 2014, the State of California signed into law the Sustainable Groundwater Management Act (SGMA). Comprised of three bills, AB 1739, SB 1168, and SB 1319, the SGMA provides a framework for long-term sustainable groundwater management across California and requires governments and water agencies of high and medium priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. Under the roadmap laid out by the legislation, local, and regional authorities in medium and high priority groundwater basins have formed Groundwater Sustainability Agencies (GSAs) that will oversee the preparation and implementation of a local Groundwater Sustainability Plan (GSP). Local stakeholders have until 2022 (in critically over drafted basins until 2020) to develop, prepare, and begin implementation of Groundwater Sustainability Plans. GSAs will have until 2042 (2040 in critically over drafted basins) to achieve groundwater sustainability.

The project site overlies the San Juan Basin. The project would receive its water from the SCWD. Both the SCWP and the California Department of Water Resources have programs in place to monitor wells to prevent overdrafting. The San Juan Groundwater Basin manager adopted the concept of "adaptive management" of the Basin to vary pumping from year to year based on actual basin conditions derived from monitoring efforts, with the groundwater management implication that during dry periods groundwater pumping would be lower than in wet periods. SCWD also addresses water supply needs through preparation of an UWMP, which projects future water use demands and identifies water supplies to meet these demands and is updated every five years.

As described in detail in Section 19. Utilities and Service Systems, the project's water demand would be within the projections of the UWMP and the project would be required to implement water saving features to reduce the amount of water used by the project in accordance with water conservation measures, including Title 20 and 24 of the California Administrative Code**.** Additionally, the project would not have the potential to impact the amount of groundwater recharge as the project site does not currently provide recharge for the groundwater basin.

Accordingly, based on the above, the project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. **Impacts to water quality control plans and sustainable groundwater management plans would be less than significant**.

Mitigation Measures

Refer to MM-BIO-2.

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

Regulatory Setting

Regulations exist at state and local levels with regard to land use and include:

- California Coast Act
- Southern California Association of Governments Connect SoCal Plan
- Laguna Beach General Plan
- Laguna Beach Design Guidelines – A Guide to Residential Development
- Laguna Beach Municipal Code

Environmental Setting

The City is comprised of a total land area of 5,658 acres, or 8.84 square miles. The City, located in the southern portion of Orange County, is bounded by the Pacific Ocean on the southwest, Crystal Cove State Park and the City of Newport Beach on the northwest, Laguna Woods on the northeast, Aliso Viejo and Laguna Niguel on the east, and Dana Point on the southeast. The Laguna Coast Wilderness Park is a 7,000-acre wilderness area in the hills surrounding the City.

Checklist Discussion

a) Physically divide an established community?

No Impact. A significant impact may occur if a project were sufficiently large enough or otherwise configured in such a way as to create a physical barrier within an established community (a typical example would be a project which involved a continuous right-of-way such as a roadway which would divide a community and impede access between parts of the community).

The project site is located at 31451 Coast Highway, and is bounded by Pacific Ocean shoreline to the west, Coast Highway to the east and single-family residential land uses beyond, and single-family residential land uses to the north and south.

The 24,338 square-foot project site is currently undeveloped. The project site does not include any roadways or access to other streets or properties. The project site is surrounded by other development and there are no existing residences on the site, or a residential use that would be physically separated or otherwise disrupted by the project. Development of the project, which is comprised of the development

of a single-family residential use, would remain within the boundaries of the existing project site and would result in further infill of an already developed community. The project would not disrupt, divide, or isolate an existing neighborhood or community directly or indirectly, as all proposed improvements would occur within the limits of the project site. **Therefore, no impact would occur**.

b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Less Than Significant Impact. A significant impact may occur if a project is inconsistent with the General Plan or zoning designations currently applicable to the project site and would cause adverse environmental effects, which the General Plan and zoning ordinance are designed to avoid or mitigate.

Applicable Land Use Policies and Regulations

At the regional level, development within the project site is subject to the following:

- *SCAG's 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy*
- *California Coastal Act*

At the City level, development within the project site is subject to the following:

- Laguna Beach General Plan;
- Laguna Beach Zoning Code (Laguna Beach Municipal Code Titles 16, 21, 22, and 25);
- Laguna Beach Design Guidelines – A Guide to Residential Development; and
- South Laguna Beach Community Design and Landscape Guidelines.

An overview of each of these plans and regulations is provided below. However, not every policy or goal of these plans is intended to mitigate or avoid environmental impacts. Where a policy is not intended to mitigate or avoid an environmental impact, consistency with that policy may not be relevant to an environmental impact analysis.

Consistency with Regional Plans

Southern California Association of Governments/Regional Transportation Plan

On September 3, 2020, the SCAG Regional Council adopted the 2020-2045 RTP/SCS, also known as Connect SoCal. The 2020-2045 RTP/SCS presents a long-term transportation vision through the year 2045 for the six-county region of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties. The 2020-2045 RTP/SCS contains baseline socioeconomic projections that are used as the basis for SCAG's transportation planning, and the provision of services by other regional agencies. SCAG's overarching strategy for achieving its goals is integrating land use and transportation. SCAG policies are directed towards the development of regional land use patterns that contribute to reductions in vehicle miles and improvements to the transportation system. Rooted in past RTP/SCS plans, Connect SoCal's "Core Vision" centers on maintaining and better managing the region's transportation network, expanding mobility choices by co-locating housing, jobs, and transit, and increasing investment in transit and complete streets. The plans "Key Connections" augment the "Core Vision" to address challenges related to the intensification of core planning strategies and increasingly aggressive greenhouse gas reduction goals, and include but are not limited to, Housing Supportive Infrastructure, Go Zones, and

Shared Mobility. Connect SoCal intends to create benefits for the SCAG region by achieving regional goals for sustainability, transportation equity, improved public health and safety, and enhancement of the regions' overall quality of life. These benefits include but are not limited to a five percent reduction in vehicle miles traveled (VMT) per capita and vehicle hours traveled by nine percent, increase in work-related transit trips by two percent, create more than 264,500 new jobs, reduce greenfield development by 29 percent, and, building off of the 2019-2040 RTP/SCS, increase the share of new regional household growth occurring in High Quality Transit Area's by six percent and the share of new job growth in High Quality Transit Areas by 15 percent.

The project, which is comprised of a single-family residential use would be developed within an existing urbanized area that provides an established network of roads and freeways that provide local and regional access to the area. Furthermore, the number of daily vehicle trips generated by the project (16 daily vehicle trips)[97] is well below the threshold required by the County of Orange to perform a vehicle miles traveled analysis. Therefore, the project would not conflict with the applicable objectives of the 2019-2040 RTP/SCS.

California Coastal Act

The project site is also within the Coastal Zone, which require that planning and development within the Coastal Zone be consistent and compatible with the unique characteristics of coastal resources. To implement these principals, the California Coastal Act established several basic goals, including the following:

- To protect, maintain, and where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources;
- To ensure orderly, balanced utilization and conservation of coastal zone resources;
- To maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resources conservation principles and constitutionally protected rights of private property owners;
- To ensure priority for coastal-dependent and coastal-related development over other development on the coast; and
- To encourage State and local efforts to coordinate planning for mutually beneficial uses.[98]

In order to implement these goals, the California Coastal Act established the California Coastal Commission as a permanent State coastal management and regulatory agency with the duties of assisting coastal communities in the preparation of Local Coastal Plans (LCP) and reviewing and certifying the LCPs once they are adopted by local jurisdictions. Each local government along the coast is responsible for incorporating these polices into its own LCP, consisting of a land use plan, zoning ordinance, and other implementing actions. After certification of the LCP, the Coastal Commission's regulatory authority over most development is delegated to the local government. The City's LCP, certified by the California Coastal Commission on January 13, 1993, is comprised of several components, including, but not limited to the:

- Laguna Beach General Plan Land Use Element;

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97 Based on a trip generation rate of 15.2 trips per day per single-family residence. 1 residence x 15.2 trips per residence = 15.2 rounded up to 16. Source: County of Orange, Guidelines for Evaluating Vehicle Miles Traveled, September 2020. Page 18.

98 California Coastal Act, Chapter 1, Findings and Declarations and General Provisions. Page 4.

- Laguna Beach General Plan Open Space Conservation Element;
- Laguna Beach Coastal Land Use Technical Appendix;[99]
- Laguna Beach Zoning Code (Laguna Beach Municipal Code Titles 16, 21, 22, and 25); and
- Laguna Beach Design Guidelines – A Guide to Residential Development.

The LCP delegates the Coastal Development Permit (CDP) authority from the Coastal Commission to the City. Upon determination of final project plans, the project would undergo a consistency analysis for conformity with the LCP. The project would be required to comply with all provisions of the Coastal Development Permit and would be directly appealable to the Coastal Commission. The analysis below discussed the consistency analysis of the project with the LCP components.

Consistency with Local Plans

Laguna Beach General Plan

The City's General Plan is a document consisting of nine elements, including, Historic Resources Element, Housing Element, Human Needs Element, Land Use Element, Landscape and Scenic Highways Element, Noise Element, Open Space Conservation Element, Safety Element, and Transportation, Circulation, and Growth Management Element.

The project site is within the Village Low Density General Plan land use designation, which primarily provides for residential uses, such as the project. This classification is intended for detached single-family residential uses in areas that are already developed and support existing homes. The district is intended to provide a residential living environment that is adjacent to local services and businesses. Building density ranges from 1 to 10 dwelling units per acre. The project is a single-family residence, located on an infill lot that would be surrounded by existing residential development. The project site is near several local restaurants and small commercial businesses. Therefore, the project would be consistent with the Village Low Density General Plan land use designation.

Other General Plan policies that are applicable to the project include policies related to creating a sustainable and resilient community, preserving and enhancing the City's residential neighborhoods, and preserving coastal views. The project would include sustainability features such as energy efficient lighting, green roof, and HVAC. The project would enhance the character of the project site and its vicinity by constructing a single-family residence consistent with existing uses and design to create a visually cohesive, high quality residential development. The project would be a maximum of 30 feet (three stories) and built in a split-level style, and would maintain a 25-foot buffer from the bluff top setting the building back from direct views from the Pacific Ocean shoreline. The project would incorporate the design and landscaping recommendations of the LSHRD for Zone J of the Coast Highway to the extent feasible.

Additionally, the project would be consistent with General Plan policies related to protecting natural resources and avoiding or creating hazardous conditions. Although the project site is degraded and fragmented coastal bluff scrub, temporarily impacted areas would be restored in place to predisturbance conditions of equal or greater quality in order to avoid adverse impacts to these resources. The project

[99] The Laguna Beach Coastal Land Use Technical Appendix is a technical document serving as an appendix to the City's General Plan. The policy framework for coastal planning is contained in the General Plan. By consolidating the issues of the Land Use Plan into the General Plan, the City is able to achieve an internally consistent long-range planning program while responding to the mandate of the Coastal Act.

would protect water quality and marine resources through use of BMPs during construction and operation to control site runoff. The project would implement measures as outlined in the coastal hazards report prepared for the project site related to on-site coastal conditions and coastal hazard constraints, including coastal erosion, coastal flood or wave runup impacts. The project would conform with LBMC Chapter 15.01, California Fire Code (which adopts the 2019 California Fire Code) and the project design and materials are at least equivalent to, if not better than, what is prescribed in the 2019 California Fire Code in terms of quality, effectiveness, fire resistance, durability, and safety.

Overall, the project would be consistent with applicable policies and actions in the General Plan adopted for the purpose of avoiding or mitigating an environmental effect. For a full analysis of General Plan policies, please see **Appendix I.1**.

Laguna Beach Zoning Code

Land Use

All on-site development activity is subject to the Zoning Code. The Zoning Code includes development standards for the various districts in the City. The project site is currently zoned R-1, Residential Low Density. Land uses allowed in the R-1 zone include single-family dwelling units, such as the project, child care, guest houses (with restrictions), public parks, playgrounds, and beaches, and residential care facilities.[100] Therefore, the project's proposed land use would be allowed by the zoning.

Lot Size

The R-1 zone's requires each lot to have 6,000 square feet of land area.[101] The project site, which totals approximately 0.56-acre (24,338 square feet), therefore, complies with the R-1 zone lot area requirement.

The R-1 zone's required lot dimensions are a minimum lot width of 70 feet and a minimum lot depth of 80 feet.[102] The project site has a lot width of approximately 81 feet and a lot depth of approximately 301 feet, and therefore, complies with the R-1 zone lot dimensions.

Height

R-1 zone permits a maximum height of 30 feet when measured from the finished or natural grade.[103] The project has been designed with a maximum height of 30 feet and, therefore, complies with the R-1 zone height limitations.

Setbacks

The R-1 zone is required to provide front, side, and rear yard setbacks. The project would be constructed with a 20' front yard setback for the house and a 20' front yard setback for the garage, a 16' side yard setback along the northerly edge, a 4' side yard setback along the southerly edge, and a 25' rear yard setback from the blufftop. The provision of these setbacks minimizes the project's massing, along with its

100 LBMC Section 25.10.004.
101 LBMC Section 25.10.008.
102 LBMC Section 25.10.008.
103 LBMC Section 25.10.008.

potential impacts upon adjacent properties, while remaining consistent with the intent of the LBMC's yard requirements.[104]

Parking

Under standard LBMC requirements, the project's single-family residential use would require two covered parking spaces and one uncovered parking space. The project would provide three covered parking spaces for the proposed residence and therefore, would be in compliance with the LBMC.[105]

Open Space

The project's required amount of open space was calculated pursuant to LBMC Section 25.10.008(0), based on the lot size. All new homes, with a lot area over 14,500 square feet, shall provide a minimum of 35 percent ground-to-sky landscaped open space or landscaped area. Thus, a total of 7,414 square feet of open space is required for the project. The project would provide approximately 10,197 square feet (or 48 percent of the lot area) of open space.

Therefore, the project complies with the zoning standards including density, permissible land uses, setbacks, parking, and open space.

Laguna Beach Design Guidelines – A Guide to Residential Development

The City of Laguna Beach Residential Design Guidelines (Design Guidelines) serve to implement the General Plan's urban design principles and are intended to be used by the community, the Design Review Board, the Heritage Committee, the Planning Commission, the City Council and design professionals in evaluating project applications, along with relevant policies from the General Plan. By offering more direction for proceeding with the design of a project, the Design Guidelines illustrate options, solutions, and techniques to achieve the goal of excellence in new design. The Design Guidelines, which were adopted December 7, 2010, are intended as performance goals and not zoning regulations or development standards and, therefore, do not supersede regulations in the LBMC. The guidelines carry out the common design objectives and are implemented by the following design review criteria: access, design articulation, design integrity, environmental context, general plan compliance, historic preservation, landscaping, light and glare, neighborhood compatibility, privacy, public art, sustainability, swimming pools, spas, and water features, and view equity.[106]

The City's Residential Design Guidelines related to access focus on safety for vehicles and pedestrian traffic. The project would include a new sidewalk along the frontage of the project site and a new drive approach per Caltrans standards. Guidelines related to design articulation and integrity recommend following natural topography, maximizing harmony with natural surroundings and honoring environmental context, and additional guidelines related to architectural elements. The project would incorporate the suggested design elements and would be consistent with these guidelines. Other Guidelines related to landscaping, light and glare, neighborhood compatibility, privacy, sustainability, and swimming pools support low-impact landscaping, non-obtrusive lighting, energy-efficient site design, and appropriate setbacks. The project would incorporate native, drought-tolerant plants, the lighting used

[104] LBMC Section 25.10.008.
[105] LBMC Section 25.52.012.
[106] City of Laguna Beach Design Guidelines-A Guide to Residential Development, December 7, 2010.

throughout the project site would prevent light spillover onto adjacent properties, and would comply with all development standards for the R-1 zone and would not physically encroach on surrounding residential areas. Lastly, the project would be consistent with guidelines related to view equity as the project would not exceed the City's building height standards and would be consistent with adjacent development. Therefore, the project conforms to the Design Guidelines. For a full analysis of the project's consistency with the City's Residential Design Guideline policies, please see **Appendix I.2**.

As discussed further under Permits and Approvals, in Section A. Project Description, the project would require approval of the building by the Design Review Board, a Coastal Development Permit, a Building Permit, and a Grading Permit. Based on the analysis above, the project would be substantially consistent with applicable goals, policies, and objectives in local and regional plans that govern development on the project site. Therefore, the project would not conflict with applicable land use plans adopted for the purpose of avoiding or mitigating an environmental effect. **As such, impacts would be less than significant**.

Mitigation Measures

None required.

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

Regulatory Setting

Regulations and responsible agencies exist at the state level with regard to mineral resources and include:

- Surface Mining and Reclamation Act of 1975
- Division of Oil, Gas, and Geothermal Resources
- Division of Mines and Geology

Environmental Setting

The project site is undeveloped, has not been historically used for mineral extraction, and there are no mineral extraction activities in the area.[107]

Checklist Discussion

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

***No Impact*.** A significant impact may occur if a project is located in an area used or available for extraction of a regionally-important mineral resource and the project converted an existing or potential future regionally-important mineral extraction use to another reuse or if the project affected access to a site used or was potentially available for regionally-important mineral resource extraction.

No portion of the project site is delineated as a mineral resource or mineral resource recovery site. There are no active mines or mineral resource extraction occurring on the site or project vicinity.[108] Additionally, the project site is not located within the boundaries of a major oil drilling area or within a State-designated

[107] California Division of Mine Reclamation, California Department of Conservation. https://maps.conservation.ca.gov/mol/index.html. Accessed October 2022.
[108] California Division of Mine Reclamation, California Department of Conservation. https://maps.conservation.ca.gov/mol/index.html. Accessed October 2022.

oil field.[109] **Due to lack of resources available on the project site and the urban nature of the City, no impact would occur**.

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

***No Impact*.** A significant impact may occur if a project is located in an area used or available for extraction of a locally-important mineral resource extraction and the project converted an existing or potential future locally-important mineral extraction use to another use or if the project affected access to a site used or potentially available for locally-important mineral resource extraction.

As discussed above under responses to Section 12(a), the project site is not within a major drilling area or State-designated oil field. The project would not affect any extraction activities and there would be no impact on existing or future regionally important mineral extraction sites. Therefore, development of the project would not result in the loss of availability of a mineral resource that would be of value to the residents of the State or a locally-important mineral resource, or mineral resource recovery site, as delineated on a local general plan, specific plan, or land use plan. **Therefore, no impact would occur**.

Mitigation Measures

None required.

[109] California Department of Conservation, Division of Oil, Gas & Geothermal Resources, Well Finder, https://maps.conservation.ca.gov/doggr/wellfinder/#openModal/-118.37122/34.06442/19. Accessed October 2022.

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
13. NOISE. Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Regulatory Setting

Various private and public agencies have established noise guidelines and standards to protect citizens from potential hearing damage and other adverse physiological and social effects associated with noise. Federal, State, regional, and local guidelines include the following:

- Federal Transit Administration and Federal Railroad Administration Standards
- Federal Aviation Administration Standards
- California Noise Control Act
- California Code of Regulations
- Laguna Beach General Plan
- Laguna Beach Municipal Code

Noise Fundamentals

Sound is described in terms of amplitude (i.e., loudness) and frequency (i.e., pitch). The standard unit of sound amplitude measurement is the decibel (dB). The dB scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound. The pitch of the sound is related to the frequency of the pressure vibration. Since the human ear is not equally sensitive to a given sound level at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted dB scale (dBA) provides this compensation by emphasizing frequencies in a manner approximating the sensitivity of the human ear.

Noise, on the other hand, is typically defined as unwanted sound audible at such a level that the sound becomes an undesirable by-product of society's normal day-to-day activities. Sound becomes unwanted when it interferes with normal activities, causes actual physical harm, or results in adverse health effects. The effects of noise on people can be placed into four general categories:

- Subjective effects (e.g., dissatisfaction, annoyance);
- Interference effects (e.g., communication, sleep, and learning interference);
- Physiological effects (e.g., startle response); and
- Physical effects (e.g., hearing loss).

The definition of noise as unwanted sound implies that it has an adverse effect, or causes a substantial annoyance, to people and their environment. However, not every unwanted audible sound interferes with normal activities, causes harm, or has adverse health effects. For unwanted audible sound (i.e., noise) to be considered adverse, it must occur with sufficient frequency and at such a level that these adverse impacts are reasonably likely to occur.

Vibration Fundamentals

Vibration can result from a source (e.g., train operations, motor vehicles, machinery equipment, etc.) causing the adjacent ground to move and creating vibration waves that propagate through the soil to the foundations of nearby buildings. This effect is referred to as groundborne vibration. The peak particle velocity (PPV) or the root mean square (RMS) velocity is usually used to describe vibration levels. PPV is defined as the maximum instantaneous peak of the vibration level, while RMS is defined as the square root of the average of the squared amplitude of the vibration level. PPV is typically used for evaluating potential building damage, while RMS velocity in decibels (VdB) is typically more suitable for evaluating human response.

Environmental Setting

Noise in Laguna Beach comes from transportation sources, including highways, arterials, and roadways and non-transportation sources, such as commercial/industrial activities, construction equipment and various community activities. The noise environment in Laguna Beach is dominated by vehicular traffic including vehicular generated noise along Highway 1 and primary and secondary arterials. In addition, a number of other sources contribute to the total noise environment. These noise sources include construction activities, power tools and gardening equipment, loudspeakers, auto repair, radios, children playing and dogs barking.

Regulatory Setting

State of California

California Code of Regulations (CCR) Title 24 Section 1207.4 requires that within residences the interior noise levels attributable to exterior noise sources not exceed a CNEL of 45 dBA in any habitable room with windows closed. CALGreen, Standard 5.507.4, requires that all non-residential buildings with property lines within sound levels regularly exceeding 65 dBA L_{eq} verify the interior noise levels within occupied nonresidential space do not exceed 50 dBA L_{eq}.

City of Laguna Beach Noise Element

The goals, policies, and implementation actions contained in the Noise Element of the Laguna Beach General Plan (2005) focus on establishing regulations and applying criteria for acceptable noise levels for different land uses in order to minimize the negative impacts of noise, especially at sensitive receiver locations. In support of these goals and policies, the Noise Element contains a land use and noise

compatibility matrix that determines the normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable noise levels for various land uses to guide planning decisions. The 'normally acceptable' noise level for a single-family home is 50-60 dBA CNEL and a 'conditionally acceptable' noise level is 60-70 dBA CNEL.[110]

City of Laguna Beach Standards

Chapter 7.25, Noise, of the LBMC establishes a series of regulations and standards to prevent excessive noise that may jeopardize the health, welfare or safety of the citizens or degrade their quality of life. Specifically, LBMC Section 7.25.040(A), Exterior Noise Standards, establishes exterior noise standards categorized by five noise zones in the City. The noise standards for these zones differ between daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) hours. The daytime exterior noise standard for residential land uses is 60 dBA L_{eq} and the nighttime exterior noise standard is 50 dBA L_{eq}.

According to Section 7.25.040(B), it is unlawful for any person at any location within the City to create noise which causes the noise level when measured on any other property to: 1) exceed the noise standard for the applicable zone for any 15-minute period, or 2) a maximum instantaneous (single instance) noise level equal to the noise standard plus 20 dBA for any period of time.

As listed in LBMC Section 7.25.050(B), Exemptions, any mechanical device, apparatus or equipment uses, related to or connected with emergency machinery, vehicle, work or warning alarm or bell is exempt from noise regulations and standards provided that the sounding of any bell or alarm on any building or motor vehicle is terminated within 15 minutes of its activation.

LBMC Section 7.25.050(E) exempts noise sources associated with construction, repair, remodeling, demolition or grading of any real property from compliance with the noise level limits contained in the LBMC. This section indicates that such noise-generating activities are subject to the provisions of LBMC Section 7.25.080, Construction Activity Noise Regulations.

Furthermore, LBMC Section 7.25.080, Construction Activity Noise Regulations, prohibits the operation of any tool or equipment used for construction activities or any other related building activity between the hours of 6:00 p.m. and 7:30 a.m. on weekdays, whereas such construction activities are prohibited entirely on weekends and federal holidays.

LBMC Section 7.25.130, Heating, venting, pool/spa and air conditioning—Special Provisions, includes specific noise standards for regulating heating, venting and air conditions (HVAC), and pool/spa equipment in or adjacent to residential areas. According to Section 7.25.130(a), permits for HVAC, and pool/spa equipment in or adjacent to residential areas are issued only after the installation contractor signs an acknowledgment that the installation project site meet the noise limits established in LBMC Section 7.25.040.

[110] Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements. Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning would normally suffice. Source: General Plan Noise Element. http://www.lagunabeachcity.net/civicax/filebank/blobdload.aspx?BlobID=2686. Accessed January 2023.

Checklist Discussion

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less Than Significant Impact.

A significant impact may occur if the project would generate excess noise that would cause the ambient noise environment at the project site to fail to comply with noise level standards set forth in the City of Laguna Beach General Plan Noise Element (Noise Element) and the City of Laguna Beach Noise Ordinance (Chapter 7.25). Implementation of the project would result in an increase in ambient noise levels during both construction and operations, as discussed in detail below.

Construction Noise

Short-term noise impacts could occur during construction activities from either the noise impacts created from the transport of workers and movement of construction materials to and from the project site, or from the noise generated on-site during: ground clearing/excavation, grading, and building activities.

Construction noise levels would vary significantly based upon the size and topographical features of the active construction zone, duration of the work day, and types of equipment employed, as indicated in **Table 14, Typical Construction Equipment Noise Levels**.

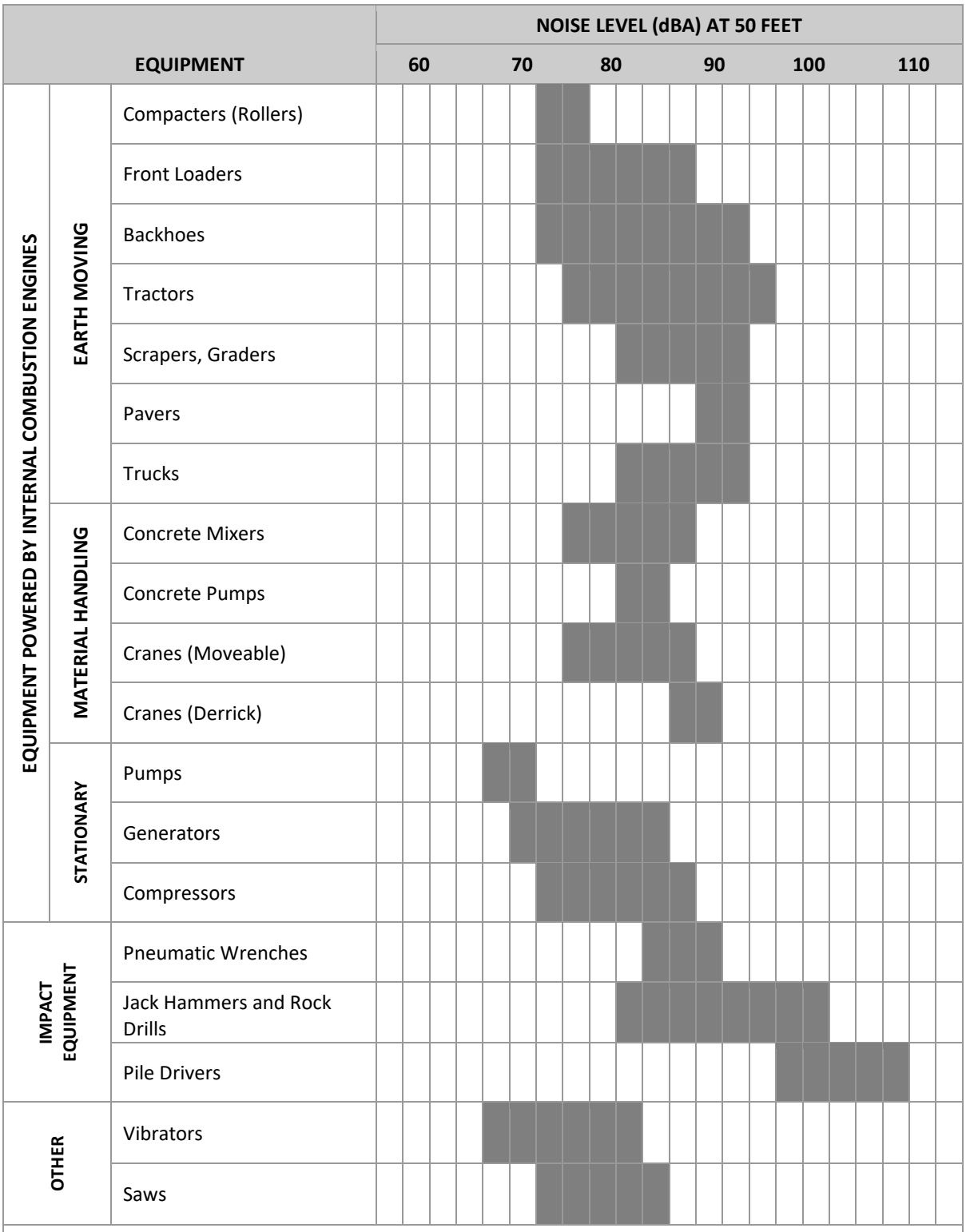
To provide a point of reference, a typical construction day with an eight-hour duration would generate 84 dBA CNEL at a distance of 50 feet[111] from the noise source, on average.

As stated above, LBMC Section 7.25.050(E) exempts noise sources associated with construction, repair, remodeling, demolition or grading of any real property from compliance with the noise level limits contained in the LBMC, as long as the construction does not occur between the hours of 6:00 p.m. and 7:30 a.m. on weekdays, weekends and federal holidays.

As the construction of the project would not occur between the hours of 6:00 p.m. and 7:30 a.m., or on weekdays, weekends and federal holidays, impacts associated with construction noise would not exceed any noise standards and are anticipated to be less than significant. However, to ensure that construction noise levels are reduced to the extent feasible, Best Management practices (BMPS) are recommended. These industry-wide best BMPs for construction in urban or otherwise noise-sensitive areas, would be incorporated to attenuate construction noise levels to the residential receptors located adjacent to the project site, to the north and south:

[111] City of Perris General Plan, Noise Element, Appendix C: Technical Noise Area Definitions, page 69

Table 14
Typical Construction Equipment Noise Levels



Source: United States Environmental Protection Agency, 1971, "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances," NTID 300-1.

- The project contractor shall use power construction equipment with state-of-the-art noise shielding and muffling devices.
- Construction activities shall be scheduled so as to avoid operating several pieces of equipment simultaneously, which causes high noise levels.
- A temporary noise control barrier/sound curtain shall be installed around the property line of the construction site abutting/facing residential uses located adjacent to the site, to the north and south of the project site. The noise control barrier shall be engineered to block the line-of-sight from the residential uses to the construction activity to reduce construction-related noise levels at the adjacent residential structures. The supporting structure shall be engineered and erected according to applicable codes. The temporary barrier shall remain in place until all windows have been installed and all activities on the project site are complete.

Operational Noise

This impact discussion analyzes the potential for a substantial permanent increase in ambient noise levels in the project vicinity associated with operation of the proposed project, including impacts related to offsite vehicular noise and exposure of neighboring land uses to onsite noise.

On-Site Noise

Analysis of on-site operational noise is typically not conducted for residential projects as they usually do not include stationary noise sources that could result in substantial increases in ambient noise levels resulting in violation of established standards. Furthermore, the typical noise sources associated with residential uses (heating, venting, pool/spa, and air conditioning) are regulated by LBMC Section 7.25.130. Therefore, with compliance with LBMC 7.25.130, the on-site operational noise from the proposed single-family dwelling unit is considered to be less than significant.

Traffic Noise

In order for a new noise source to be audible, there would need to be a 3 dBA or greater CNEL noise increase. The traffic volume on any given roadway would need to double in order for a 3 dBA increase in ambient noise to occur.[112] As the project is a single-family dwelling unit and did not meet the threshold requirement to do any kind of traffic analysis for the City of Laguna Beach, the project is not anticipated to generate a doubling of traffic volumes on any roadways within the project vicinity. The noise impact from project-related traffic is considered to be less than significant.

Therefore, the project would not cause the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. **Impacts would be less than significant.**

[112] Highway Traffic Noise: Assessment and Abatement. Website: https://www.codot.gov/programs/research/assets/Brochures/NoiseBrochureFinal.pdf. Accessed January 2023.

Mitigation Measures.

None required.

b) Generation of excessive groundborne vibration or groundborne noise levels?

Less Than Significant Impact. A significant impact may occur if a project were to generate excessive vibration during construction or operation.

Construction activities can produce vibration that may be felt by adjacent uses. The construction of the project would not require the use of equipment such as pile drivers, which are known to generate substantial construction vibration levels. The highest degree of groundborne vibration would be generated during the foundation and building construction phase due to the operation of large bulldozer. Based on the Federal Transit Administration (FTA) data, vibration velocities from large bulldozer operations are estimated to be approximately 0.156 inch-per-second PPV at 15 feet from the source of activity.[113] As such, structures located greater than 15 feet from bulldozer operations would not experience groundborne vibration above the Caltrans significance thresholds (i.e. 0.2 inch-per-second PPV for structures and 0.2 inch-per-second PPV for human annoyance). As the nearest existing structures are at least 16 feet from any location within the project boundary where a bulldozer may be used, the Caltrans significance thresholds would not be exceeded. Therefore, impacts would be less than significant in this regard. Such compliance would reduce noise groundborne vibration and noise levels associated with construction activities. **Therefore, impacts would be less than significant.**

As the project is a residential use, it is not considered to be a significant source of operational vibration. No additional analysis is warranted or required. Therefore, the project would not cause excessive groundborne vibration or groundborne noise levels. **Impacts would be less than significant.**

Mitigation Measures.

None required.

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

No Impact. A significant impact would occur if the project were located in the vicinity of a private airstrip or an airport land use plan and would expose people residing or working in the project area to excessive noise levels.

John Wayne Airport is located approximately 13 miles northwest of the project site. According to the Orange County ALUC Land Use Plan for the John Wayne Airport, the site is not located within the airport's noise contours.[114] Although the project site would potentially be subject to occasional aircraft overflight noise, such occurrences would be intermittent and temporary. In addition, there are no private airstrips

[113] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.

[114] Orange County Airport Land Use Commission. 2008. Land Use Plan for the John Wayne Airport. https://files.ocair.com/media/2021-02/JWA_AELUP-April-17-2008.pdf?VersionId=cB0byJjdad9OuY5im7Oaj5aWaT1FS.vD. Accessed January 2023.

in the vicinity of the project site. Therefore, the project would not expose people working in the project area to excessive noise levels associated with airports or airstrips and the project would not exacerbate existing noise conditions related to airports or airstrips. **There would be no impact related to exposure to excessive noise from air traffic-related sources**. **No impact would occur.**

Mitigation Measures.

None required.

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

Regulatory Setting

Regulations and plans exist at state, regional, and local levels related to populations and housing and include:

- Southern California Association of Governments Connect SoCal

Environmental Setting

Laguna Beach was founded on June 29, 1927. The City occupies 8.84 square miles and has an estimated population of 22,795.[115] The City has 13,007 housing units.[116]

Checklist Discussion

a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

No Impact. A significant impact may occur if a project were to locate new development such as homes, businesses or infrastructure, with the effect of substantially inducing growth that would otherwise not have occurred as rapidly or in as great a magnitude.

The project is comprised of the construction of a single-family residential use on a residential zoned property. **Therefore, the project is not anticipated to induce substantial growth and no impacts are anticipated**.

[115] United State Census. Quick Facts, Laguna Beach, California, https://www.census.gov/quickfacts/fact/table/lagunabeachcitycalifornia/PST045221. Accessed October 2022.

[116] SCAG. 2019 Local Profiles, https://scag.ca.gov/sites/main/files/file-attachments/lagunabeach_localprofile.pdf?1606012709. Accessed October 2022.

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. A significant impact may occur if a project would result in displacement of existing people or housing units, necessitating construction of replacement housing elsewhere. Because no existing housing is located on the project site, the project would not displace existing housing or people and would not necessitate the construction of replacement housing elsewhere. **No impact would occur**.

Mitigation Measures

None required.

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
15. PUBLIC SERVICES. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, 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 public services:				
a) Fire protection?	☐	☒	☐	☐
b) Police protection?	☐	☐	☒	☐
c) Schools?	☐	☐	☒	☐
d) Parks?	☐	☐	☒	☐
e) Other public facilities?	☐	☐	☒	☐

Regulatory Setting

Regulations and policies exist the state and local level with regard to public services and include:

- California Mutual Aid Plan
- Senate Bill 50
- Wildfire Mitigation and Fire Safety Report
- Laguna Beach Local Hazard Mitigation Plan
- Laguna Beach Municipal Code
- Laguna Beach General Plan Open Space Conservation Element
- Laguna Beach General Plan Safety Element

Environmental Setting

Fire Protection

The LBFD provides fire protection to the City and is comprised of four (4) stations. The LBFD provides for the public's safety by deploying and staffing a variety of emergency response vehicles and covers emergency medical services, rescue, forestry, and health hazardous material and emergency operations.[117]

Police Protection

The Laguna Beach Police Department (LBPD) provides law enforcement services to residents and businesses in the City. The LBPD is located at 505 Forest Avenue and provides field services and patrol. The services provided include the following: crime prevention; traffic and congestion control; safety management; and emergency response.[118]

[117] City of Laguna Beach, Fire Department, https://www.lagunabeachcity.net/government/departments/fire. Accessed October 2022.

[118] City of Laguna Beach, Police Department, https://www.lagunabeachcity.net/government/departments/police. Accessed October 2022.

Schools

Schools in the City are under the Laguna Beach Unified School District (LBUSD). The City has two (2) elementary schools, one (1) middle school, and one (1) high school.[119] The Leroy F. Greene School Facilities Act of 1998 (Senate Bill 50) sets a maximum level of fees a developer may be required to pay to mitigate a project's impacts on school facilities authorized school districts to assess all new development a fee to offset impacts proposed projects might have on the school facilities. Whenever possible, school districts have requested that developers provide full impact mitigation on development. The establishment of special tax districts, full cost recovery agreements or the provision of relocatable classrooms in lieu of fees are just a few examples of such mitigation measures.

Parks

The City has ten (10) parks and a variety of recreation opportunities. Parks include the Alta Laguna Park, Bluebird Park, Crescent Bay Park, Heisler Park, Laguna Beach Dog Park, Lang Park, Main Beach Park, Moulton Meadows Park (and Dog Plan Area), Riddle Field Park, and Village Green Park. The City has a senior center, the Laguna Beach Community & Susi Q Senior Center[120] and direct access to the Laguna Greenbelt, which is approximately 10,000 acre open space area within Orange County.[121]

Other Public Facilities

The City has one public library located 363 Glenneyre Street that is operated by Orange County. The library has space for children and teens, including homework help. Additionally, the library includes materials in both English and Spanish, public computers for online research, eBooks, audiobooks, magazines, newspapers, and music. [122]

Checklist Discussion

a) Fire Protection?

Less Than Significant Impact with Mitigation. A significant impact may occur if a project creates the need for new or physically altered fire facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable response times or other performance objective.

The nearest fire station to the project site is Fire Station No. 4, located at 31646 2nd Avenue, approximately 0.3 mile south of the project site. The project would be comprised of a single-family residence use. As identified in Chapter 15.01 of the LBMC, the City has adopted the 2019 California Fire Code, which contains regulations related to construction, maintenance and design of buildings and land uses. The project would be required to adhere to all Fire Code requirements. Specifically, the project would provide:

- fire sprinklers inside the single-family home;
- a minimum 3-foot-wide firefighter access around the perimeter of the structure,
- all vegetation would be pruned to reduce fuel loads,
- an automatic irrigation system would maintain healthy vegetation,

[119] Laguna Beach Unified School District, https://www.lbusd.org/. Accessed October 2022.

[120] City of Laguna Beach, Recreation Division, https://www.lagunabeachcity.net/government/departments/parks-recreation/parks-and-open-space. Accessed October 2022.

[121] City of Laguna Beach, General Plan, Open Space Conservation Element, Adopted December 17, 1993. Page 8.

[122] Orange County Public Libraries, https://www.ocpl.org/libraries/laguna-beach. Accessed October 2022.

- no trees or tree-form shrubs would extend beyond the property line: and
- vertical access in excess of 13 feet 6 inches would be provided.

The project has incorporated additional features that are non-conforming, which would result in the structure having improved survivability from fire and reduce the chance of ignition. With the implementation of MM-PUB-1, prescribed, the project is at least equivalent to, if not better than, what is prescribed in the 2019 California Fire Code in terms of quality, effectiveness, fire resistance, durability, and safety. In addition, the landscape plans for the project provide for a low fuel planting scheme that would avoid fuel loading in future years.[123] In addition, as discussed in Section 14, Population and Housing, the project would not significantly increase population in the City. **Therefore, impacts to fire protection services would be less than significant with implementation of mitigation measures**.

b) Police Protection?

Less Than Significant Impact. A significant impact may occur if a project creates the need for new or physically altered police facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objective.

The project site would be served by the LBPD. The station is located at 505 Forest Avenue, approximately 3.6 miles north of the project site. The Field Services Division patrols the City in three geographic areas; the project site is within Patrol Beat Three.[124] The project would be comprised of a single-family residence use. As discussed in Section 14, Population and Housing, the project would not significantly increase population in the City and therefore would not cause substantially delayed response times, degraded service ratios or necessitate construction of new police facilities. **Therefore, impacts to police protection services would be less than significant.**

c) Schools?

Less Than Significant Impact. A significant impact may occur if a proposed project includes substantial employment or population growth, which could generate demand for school facilities that exceeds the capacity of the school district(s) responsible for serving the project site.

The project site is served by LBUSD, which operates two (2) elementary schools, one (1) middle school, and one (1) high school.[125] The project would be comprised of a single-family residence use. As discussed in Section 14, Population and Housing, the project would not significantly increase population, including student population in the City and therefore would not cause substantially impact to LBUSD schools. Furthermore, in accordance with state law pursuant to Government Code Section 65996 and SB 50, California legislation holds that an acceptable method of offsetting a project's effect on the adequacy of school facilities is payment of a school impact fee prior to issuance of a building permit. Once paid, the school impact fees would serve as mitigation for any project-related impacts to school facilities. As such, the City is legally prohibited from imposing any additional mitigation related to school facilities, as payment of the school impact fees constitutes full and complete mitigation. Therefore, the project would not result in substantial adverse physical impacts associated with the provision of new or physically altered school facilities. **Impacts related to schools would be less than significant**.

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123 AM&M Request for Joe Reyna, 718 The Strand, Hermosa Beach, CA 90254, prepared by FIREWISE 2000, LLC, January 27, 2022.

124 City of Laguna Beach, Laguna Beach Police Department, 2017-2018 Biennial Report. Page 11.

125 Laguna Beach Unified School District, https://www.lbusd.org/. Accessed October 2022.

d) Parks?

Less Than Significant Impact. A significant impact to parks may occur if implementation of a project includes a new or physically altered park or creates the need for a new or physically altered park, the construction of which could cause substantial adverse physical impacts.

The nearest park, operated by the Laguna Beach Recreation Division, to the project site is Lang Park, located at 21540 Wesley Drive, approximately 0.8 mile north of the project site.[126] Lang Park is comprised of one (1) tennis and pickle ball court, a half basketball court, playground, restrooms, and a soccer field. The project would be comprised of a single-family residence use. As discussed in Section 14, Population and Housing, the project would not significantly increase population in the City and therefore would not substantially impact parks. **Therefore, impacts would be less than significant.**

e) Other public facilities?

Less Than Significant Impact. A significant impact may occur if a project generates a demand for other public facilities (such as libraries) that exceeds the capacity available.

The project site would be served by the Laguna Beach Library, located at 363 Glenneyre Street, approximately 3.3 miles north of the project site. The project would be comprised of a single-family residence use. As discussed in Section 14, Population and Housing, the project would not significantly increase population in the City and therefore would not substantially impact the Laguna Beach Library. **Impacts from potential future development on the library would be less than significant**.

Mitigation Measures

MM-PUB-1 The Fire Department Site Access Plan prepared for the project[127] shows that with the fire apparatus parked on the Coast Highway, the 150' hose pull requirement (CFC 503.1.1) cannot be met. The following alternative materials and methods to mitigate for the inability to meet the hose pull requirement or provide for the Guidelines fuel treatment measures are proposed:

- The automatic fire sprinkler system shall be upgraded to a 4-head sprinkler design to be applied to all rooms including garages, storage areas, closets and bathrooms regardless of size.

  The design and projected flow demand of the system shall be deigned and calculated by a qualified Fire Protection Contractor. The four head calculation system must have a minimum .05 density design, QR and intermediate temperature heads; the heads may be of a small orifice type such as 3/8" or 7/16". Copper piping is required in the attics; CPVC project site only be permitted in the attic if listed heads are used in accordance with their listing.

[126] City of Laguna Beach, Recreation Division, https://www.lagunabeachcity.net/government/departments/parks-recreation/parks-and-open-space. Accessed October 2022.

[127] AM&M Request for Joe Reyna, 718 The Strand, Hermosa Beach, CA 90254, prepared by FIREWISE 2000, LLC, January 27, 2022.

A Fire Sprinkler subcontractor shall submit plans to the architect and LBFD, showing sprinkler head layout prior to installation. The Fire Sprinkler System shall be inspected annually by a qualified Fire Protection Contractor and the report submitted to LBFD.

- To meet the required hose pull distances, install two (2) wet manual Class 1 Standpipe System with 2-2 ½ outlets at the hose connection, with 2-2½ snoots at the FDC. Location is noted on the FDSAP Appendix A. System shall be designed to meet the requirements of 2019 CFC, NFPA 13, NFPA 14 & LBMC. Submitted under a separate deferred submittal by a qualified Fire Protection System Contractor. Plans shall be submitted to the LBFD for review and approval, a permit issued, and final inspection required. Appropriate signage shall be provided for standpipe hose connection and FDC at the time of installation. All underground piping shall be 3-inch, wet standpipe must connect to fire sprinklers system above sprinkler flow switch. Standpipe hose connection to be accessible from firefighter access pathway. Two (2) standpipe locations on project site, one in the northwest corner of travel pathway and the second on southeast side at 150 feet hose pull distance. FDC located northeast of garage entry point, from Coast Highway. FDC must be accessible from street and cannot be blocked by vehicles, wall, gates or vegetation.

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

Environmental Setting

The City has ten (10) parks and a variety of recreation opportunities. Parks include the Alta Laguna Park, Bluebird Park, Crescent Bay Park, Heisler Park, Laguna Beach Dog Park, Lang Park, Main Beach Park, Moulton Meadows Park (and Dog Plan Area), Riddle Field Park, and Village Green Park. The City has a senior center, the Laguna Beach Community & Susi Q Senior Center[128] and direct access to the Laguna Greenbelt, which is approximately 10,000 acre open space area within Orange County.[129]

Checklist Discussion

a) Would the project Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated?

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Less Than Significant Impact. A significant impact may occur if a project would include substantial employment or population growth which could generate an increased demand for park or recreational facilities that would exceed the capacity of existing parks and causes premature deterioration of the park facilities.

As previously discussed in Section 15, Public Services, the nearest park, operated by the Laguna Beach Recreation Division, to the project site is Lang Park, located at 21540 Wesley Drive, approximately 0.8 mile north of the project site.[130] Lang Park is comprised of one (1) tennis and pickle ball court, a half basketball court, playground, restrooms, and a soccer field. The project would be comprised of a single-family

[128] City of Laguna Beach, Recreation Division, https://www.lagunabeachcity.net/government/departments/parks-recreation/parks-and-open-space. Accessed October 2022.

[129] City of Laguna Beach, General Plan, Open Space Conservation Element, Adopted December 17, 1993. Page 8.

[130] City of Laguna Beach, Recreation Division, https://www.lagunabeachcity.net/government/departments/parks-recreation/parks-and-open-space. Accessed October 2022.

residence use. As discussed in Section 14, Population and Housing, the project would not significantly increase population in the City. Furthermore, future residents can easily access open space and recreational opportunities within the region and because the project does not substantially increase the number of residents, the project would not create unanticipated demand on City parks or cause substantial deterioration of existing parks such that new park facilities would be needed. **Therefore, impacts would be less than significant**.

Mitigation Measures

None required.

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

Regulatory Setting

Regulations and policies exist at the state, regional, and local levels as follows:

- Senate Bill 743
- Southern California Association of Governments Connect SoCal Plan
- CEQA Guidelines Section 15064.3
- County of Orange 2020 Updated Transportation Implementation Manual
- County of Orange Guidelines for Evaluating Vehicle Miles Traveled Under CEQA
- Laguna Beach General Plan Transportation, Circulation, and Growth Management Element

Environmental Setting

The City has an established system of streets and roadways, which is currently served by major arterials, primary arterials, hillside collector streets, collector streets, and local streets. The major arterial roadways and primary arterial roadways through the City extend beyond the city boundaries into neighboring cities. Circulation issues and travel patterns, likewise, extend beyond the City limits. The land use decisions and traffic patterns in these other jurisdictions have the potential to affect the quality of traffic flow and mobility in the City, and conversely, traffic conditions and decisions made by the City can affect its neighbors.

The project site is located in South Laguna Beach at 31541 Coast Highway, Laguna Beach, California. The site is regionally accessible by Coast Highway, I-405, I-5, and SR-73. Site access would be provided by a driveway off of Coast Highway.

The City is served for transit by Orange County Transit Authority (OCTA), with a bus line, Route 1, on Coast Highway, and the Laguna Beach Trolley, a free trolley service on Coast Highway between North Laguna/ Heisler Park, downtown, South Laguna/ Mission Hospital and Ritz Carlton in Dana Point. The City also has

other transit, including an on-demand shared-ride transit service, Age Well Senior Services, and Sally's Fund, providing transportation to and from the Laguna Beach Community and Susi Q Center.[131]

Checklist Discussion

a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Less Than Significant Impact. A significant impact may occur if a project would conflict with a program plan, ordinance, or policy designed to maintain adequate effectiveness of an overall circulation system, including transit, roadway, bicycle, and pedestrian facilities.

The County of Orange has updated the County of Orange 2020 Updated Transportation Implementation Manual, to conform to the requirements of Senate Bill 743. The updated Transportation Implementation Manual shifted the performance metric for evaluating transportation impacts under CEQA from level of service (LOS) to VMT. Attachment B of the County of Orange 2020 Updated Transportation Implementation Manual, which is comprised of the Guidelines for Evaluating Vehicle Miles Traveled discusses how citywide plans, policies, and programs that could create an impact. In accordance with the 2020 Updated Transportation Implementation Manual, a project that generally conforms with and does not obstruct a City's development policies and standards would generally be considered to be consistent. The project's consistency with applicable plans and their policies is provided in response to Section 9, Land Use. As detailed there, the project would be consistent with the applicable land use plans.

Furthermore, construction of the project would generate traffic for deliveries of equipment and materials to the project site and create construction worker traffic via Coast Highway. Construction vehicles and equipment would be staged on the site. Construction worker trips were estimated based on default values provided by CalEEMod (see **Appendix E.1**). The project would generate a maximum of 10 construction worker trips per day. The latest traffic counts on Coast Highway indicate that the annual average daily traffic on Coast Highway in the vicinity of the project site is between 37,900 and 38,900.[132] As the increase in average daily traffic would be less than one percent of the annual average daily traffic on Coast Highway, traffic generated during project construction is not anticipated to affect the performance of the circulation system. In addition, construction traffic would be temporary, and the movement of construction equipment would be limited to the project site. Construction of the project would not involve any vehicle or equipment staging on Coast Highway and would not require any long-term lane closures on Coast Highway. Construction also would not require any temporary closures or alterations to the OCTA bus route located along Coast Highway, and OCTA bus route 1 would be able to continue operating. Therefore, construction activities would not substantially interfere with the City's circulation system. Furthermore, the City is responsible for traffic control plan reviews. As part of the construction coordination for the project, the City would determine the need for Traffic Control Measures to avoid traffic congestion impacts, potential safety conflicts with bicycles and pedestrians.

131 City of Laguna Beach, Parking and Transportation, https://www.lagunabeachcity.net/live-here/parking-and-transportation. Accessed October 2022.

132 California Department of Transportation (Caltrans), Traffic Census Program, Traffic Volumes: Annual Average Daily Traffic (AADT), 2020, https://dot.ca.gov/programs/traffic-operations/census. Accessed October 2022.

The operation of the project, which is comprised of a single-family residential use would generate minimal long-term traffic trips. Therefore, no long-term adverse traffic impacts would occur that would conflict with programs, ordinances or policies evaluating circulation systems within the City.

Based on the above as well as the analysis presented in Section 9, Land Use, the project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. **Therefore, impacts would be less than significant**.

b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?

Less Than Significant Impact. CEQA Guidelines Section 15064.3(b) identifies appropriate criteria for evaluating transportation impacts. It states that land use projects with VMT exceeding an applicable threshold of significance may indicate a significant impact, and that projects that decrease VMT compared to existing conditions should be presumed to have a less than significant transportation impact. Section 15064.3(c) states that the requirement to use these criteria only applies on and after July 1, 2020. A deadline of July 1, 2020 was established for jurisdictions to adopt thresholds for evaluation of transportation impacts according to VMT. The City did not prepare revised traffic impact guidelines or separate VMT analysis guidelines by the July 1, 2020, deadline. However, CEQA Guidelines Section 15064.7(c) states the following:

> *When adopting or using thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency is supported by substantial evidence*.

While the City has not adopted specific VMT thresholds, the County of Orange has updated the County of Orange 2020 Updated Transportation Implementation Manual and Attachment B is comprised of the Guidelines for Evaluating Vehicle Miles Traveled.[133] The County Guidelines establish screening criteria for land use projects that would not exceed an applicable threshold of significance. One of the screening criteria is for small projects, which is defined as a project that generates 500 or fewer average daily trips (ADT). The project would develop a single-family residential use on the project site. The number of daily vehicle trips generated by the project (16 daily vehicle trips)[134] is well below the threshold required by the County of Orange to perform a vehicle miles traveled analysis. As such, the project would not conflict with and would not be inconsistent with CEQA Guidelines Section 15064.3, and any impacts are less than significant. **Therefore, impacts would be less than significant**.

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Impact. A significant impact may occur if a project includes new roadway design or introduced a new land use or project features into an area with specific transportation requirements, characteristics, or project access or other features designed in such a way as to create hazardous conditions.

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[133] County of Orange, 2020 Updated Transportation Implementation Manual, Amended November 17, 2020.

[134] Based on a trip generation rate of 15.2 trips per day per single-family residence. 1 residence x 15.2 trips per residence = 15.2 rounded up to 16. Source: County of Orange, Guidelines for Evaluating Vehicle Miles Traveled, September 2020. Page 18.

Impacts regarding the potential increase of hazards due to a geometric design feature generally relate to the design of access points to and from the project site, and may include safety, operational, or capacity impacts. Impacts can be related to vehicle conflicts as well as to operational delays caused by vehicles slowing and/or queuing to access a project site. A review of the project site plans was conducted to identify any hazardous geometric design features. A new vehicle access point to the single-family residential use would be provided via Coast Highway at the northern end of the project site. The driveway placement and location has been designed in accordance with Caltrans standards. **Accordingly, the project would not substantially increase hazards due to a geometric design feature or incompatible uses and there would be no impact**.

d) Result in inadequate emergency access?

No Impact. A significant impact may occur if a project design does not provide emergency access meeting the requirements of the Fire Department or in any other way threatens the ability of emergency vehicles to access and serve the project site or adjacent uses.

The project would not result in inadequate emergency access because it would be subject to Building Safety Division and LBFD review for acceptance of site plans prior to occupancy to confirm that required safety features, including adequate emergency access, are implemented. The project site would be accessible by the driveway off of Coast Highway and include a walkable emergency access area along the northern boundary of the project site. Access would be maintained throughout the construction and operation of the project. **Therefore, no impact would occur**.

Mitigation Measures

None required.

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
18. TRIBAL CULTURAL RESOURCES. Consultation with a California Native American tribe that has requested such consultation may assist a lead agency in determining whether the project may adversely affect tribal cultural resources, and if so, how such effects may be avoided or mitigated. Whether or not consultation has been requested, would the project cause a substantial adverse change in a site, feature, place, cultural landscape, sacred place, or object, with cultural value to a California Native American tribe, which is any of the following:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☒	☐	☐
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Regulatory Setting

The regulation that guides the consideration and treatment of tribal cultural resources is:

- Assembly Bill 52
- Senate Bill 18

Environmental Setting

Assembly Bill 52 (AB 52), Gatto. Native Americans: California Environmental Quality Act) and CEQA Public Resources Code Section 21080.31, subdivisions (b), (d)), requires a lead agency to consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a project.

California Government Code Section 65352.3 (adopted pursuant to the requirements of Senate Bill (SB) 18) requires local governments to contact, refer plans to, and consult with tribal organizations prior to adopting or amending a general or specific plan, or to designate open space that includes Native American Cultural Places. The tribal organizations eligible to consult have traditional lands in a local government's jurisdiction, and are identified, upon request, by the NAHC. As noted in the California Office of Planning and Research's Tribal Consultation Guidelines (2005), "the intent of SB 18 is to provide California Native American tribes an opportunity to participate in local land use decisions at an early planning stage, for the purpose of protecting, or mitigating impacts to cultural places."

Checklist Discussion

a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1 (k)?

b) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Less Than Significant Impact With Mitigation. AB 52, signed into law on September 25, 2014, requires lead agencies to evaluate a project's potential to impact Tribal Cultural Resources (TCR) and establishes a formal notification and, if requested, consultation process for California Native American Tribes as part of CEQA. TCR may 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 or included in a local register of historical resources. AB 52 also gives lead agencies the discretion to determine, supported by substantial evidence, whether a resource qualifies as a TCR. Consultation is required upon request by a California Native American tribe that has previously requested that the City provide it with notice of such projects, and that is traditionally and culturally affiliated with the geographic area of a project.

The City initiated AB 52 consultation through emails with the Gabrielino Tongva Indians of California on October 22, 2022 (see **Appendix F.2**, of this document). The Gabrielino Tongva Indians of California completed a review of the project based on the documents provided by the City of Laguna Beach and Gabrielino Tongva Indians of California records to gather information on the Tribal Cultural sensitivity of the project's vicinity.

The tribe expressed concern as they had made unrecorded discoveries in this area in June 2022. There are significant areas of concern within this APE. Upon reviewing the Cultural Resources Report, the Gabrielino Tongva Indians of California responded stating that they agree, this is a culturally sensitive area for their tribes. The Gabrielino Tongva Indians of California requested additional mitigation to address these concerns, among which includes the allowance for a representative to be part of the monitoring of all ground disturbances.

As previously discussed in response to Section V. Cultural Resources (a), the project site is located within a developed urban setting and is a vacant lot. The project site has not been determined to be eligible for listing in the National Register of Historic Places, or California Register of Historic Resources. However, the project lies in a significant cultural area surrounded by known TCRs. The results of the Phase I and II has revealed that resource CA-ORA-842 (West Locus) is composed of a multi-component prehistoric archaeological site that consists of a well-developed prehistoric shell midden deposit. Therefore, it is

recommended that CA-ORA-842 (West Locus) is eligible for listing in the California Register under Criterion 4 because it contains sufficient data important in prehistory. As a result, CA-ORA-842 (West Locus) qualifies as a historical resource under CEQA. Eligibility of the resource is limited to a discrete area around TEU 1 and 2 where shell midden deposits were deep and largely intact. All other areas of the resource are recommended as non-contributing elements given their lack of intact shell midden deposits or their heavily disturbed condition. However, the Applicant has revised the site plans to avoid the significant contributing components of resource and; therefore, the project would not cause a substantial adverse change to the significance of a historical resource under CEQA and mitigation measures related to the resource are not warranted.

Nonetheless, given the presence of CA-ORA-842 (West Locus) within the project site, the identification of several prehistoric archaeological resources in the immediate vicinity, and the presence of favorable natural conditions (e.g., proximity to Pacific Ocean and other marine, estuarine, and terrestrial habitats) that would have attracted prehistoric inhabitants to the area, there is a high potential to encounter previously unknown archaeological resources during construction of the project. Based on these results, it is recommended that archaeological and Native American monitoring occur during project-related ground disturbing activities. Mitigation measures MM-CULT-1 through MM-CULT-7 for the archaeological and Native American construction monitoring are provided below. With implementation of these mitigations measures (MM-CULT-1 through MM-CULT-7), impacts to previously unknown historical resources, archaeological resources, and human remains would be less than significant under CEQA.[135] **Therefore, impacts to previously unknown historical resources, archaeological resources, and human remains would be less than significant with implementation of mitigation measure.**

Mitigation Measures

Refer to MM-CULT-1 through MM-CULT-7.

[135] An evaluation of the resource under Criterion 1, 2, and 3 is not included in the Phase I and II nor an evaluation of whether the resource qualifies as a tribal cultural resource under CEQA, the latter of which was determined based on government-to-government consultations between the City and Native American Tribes who have requested consultation and could lead to additional mitigation measures for the project. The inclusion of Assembly Bill (AB) 52 consultation results was required for preparation of this document.

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

Regulatory Setting

- 2020 Urban Water Management Plan
- Assembly Bill 939
- California Code of Regulations Title 20
- California Code of Regulations Title 24
- South Coast Water District Sewer System Management Plan
- County of Orange Waste & Recycling Strategic Plan
- Laguna Beach Municipal Code

Environmental Setting

Water

The South Laguna portion of the City is served by the SCWD for water supply. Water delivered to customers in the SCWD is a blend of groundwater pumped from the San Juan Groundwater Basin, purchased and imported water from MWD, and recycled water from the South Orange County

Wastewater Agency (SOCWA).[136] SCWD is responsible for ensuring that water demand within the City is met and that State and federal water quality standards are achieved. The SCWD ensures the reliability and quality of its water supply through an extensive distribution system that includes more than 158 miles of pipes, and more than 13 storage reservoirs.[137] The water enters the City after going through the Robert B. Diemer Treatment Plant (RDTP) in Yorba Linda, which is owned and operated by the Metropolitan Water District of Southern California. Water entering the RDTP undergoes treatment and disinfection before being distributed throughout the SCWD's Water Service Area. The RDTP currently treats approximately 520 million gallons per day.[138] SCWD's 2020 UWMP reports total districtwide potable water demand in 2020 at 5,375 acre-feet (AF).[139] According to the UWMP, SCWD expects to meet projected demands and anticipates having an annual supply surplus through to 2045.[140]

Wastewater

Under contract with the City, SCWD provides the South Laguna portion of the City with the conveyance, treatment, and disposal of wastewater. The SCWD sewer system is composed of three sanitary sewer collection service areas; Capistrano Beach, Dana Point, and South Coast. The wastewater collection system collects and conveys four (4) million gallons per day (mgd) of wastewater from residences and businesses to two treatment plants via a 140-mile system of pipelines, which includes 13 lift stations, approximately 3 miles of force mains, and 3,749 manholes (MHs).[141] SCWD is a part of the SOCWA, which operates the Coastal Treatment Plant (CTP) located in the City. The CTP has a permitted capacity of 6.70 mgd, with an average daily capacity of 2.9 mgd.[142]

Solid Waste

The City's Public Works Department supplies residents, businesses, and institutions with waste carts for recyclables and green waste through their contract with the private waste hauler, Waste Management. Waste Management services include trash pickup, recycling, bulky item pickup, organic waste recycling, green waste collection, and holiday tree recycling.[143] The California Integrated Waste Management Act of 1989 (Assembly Bill [AB] 939), as amended, was enacted to reduce, recycle, and reuse solid waste generated in the State. AB 939 requires city and county jurisdictions to divert 50 percent of the total waste stream from landfill disposal. AB 939 also requires each city and county to promote source reduction, recycling, and safe disposal or transformation. Furthermore, California cities and counties are required to submit annual reports to the California Department of Resources Recycling and Recovery (CalRecycle) to update their progress toward the AB 939 goals.

136 South Coast Water District 2020 Urban Water Management Plan, June 2021. Page 6-4.

137 South Coast Water District, Water Operations, https://www.scwd.org/your_water/drinking_water/water_operations/index.php. Accessed October 2022.

138 Metropolitan Water District of Southern California, https://www.mwdh2o.com/your-water/water-quality-and-treatment?keywords=diemerp. Accessed October 2022.

139 South Coast Water District 2020 Urban Water Management Plan, June 2021. Page 4-2.

140 South Coast Water District 2020 Urban Water Management Plan, June 2021. Page ES-3.

141 South Coast Water District Sewer System Management Plan, July 2009, Revised September 2019. Page iv.

142 South Orange County Wastewater Agency, Coastal Treatment Plant, https://www.socwa.com/infrastructure/coastal-treatment-plant/. Accessed October 2022.

143 City of Laguna Beach, Public Works, https://www.lagunabeachcity.net/government/departments/public-works/recycling-waste-and-compost. Accessed October 2022.

Electric Power Facilities

Electricity is provided to the southern portion of the City, where the project site is located, by SDG&E. SDG&E provides electric power to more than 3.7 million persons, within a service area encompassing approximately 4,100 square miles.[144] SDG&E derives electricity from varied energy resources including fossil fuels, hydroelectric generators, nuclear power plants, geothermal power plants, solar power generation, and wind farms. SDG&E also purchases power from independent power producers and utilities, including out-of-state suppliers.[145] In 2020, California used 272,576 gigawatt-hours (GWh) of electricity, of which 33 percent was from renewable resources.[146] **Table 15**, **Electricity Consumption in the SDG&E Service Area for 2020**, shows the electricity consumption by sector and total for SDG&E.

Table 15
Electricity Consumption in the SDG&E Service Area for 2020

Agriculture and Water Pump	Commercial Building	Commercial Other	Industry	Mining and Construction	Residential	Streetlight	Total Usage (GWh)
349	7,150	1,803	1,351	360	6,350	81	17,445
Source: California Energy Commission, Electricity Consumption by Entity, https://ecdms.energy.ca.gov/elecbyutil.aspx. Accessed October 2022.							

Natural Gas Facilities

Natural gas is provided to the City by SoCalGas. California also consumed approximately 12,332 MMthm of natural gas in 2020.[147] **Table 16, Natural Gas Consumption in the SoCalGas Service Area for 2020,** shows the natural gas consumption by sector and total for SoCalGas.

Table 16
Natural Gas Consumption in the SoCalGas Service Area for 2020

Agriculture and Water Pump	Commercial Building	Commercial Other	Industry	Mining and Construction	Residential	Total Usage (MMthm)
74	802	88	1,616	226	2,426	5,231
Source: California Energy Commission, Natural Gas Consumption by Entity, https://ecdms.energy.ca.gov/gasbyutil.aspx. Accessed October 2022.						

144 San Diego Gas and Electric, Sustainability Strategy Update, October 2021.

145 San Diego Gas and Electric, About Us, https://www.sdge.com/more-information/our-company/about-us. Accessed October 2022.

146 California Energy Commission, 2020 Total System Electric Generation, https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2020-total-system-electric-generation/2020. Accessed October 2022.

147 California Energy Commission, Natural Gas Consumption by Entity, https://ecdms.energy.ca.gov/gasbyutil.aspx. Accessed October 2022.

Checklist Discussion

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Less Than Significant Impact.

Water Facilities

As detailed below in response to Section 19(b), sufficient water supplies would be available to serve the project. Furthermore, the demand and installation of new water supply lines and fire hydrants are evaluated and managed by SCWD and LBFD, respectively, under their own independent environmental analysis. The project site, which is currently undeveloped, would require construction of new, on-site water distribution lines to serve the new development. Impacts associated with the installation of water distribution lines would primarily involve trenching in order to place the water distribution lines below surface and would be limited to on-site water distribution, and minor off-site work associated with connections to the public main. Prior to ground disturbance, project contractors would coordinate with the SCWD to identify the locations and depth of all lines. Furthermore, SCWD would be notified in advance of proposed ground disturbance activities to avoid water lines and disruption of water service and including offsite connection to existing water lines. Therefore, the construction of new water facilities would not result in significant environmental effects. Accordingly, impacts related to the construction of new water facilities would be less than significant.

Wastewater Facilities

As detailed below in response to Section 19(c), the project's wastewater would be treated by the CTP, which has adequate capacity to serve the project. Accordingly, it is not anticipated that the project, which is comprised of a single-family residential use, would require the construction of new wastewater treatment facilities. During construction of the project, workers would utilize portable restrooms, which would not contribute to wastewater flows to the wastewater system. Therefore, wastewater generation from project construction activities is not anticipated to cause any increase in wastewater flows. The project would require construction of new on-site wastewater infrastructure to serve the new development. Impacts associated with wastewater infrastructure would primarily be confined to trenching for miscellaneous utility lines and connections to public infrastructure. Installation of wastewater infrastructure would be limited to on-site wastewater distribution, and minor off-site work associated with connections to the public main. Although no upgrades to the public main are anticipated, minor off-site work along the project frontage would be required in order to connect to the public main. All off-site work would be performed in consultation and under the approval of SCWD. Therefore, the construction of new wastewater facilities would not result in significant environmental effects. Accordingly, impacts related to the construction of new wastewater facilities would be less than significant.

Stormwater Drainage Facilities

Refer to Section 10c(iii), Hydrology and Water Quality, above for a discussion of stormwater drainage facilities. As discussed there, BMPs would be required to control stormwater runoff and runoff would drain to the stormwater system on Coast Highway. Stormwater runoff from the project site would not

exceed the capacity of the existing or planned stormwater drainage systems and would not be expected to require the construction of new facilities. Therefore, the construction of new stormwater drainage facilities would not result in significant environmental effects. Accordingly, impacts related to the construction of new stormwater facilities would be less than significant.

Electric Power Facilities

The SDG&E would supply the project from the existing electrical system. However, the project would require the installation of new on-site electrical distribution facilities and connection to the off-site electrical system. All electrical facility installation and connection to the existing system would be done in coordination and under the approval of the SDG&E. Electricity demand during construction would vary throughout the construction period based on the construction activities being performed, and would cease upon completion of construction. When not in use, electric equipment would be powered off so as to avoid unnecessary energy consumption. Accordingly, it is not expected that the temporary demand for electricity during construction would require new electric power facilities.

The project, which is comprised of a single-family residential uses, during operation would represent an insignificant percentage of the SDG&E 's projected annual sales. Furthermore, as discussed in response to Section 6(a), Energy, the incorporation of the Title 24 energy conservation standards into the project would ensure that the project would not result in the inefficient, unnecessary, or wasteful consumption of energy, including electricity. As such, it is anticipated that SDG&E's existing and planned electricity capacity and electricity supplies would be sufficient to support the project's electricity demand. Based on the above, the construction of new on-site electric power distribution facilities would not result in significant environmental effects and the expansion of off-site electric power sources would not be required. Accordingly, impacts would be less than significant.

Natural Gas Facilities

SoCalGas would supply the project from the existing natural gas facilities. However, the project would require construction of new on-site gas distribution lines to serve the new development and connection to the existing off-site natural gas facilities. The project would connect to existing natural gas facilities in coordination with and under the supervision of SoCalGas. Construction activities typically do not involve the consumption of natural gas. Accordingly, there would be no demand generated by construction and no new natural gas facilities would be required.

During operation, natural gas service would be provided in accordance with the SoCalGas's policies and extension rules on file with the California Public Utilities Commission (CPUC) at the time contractual agreements are made. The project would be responsible for paying connection costs to connect its on-site service meters to existing infrastructure. SoCalGas undertakes expansion and/or modification of the natural gas infrastructure to serve future growth within its service area as part of the normal process of providing service. There would be no disruption of service to other consumers during the installation of these improvements. As detailed in response to Section 6(a), Energy, the estimated natural gas demand of the project during operation would represent an insignificant percentage of the forecasted consumption of natural gas in SoCalGas' planning area. Furthermore, as discussed in response to Section 6(a), Energy, the incorporation of the Title 24 energy conservation standards into the project would ensure that the project would not result in the inefficient, unnecessary, or wasteful consumption of energy, including natural gas. As such, it is expected that SoCalGas' existing and planned natural gas capacity and supplies project site be sufficient to serve the project's demand. Based on the above, the construction of

new on-site electric power facilities would not result in significant environmental effects and the expansion of off-site natural gas sources would not be required. Accordingly, impacts would be less than significant.

Telecommunication Facilities

Construction-related activities, including grading and excavation, could encroach on telecommunication facilities. However, before construction begins, the project applicant would be required to coordinate with applicable regulatory agencies and telecommunication providers to locate telecommunication facilities. Therefore, the location of new telecommunication facilities would not result in significant environmental effects. Furthermore, telecommunication services are provided by private companies, the selection of which is at the discretion of the Applicant and/or the successor on an ongoing basis. Accordingly, project impacts to telecommunication facilities would be less than significant.

Therefore, the project would not require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunication facilities, the construction or relocation of which could cause significant environmental effects. **Impacts would be less than significant.**

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Less Than Significant Impact. A significant impact may occur if a project were to increase water consumption to such a degree that new water sources would need to be identified, or that existing resources would be consumed at a pace greater than planned for by purveyors, distributors, and service providers.

The Metropolitan Water District of Southern California and Municipal Water District of Orange County's 2020 UWMPs conclude that they can meet full-service demands of their member agencies starting 2025 through 2045 during normal years, a single-dry year, and multiple-dry years. Consequently, the SCWD is projected to meet full-service demands through 2045 for the same scenarios.[148] The SCWD's 2020 UWMP total gross water demand projection for 2045 is approximately 7,070 af/y.[149] CalEEMod is a statewide emissions computer model and comprehensive tool for quantifying emissions associated with both construction and operations from a variety of land use projects, including project water demand. According to CalEEMod results, the project would demand an estimated 0.42 af/y (see **Appendix E.1**). This increase is within the forecasted increase in water demand for SCWD.[150]

The project would comply with the California's Green Building Standards Code, which would require implementation of water saving features to reduce the amount of water used by the project, including, high efficiency toilet and urinals and low flow faucets. All fixtures would be required to meet applicable flush volumes and flow rates. In addition, the project would be prohibited from using single-pass cooling systems. Compliance with these requirements and water conservation measures, including Title 20 and 24 of the California Administrative Code, would further reduce the above projected water demand.

148 South Coast Water District 2020 Urban Water Management Plan, June 2021. Page 7-1.
149 South Coast Water District 2020 Urban Water Management Plan, June 2021. Page 4-7.
150 See Construction Transportation Energy Worksheet included as **Appendix E.2** to this document.

Consideration of existing sources of supply is expected to assure adequate water supplies for the service area through at least 2045. Any shortfall in SCWD controlled supplies (e.g., groundwater, recycled, conservation, or aqueduct) is offset with MWD purchases to rise to the level of demand.[151] Therefore, the amount of new annual demand from the project would be insignificant relative to available supplies through 2045, projected growth in SCWD. Moreover, the addition of a single-family residential use would be consistent with Citywide growth, and thereby accounted for in the 2020 UWMP. As such, the project's estimated water demand would be within overall SCWD projections and would not require new water supply entitlements and/or require the expansion of existing or construction of new water facilities beyond those already considered in the 2020 UWMP.

Therefore, based on the above, sufficient water supplies would be available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years. **Accordingly, impacts related to water supply would be less than significant**.

c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Less Than Significant Impact. A significant impact may occur if a project would increase wastewater generation to such a degree that the capacity of facilities currently serving the project site would be exceeded.

Under contract with the City, SCWD provides the South Laguna portion of the City with the conveyance, treatment, and disposal of wastewater. The project would require construction of new on-site wastewater infrastructure to serve the new development. The project site's wastewater would be conveyed to the CTP. Recent data on the CTP website indicates that on average 2.9 mgd of wastewater enters the CTP on a daily basis. The plant was designed to accommodate both dry and wet weather days with a maximum daily flow of 6.7 mgd.[152] Accordingly, there is a capacity of 3.8 mgd, or 57 percent of the total.

The type and amount of wastewater that would be generated by the project would be typical for the single-family residential use proposed for the site. Conservatively assuming that wastewater generation would be approximately 100 percent of water demand, the project would generate approximately 137,023 gallons per year (375 gallons per day or 0.38 mgd) based on the CalEEMod modeling results (see **Appendix E.1** of this document). This amount would represent approximately 5.7 percent of the remaining daily capacity at the CTP. Therefore, the CTP has adequate capacity to serve the project's demand in addition to its existing commitments and the project would not require the construction of new or expanded wastewater treatment facilities. Furthermore, as with the projections of water demand detailed above, the estimated wastewater generation is a conservative estimate as the rates do not account for water conservation features that would reduce the amount of the project's water usage and, therefore, resulting conveyance into the wastewater distribution and treatment system**. Accordingly, impacts related to wastewater treatment capacity would be less than significant**.

[151] South Coast Water District 2020 Urban Water Management Plan, June 2021.

[152] South Orange County Wastewater Agency, Coastal Treatment Plant, https://www.socwa.com/infrastructure/coastal-treatment-plant/. Accessed October 2022.

d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Less Than Significant Impact. A significant impact may occur if a project were to increase solid waste generation to a degree that existing and projected landfill capacity would be insufficient to accommodate the additional solid waste.

Waste disposal sites (i.e., landfills) are operated by the City and County as well as by private companies. In addition, transfer stations temporarily store debris until larger haul trucks are available to transport the materials directly to the landfills. Landfill availability is limited by several factors, including: (1) restrictions to accepting waste generated only within a particular landfill's jurisdiction and/or watershed boundary, (2) tonnage permit limitations, (3) types of waste, and (4) operational constraints. Planning to serve long-term disposal needs is constantly being conducted at the regional level (e.g., siting new landfills within the County and transporting waste outside the region). Waste generated from the project site would be taken to Sunset Environmental Transfer Station, where recyclables are separated from the solid waste. Materials leaving transfer stations could be transported to three active landfills within Orange County: Olinda Alpha Landfill, Frank R. Bowerman Landfill, and Prima Deshecha Landfill.[153] These landfills accept residential, commercial, and construction waste. Olinda Alpha Landfill is permitted to receive 8,000 tons of waste per day and has a remaining capacity of 17,500,000 cubic yards.[154] Frank R. Bowerman Landfill is permitted to receive 11,500 tons of waste per day and has a remaining capacity of 205,000,000 cubic yards.[155] Prima Deshecha Landfill is permitted to receive 4,000 tons of waste per day and has a remaining capacity of 134,300,000 cubic yards.[156]

Construction of the project would generate construction waste. Construction of the project building is estimated to generate a total of approximately 17 tons of solid waste.[157] This forecasted solid waste generation is a conservative estimate as it assumes no reductions in solid waste generation would occur due to recycling. As required by LBMC 7.19, projects shall reuse, recycle, or divert a minimum of fifty percent of construction and demolition debris. Moreover, the *County of Orange Waste & Recycling Strategic Plan* concludes that there is capacity of 212 million tons available throughout the County for the disposal of waste and by 2031 the disposal system is projected to have 156 million tons of remaining capacity.[158] Therefore, the project-generated construction waste of 17 tons would represent a very small percentage of the inert waste disposal capacity in the region.

During operation, the project would generate solid waste that is typical of a single-family residential use and would be consistent with all federal, State, and local statutes and regulations regarding proper disposal. According to CalEEMod, the project would generate about 0.27 tons of solid waste per year

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153 Orange County Waste & Recycling, Active Landfills, https://www.oclandfills.com/landfills/active-landfills. Accessed October 2022.

154 California Department of Resources Recycling and Recovery, SWIS Facility, Olinda Alpha Landfill, https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/2757?siteID=2093. Accessed October 2022.

155 California Department of Resources Recycling and Recovery, SWIS Facility, Frank R. Bowerman Sanitary Landfill, https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/2767?siteID=2103. Accessed October 2022.

156 California Department of Resources Recycling and Recovery, SWIS Facility, Prima Deshecha Landfill, https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/2750?siteID=2085. Accessed October 2022.

157 A construction waste generation rate of 4.38 pounds per square foot was used. 7,584 square feet of residential construction multiplied by 4.38 pounds is 33,218 pounds (17 tons). Source: USEPA Report No. EPA A530-98-010, Characterization of Building Related Construction and Debris in the United States, Table 3, July 1998.

158 County of Orange Waste & Recycling Strategic Plan, November 22, 2016, page 9.

(0.0007 tons per day) (see **Appendix E.1** of this document). As discussed below in response to Section 19(e), AB 939 was enacted to reduce, recycle, and reuse solid waste generated in the State to the maximum extent feasible. Specifically, AB 939 required cities and counties to identify an implementation schedule to divert 50 percent of the total waste stream from landfill disposal. AB 939 also required each city and county to promote source reduction, recycling, and safe disposal or transformation. All solid waste-generating activities within the City, including the project, would continue to be subject to the requirements set forth in AB 939. Therefore, it is assumed that the project would divert 50 percent of its solid waste generated, thereby diverting this waste from landfills and have adequate areas for collection and removal of recyclable materials. Nonetheless, it is conservatively assumed that all 0.0007 pounds per day of the project's solid waste would be disposed of at regional landfills. The Olinda Alpha, Frank R. Bowerman, and Prima Deshecha Landfills' combined permitted daily intake of 23,500 tons per day would have capacity to accept the daily operational waste generated by the project under the existing permitted amount. Therefore, the project would not generate solid waste in excess of State and local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. **Accordingly, impacts related to solid waste and solid waste reduction goals would be less than significant**.

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Less Than Significant Impact. A significant impact may occur if a project would generate solid waste that was not disposed of in accordance with applicable regulations. Solid waste generated onsite by the project would be disposed of in accordance with all applicable federal, state, and local regulations, related to solid waste, such as AB 939.

The project would comply with federal, State, and local statues and regulations related to solid waste, such as AB 939 and the City's recycling programs for residences. The AB 939 requirement to reduce the solid waste stream in landfills by 50 percent means that half of the project's total solid waste generated must be recycled rather than disposed of in a landfill. The project would be required to comply with AB 939 requirements and approximately 50 percent of the project's waste would be diverted for reuse or recycling; the remaining solid waste generated during operation would be disposed of in landfills. Therefore, the project would not substantially increase solid waste generation in the City or the amount disposed into the landfills. **Impacts would be less than significant**.

Mitigation Measures

None required.

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

Regulatory Setting

- Laguna Beach Safety Element
- Laguna Beach Local Hazard Mitigation Plan
- Laguna Beach Wildfire Mitigation and Fire Safety Report
- Laguna Beach Municipal Code

Environmental Setting

The City is surrounded by natural, undeveloped hillsides and all the canyon and hillside areas in the City and some coastal terrace areas are classified within the VHFHSZ, which is the highest wildfire risk classification designated by Cal FIRE. Nearly 90 percent of the City is classified VHFHSZ. The Laguna Beach Local Hazard Mitigation Plan (LHMP) identifies these hazard zones in relation to developed areas of the City and the location of critical facilities and infrastructure. In addition, the LBFD conducts strategic planning on a regular basis to ensure fire response capabilities and personnel can adequately address current service needs throughout the City and identifies potential issues to be addressed by the LBFD.[159]

[159] Laguna Beach General Plan, Safety Element, October 19, 2021. Page 11.

Checklist Discussion

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact. A significant impact may occur if a project were to interfere with roadway operations used in conjunction with an emergency response plan or emergency evacuation plan or would generate traffic congestion that would interfere with the execution of such a plan.

Many of the major roadways within the City are susceptible to natural hazards and could become blocked in the event of an emergency. Therefore, evacuation routes would depend on the area affected and the type of hazard. As described in the Laguna Beach Wildfire Egress Study, City officials have divided the City into Emergency Management Zones (EMZs), which helps the City communicate evacuation orders to the public. The project site is located in the South Coast zone[160] and according to Cal FIRE, the project site is located in a VHFHSZ.[161] However, all new development in the city is required to comply with existing fire codes and ordinances regarding emergency access, such as widths, surfaces, vertical clearance, brush clearance, and allowable grades.

The project, comprised of a single-family residential use, would not involve the development of structures that could potentially impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. The project would include an access driveway from Coast Highway, which would provide adequate emergency access to the site. The project does not propose any new roads or infrastructure that have the potential to interfere with or obstruct an adopted emergency response plan or impede fire or police access to the site. Construction staging and activities would be temporary in nature and are not anticipated to substantially impede traffic on Coast Highway. Project operation and maintenance would not introduce new activities that could impede or interfere with emergency plans, as operation and maintenance would not involve work along nearby roadways. Furthermore, the project would not result in such an increase in population on the site that traffic would impede evacuation routes. **Therefore, the project would not impede or conflict with any adopted emergency response or evacuation plans and the project would have a less than significant impact on emergency response or evacuation plans**.

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Less Than Significant Impact. A significant impact may occur if a project were to expose people to pollutant concentrations from a wildfire or in the path of an uncontrolled spread of a wildfire.

Topography influences the movement of air and the direction of a fire course. Additionally, wind events magnify the risks of wildfire and would have the potential to expose inhabitants to elevated pollutant concentrations. According to Cal FIRE, the project site is located in a VHFHSZ.[162] However, the project site

[160] City of Laguna Beach, Wildfire Egress Study, July 2021. Page ES-1.

[161] City of Laguna Beach, GIS Map, https://lagunabeach.maps.arcgis.com/apps/webappviewer/index.html?id=75a3aa3236c7475bb5e81925d130a763. Accessed October 2022.

[162] City of Laguna Beach, GIS Map, https://lagunabeach.maps.arcgis.com/apps/webappviewer/index.html?id=75a3aa3236c7475bb5e81925d130a763. Accessed October 2022.

is not adjacent to wildland slope areas that could act as a conduit for wildland fire. Additionally, the project would have Coast Highway and the driveway which would also act as fire breaks. The project does not propose uses that could exacerbate wildfire risks and risks to project occupants would be mitigated through conformance with LBMC Chapter 15.01, which adopts the 2019 California Fire Code and establishes provisions for fire safety related to construction, maintenance and design of buildings and land uses. Specifically, the project would provide:

- fire sprinklers inside the single-family home;
- a minimum 3-foot-wide firefighter access around the perimeter of the structure,
- all vegetation would be pruned to reduce fuel loads,
- an automatic irrigation system would maintain healthy vegetation,
- no trees or tree-form shrubs would extend beyond the property line: and
- vertical access in excess of 13 feet 6 inches would be provided.

Furthermore, the project has incorporated additional features that are non-conforming, which would result in the structure having improved survivability from fire and reduce the chance of ignition. With the implementation of MM-PUB-1, prescribed, the project is at least equivalent to, if not better than, what is prescribed in the 2019 California Fire Code in terms of quality, effectiveness, fire resistance, durability, and safety.[163] Therefore, the project would not exacerbate wildfire risks, and risks to people or structures due to runoff, post-fire slope instability, or drainage changes. **Impacts would be less than significant**.

c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

Less Than Significant Impact. A significant impact may occur if a project would require the installation or maintenance of associated infrastructure that may exacerbate fire risks or that may result in temporary or ongoing impacts to the environment.

The project would involve the construction of a single-family residential use in an urbanized area in the City. No roads, fuel breaks, or emergency water sources would be installed or maintained. Installation of any required power lines or other utilities would be done in a manner consistent with other construction projects typical of urban development requiring connection to the existing utility grid and infrastructure and in accordance with applicable City building codes and utility provider policies and would not exacerbate fire risk. **Compliance with all building code, developmental regulations, and utility providers requirements and policies would ensure that the project would not exacerbate fire risks and impacts would be less than significant**.

[163] AM&M Request for Joe Reyna, 718 The Strand, Hermosa Beach, CA 90254, prepared by FIREWISE 2000, LLC, January 27, 2022. See **Appendix B** of this document.

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Less Than Significant Impact. A significant impact may occur if a project were to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope stability, or drainage changes.

The project site is relatively flat; however there is a slope (coastal bluff) on the western end of the project site. Nevertheless, according to the FEMA Flood Insurance Rate Map, the project site is within Zone X, which is a designation for areas determined to have a minimal flood hazard.[164] **Therefore, downslope flooding as a result of runoff, post-fire slope instability, or drainage changes are unlikely to occur at the site. Impacts would be less than significant.**

Mitigation Measures

None required.

[164] Federal Emergency Management Agency, Flood Insurance Rate Map, City of Laguna Beach, California, FEMA Map Number 06059C0438K, effective March 21, 2019.

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

Checklist Discussion

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Less Than Significant Impact with Mitigation. A significant impact may occur if a project, in conjunction with other related projects in the area of the project site, would result in impacts that are less than significant when viewed separately, but would be significant when viewed together.

A biological evaluation prepared for the project site and one special-status species—i.e., cliff spurge—was observed during the field surveys. The project would result in the permanent loss of 21 cliff spurge individuals out of a total of 45 individuals within the project area limits, and replanting is proposed. There is the potential that nesting birds could occur on-site or near the project site and construction activities for the project could impact vegetation that could be used for nesting. Because of the potential for on-site bird nesting, project construction could result in impacts to nesting birds that would be in violation of the Federal Migratory Bird Treaty Act and the California Fish and Game Code Sections 3500–3516. To avoid direct and indirect construction impacts to nesting birds, the project would implement MM-BIO-3, which limits construction activities to outside of the nesting season or required pre-construction bird

surveys to confirm the absence of nesting birds if construction activities occur during the nesting season. With implementation of MM-BIO-3, potential impacts to nesting birds would be less than significant. With implementation of MM-BIO-4, potential impacts to native species would be less than significant. Additionally, the project site does not contain or would impact any wetlands or other jurisdictional waters. To avoid indirect construction impacts to coastal resources, such as the Pacific Ocean, located directly west of the site, the project would implement MM-BIO-2, which requires Best Management Practices be incorporated into the construction operations. With implementation of MM-BIO-2, potential indirect impacts to coastal resources would be less than significant. Furthermore, the project site does not contain any trees on-site. **With implementation of MM-BOI-1 through MM-BIO-4, implementation of the project would not substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, nor substantially reduce the number or restrict the range of a rare or endangered plant or animal species**.

A cultural resource record search prepared for the project identified that no recorded cultural resources were recorded on the project site. However, the record search did identify that known cultural resources have occurred in the vicinity of the project site. There could be the potential that unknown cultural resources could be encountered during excavation activities. To avoid impacts to unknown cultural resources that could be present on the project site, the proposed project would be required to comply with MM-CUL-1 through MM-CUL-7, which requires a halt condition be incorporated into the project which would temporarily suspend excavation activities if unknown cultural resources are encountered. With implementation of MM-CUL-1 through MM-CUL-7, potential impacts to unknown cultural resources would be less than significant. Additionally, a paleontological record search was prepared for the project which identified that no recorded paleontological resources were recorded on the project site. However, the research did find that there are localities of resources nearby from the same sedimentary deposits occurring at depth in the project area. Found deposits would be treated in accordance with federal, State, and local guidelines, including those set forth in California Public Resources Code Section 21083.2. **Furthermore, implementation of Mitigation Measures CUL-1 to CUL-7 would ensure that important examples of the major periods of California history or prehistory are not eliminated**.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

Less Than Significant Impact with Mitigation. A cumulative impact may be significant if a project's incremental effect, though individually limited, is cumulatively considerable. Cumulatively considerable means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects and the effects of probable future projects. Cumulative impacts can occur as a result of the interactions of environmental change from multiple projects that could affect the environment, such as traffic, noise, and air quality. The City has ongoing development projects and capital improvement projects that could be occurring concurrently in the vicinity of the project when the project is under construction. The following analysis evaluates the potential for the project to contribute considerably to significant cumulative impacts.

Implementation of the project would have no impact or a less than significant impact on aesthetic resources, agriculture and forestry resources, air quality, energy, greenhouse gas emissions, hazards and hazardous materials, land use/planning, mineral resources, housing and population, public services,

recreation, transportation, utility/service systems, and wildfire. **Because either no potential impacts would occur or less than significant impacts would occur, the project contribution to cumulative impacts to these issue areas would not be considered considerable and potential cumulative impacts would be less than significant**.

Biological Resources

Construction activities for the project would have the potential to adversely impact coastal resources and to impact nesting birds directly and indirectly. The project would implement MM-BIO-1 through MM-BIO-4, which would reduce construction impacts to coastal resources and nesting birds to a less than significant level. Cumulative development projects in the City would be required to comply with state and federal laws that provide for the protection of biological resources and where needed, would need to implement measures to minimize impacts to biological resources. Compliance with local, state, and federal laws would reduce the potential impacts to less than significant. **Therefore, the project, considered with the related projects, would not contribute considerably to cumulative impacts and potential cumulative impacts to biological resources would be less than significant**.

Cultural Resources

The context for assessing cumulative impacts to local archaeological and paleontological resources is to determine whether the project would result in a loss of these resources that could diminish or eliminate important information relevant to the history of the project area. The project would be required to comply with MM-CUL-1 through MM-CUL-7, which would eliminate any potential loss of important archaeological or paleontological information that may be buried under the project site. With regard to the potential discovery of human remains during construction, the project would be required to comply with Mitigation Measure CUL-7, which requires grading and construction activities to cease pursuant to State Health and Safety Code Section 7050.5 until the County Coroner has made the necessary findings as to the origin and disposition pursuant to Section 5097.98 of the California Public Resources Code. Therefore, the project would not contribute considerably to a cumulative loss of important archaeological or paleontological resources, and/or disturbed human remains. Related cumulative projects in the City would be evaluated for potential impacts to cultural resources and would be required to implement measures to reduce impacts to cultural resources. **Therefore, the project, considered with the related cumulative projects, would not result in significant cumulative impacts to cultural resources**.

Geology/Soils

The project would be required to implement the geotechnical design measures recommended in the project geotechnical report to ensure the stability of the project. Additionally, the project would be required to comply with the California Building Code and implement erosion control measures. With compliance of the geotechnical report design measures, California Building Code requirements and erosion control measures, potential geologic impacts would be less than significant. Therefore, the project would not contribute considerably to geologic impacts. Related cumulative projects in the City would be required to comply with the California Building Code requirements to minimize potential geologic impacts and would be required to implement erosion control plans to minimize potential erosion and sedimentation impacts. **Therefore, the project, considered with the related projects, would not result in significant cumulative geologic impacts**.

Hydrology and Water Quality

The project site and the surrounding areas are served by the existing City storm drain system. Runoff from the project site and adjacent urban uses is typically directed into the adjacent streets, where it flows to the nearest drainage improvements. It is likely that most, if not all, of the related cumulative projects would also drain to the surrounding street system. However, little if any additional cumulative runoff is expected from the project site and the related projects, since this area of the City, along Coast Highway, is mostly developed. Under the requirements of the Low Impact Development Ordinance, each related project would be required to implement stormwater BMPs to retain or treat the runoff from a storm event. The project, with successful implementation of the recommended impact avoidance and minimization measures (MM-Bio-2), would effectively avoid adverse indirect impacts on water quality (from erosion, runoff, etc.). Mandatory structural BMPs for all projects in accordance with the NPDES water quality program would therefore result in a cumulative reduction to surface water runoff, as the development in the surrounding area is limited to infill developments and redevelopment of existing urbanized areas. Therefore, the project would not make a cumulatively considerable contribution to impacting the volume or quality of surface water runoff, and cumulative impacts to the existing or planned stormwater drainage systems would be less than significant. **Therefore, the project would not make a cumulatively considerable contribution to any potential cumulative impacts, and cumulative water quality impacts would be less than significant**.

Noise

The project's long-term operational noise impacts were determined to be less than significant. The project would result in a temporary increase in noise levels during construction activities. The construction noise impacts would be below the FTA threshold of 90 dBA and would be less than significant. Additionally, groundborne vibration generated at the site during construction would not be in exceedance of the FTA threshold of 0.12 inch/second PPV, and the long-term vibration impacts from operations at the site would be less than significant. Therefore, the project would not contribute considerably to cumulative noise and vibration impacts and potential cumulative impacts would be less than significant. Related cumulative projects would be required to comply with applicable noise and vibration standards, and regulations to minimize noise and vibration impacts where needed, would be required to incorporate mitigation measures to minimize noise and vibration impacts. **Therefore, the project, considered with the related cumulative projects, would not result in significant cumulative noise impacts**.

Tribal Cultural Resources

The project and related projects would comply with AB 52 in which the lead agency for each project would be required to notice tribes that are traditionally and culturally affiliated with the geographic area of the related project sites if the tribe has submitted a written request to be notified. Due to being locally specific, each related project would need to conduct a Sacred Lands File search and be evaluated within its own site specific context. The project would not adversely affect known Tribal Cultural Resources. **Therefore, the project would not make a cumulatively considerable contribution to any potential cumulative impacts, and cumulative impacts on cultural resources project site be less than significant**.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Less Than Significant Impact. A significant impact may occur if a project has the potential to result in significant impacts, as discussed in the preceding sections. Based on the preceding environmental analysis, the project would not have significant environmental effects on human beings, either directly or indirectly. **Thus, impacts to humans would be less than significant**.

Mitigation Measures

Refer to MM-BIO-1 through MM-BIO-4.

Refer to MM-CULT-1 through MM-CULT-7.

APPENDICES

Appendix A. Coastal Bluff Evaluation

Appendix B. Fuel Modification Plan

Appendix C. Biological Report

Appendix D. Geology Technical Reports

D.1. Geotechnical Investigation

D.2. Geotechnical Investigation Update

D.3 Coastal Hazards Report

Appendix E. Air Quality, Greenhouse Gases, and Energy Data

E.1 CalEEMod Data

E.2 Energy Data

Appendix F. Cultural and Tribal Resources

F.1 Phase I and II

F.2 AB 52 Tribal Cultural Resources Consultation Letters and Response

Appendix G. Paleontological Resources Letter

Appendix H. Hydrology Report

Appendix I. Land Use Tables

I.1 General Plan Consistency Table

I.2 Residential Design Guidelines

APPENDIX A: Coastal Bluff Evaluation

GeoSoils, Inc.

Geotechnical • Geologic • Coastal • Environmental

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

May 15, 2020

W.O. S7823

Mr. Tony Reyna
c/o **Horst-Architects**
247a Forest Avenue
Laguna Beach, California 92651

Attention: Mr. Horst Noppenberger

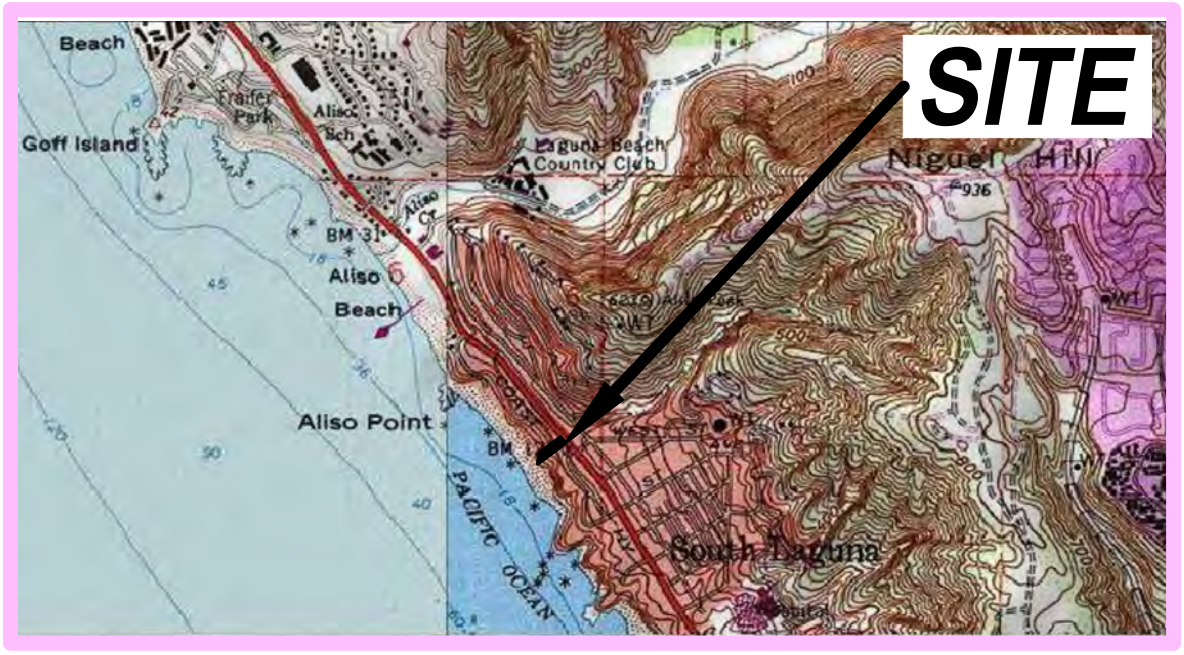
Subject: Coastal Bluff Edge Evaluation, Proposed Single-Family Development, 31451 S. Coast Highway, Laguna Beach, Orange County, California 92651, Assessor's Parcel Number (APN) 056-032-26

Dear Mr. Noppenberger:

In accordance with Mr. Tony Reyna's request and authorization, GeoSoils, Inc. (GSI), is providing this summary of our coastal bluff edge evaluation as it pertains to the proposed single-family development at the subject site. The intent of this study was to delineate the coastal bluff edge location for the purpose of siting the proposed development within the subject property. The explicit purpose of our evaluation was to locate the coastal bluff edge within the subject property. Therefore, this investigation does not include geotechnical engineering analyses related to global bluff stability nor the rate of long-term coastal bluff retreat aimed at establishing safe development setbacks from the coastal bluff edge. The scope of our services for this study included: 1) reviews of in-house regional geologic maps and literature, a site-specific geotechnical report and topographic survey, and stereoscopic and oblique aerial photographs (see the Appendix); 2) engineering and geological analyses; 3) site reconnaissance and surficial mapping; and 4) the preparation of this summary report.

SITE CONDITIONS

The subject property consists of an irregularly shaped parcel of land located at 31451 Coast Highway, Laguna Beach, Orange County, California 92651 (see Figure 1, Site Location Map). According to a topographic survey prepared by Toal Engineering, Inc. ([TEI], 2003), the site may be characterized as relatively flat-lying to steeply sloping terrain that ascends from Pacific Ocean shoreline and an in-filled natural drainage course to the north. TEI (2003) shows that site elevations vary between approximately 15 feet and 123 feet (unknown datum) for an overall relief of roughly 108 feet. The site is bounded by Pacific Ocean shoreline to the west, by S. Coast Highway to the east, by an undeveloped parcel to the south, and by existing residential property and a partially in-filled natural



Base Map: TOPO!® ©2003 National Geographic, U.S.G.S. San Juan Capistrano Quadrangle & U.S.G.S. Laguna Beach Quadrangle California -- Orange Co., 7.5 Minute, dated 1996, current, 2000.



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

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W.O. S7823

SITE LOCATION MAP

Figure 1

drainage channel to the north. Site drainage is predominately controlled by sheet-flow runoff that follows site topography to the northwest, west, and southwest. With the exception of existing electrical utilities and an associated approximately 3-foot high retaining wall, the site is undeveloped. Site vegetation, consists of weeds, grasses, shrubs, and sparse trees.

PROPOSED DEVELOPMENT

Based on our email communication with a representative of Horst-Architects (Project Architectural Consultant) and our review of the conceptual site plan Horst-Architects have provided, GSI understands that the proposed development includes preparing the site to receive a three-story, split-level single-family residence and associated appurtenances (i.e., swimming pool, exterior walkways and staircase, driveway, and screen wall).

PREVIOUS GEOTECHNICAL STUDIES

GSI was provided with a draft summary report of a preliminary geotechnical evaluation of the subject site and the adjacent southerly property prepared by Coastal Geotechnical in 2004 ([CG], 2004). Based on our review of this document, GSI understands that as part of their study, CG reviewed previous site-specific geotechnical reports by other technical consultants, as well as development plans, geologic literature, and aerial photographs. In addition, CG advanced four (4) large-diameter borings within the properties to depths ranging between approximately 7½ and 38 feet below the existing grades. CG also performed geologic mapping of the seacliff and conducted laboratory testing of earth material samples collected during their subsurface exploration.

CG (2004) describes the site physiographic setting as part of the coastal plain section of the Peninsular Ranges geomorphic province. At a local scale, the site and vicinity are situated along an irregular coastline with numerous coves and pocket beaches backed by a landward succession of steep to near-vertical seacliffs that transition to a gently to moderately sloping coastal terrace that covers the westerly flank of the resistant San Joaquin Hills.

According to CG (2004), undocumented fill, possibly associated with an in-filled, former natural drainage course during S. Coast Highway construction, mantles much of the westerly and southerly portions of the subject property, and generally thickens toward the west and south. CG indicates that colluvium mantles the northeasterly portion of the site. The colluvium and fill are reported to overlie regressive marine and continental Pleistocene-age terrace deposits, which in turn overlie the San Onofre Breccia that outcrops at the seacliff. As depicted in CG's Geologic Cross Sections A-A' and B-B', the geologic contact between the San Onofre Breccia and the terrace deposits at the seacliff is located between approximate elevations ±55 and ±57 feet. Based on their subsurface

exploration and review of previous geotechnical reports by others, CG opined that two relict wave-cut abrasion platforms occur within the property, and are representative of two ancient high sea-level stands. CG (2004) states that their review of aerial photographs and the subsurface data suggested that prior to the construction of S. Coast Highway in the late 1920's, the subject property was essentially a headland bounded by seaward trending natural drainage courses. CG describes a general northwest/southeast trending tunnel containing a municipal sewer main beneath the western portion of the property. The floor of this tunnel is reportedly located at elevation 19 feet (Mean Sea Level [MSL]).

CG (2004) states that geologic structure within the terrace deposits is essentially massive. Whereas, bedding of the San Onofre Breccia at the site and vicinity is inclined to the southeast and southwest at angles ranging between approximately 8 and 26 degrees.

In addition to evaluating the onsite geologic conditions, CG (2004) discussed geologic and seismic hazards that could have an effect on proposed development of the property. CG also evaluated coastal bluff stability and the rate of long-term coastal bluff retreat.

CG (2004) concluded that strong ground shaking in the event of a nearby earthquake and the potential surficial instability of the terrace deposits and overlying soil mantle at the seaward portion of the property presented the greatest geotechnical hazard to the proposed development. In order to address surficial instability, CG recommended the use of a drilled pier retaining structure at the seaward side of the previously proposed residential structure.

SITE GEOLOGIC CONDITIONS

Based on our observations and review of stereoscopic aerial photographs for the years 1939, 1947, 1952, 1960, 1968, and 2001 (see Appendix). GSI is in general agreement with site geologic conditions summarized in CG (2004). However, it is our opinion that the terrace deposits in the elevated portion of the site, near the northeasterly property corner, are likely terrestrial in origin and were laid down on an alluvial fan emanating from the highlands to the northeast (see Figure 1). Our review of the stereoscopic aerial photographs suggests anthropogenic modifications to the site topography were occurring prior to 1939 and likely lasted up until the early 2000s. These man-made alterations appear to have generally involved the placement of fill on the site and within natural drainage courses to the north and south of the subject site.

COASTAL BLUFF

According to the “Laguna Beach General Plan, Land Use Element,” (City of Laguna Beach, 2012), an oceanfront bluff/coastal bluff is defined as, “A bluff overlooking a beach or shoreline or that is subject to marine erosion. Many oceanfront bluffs consist

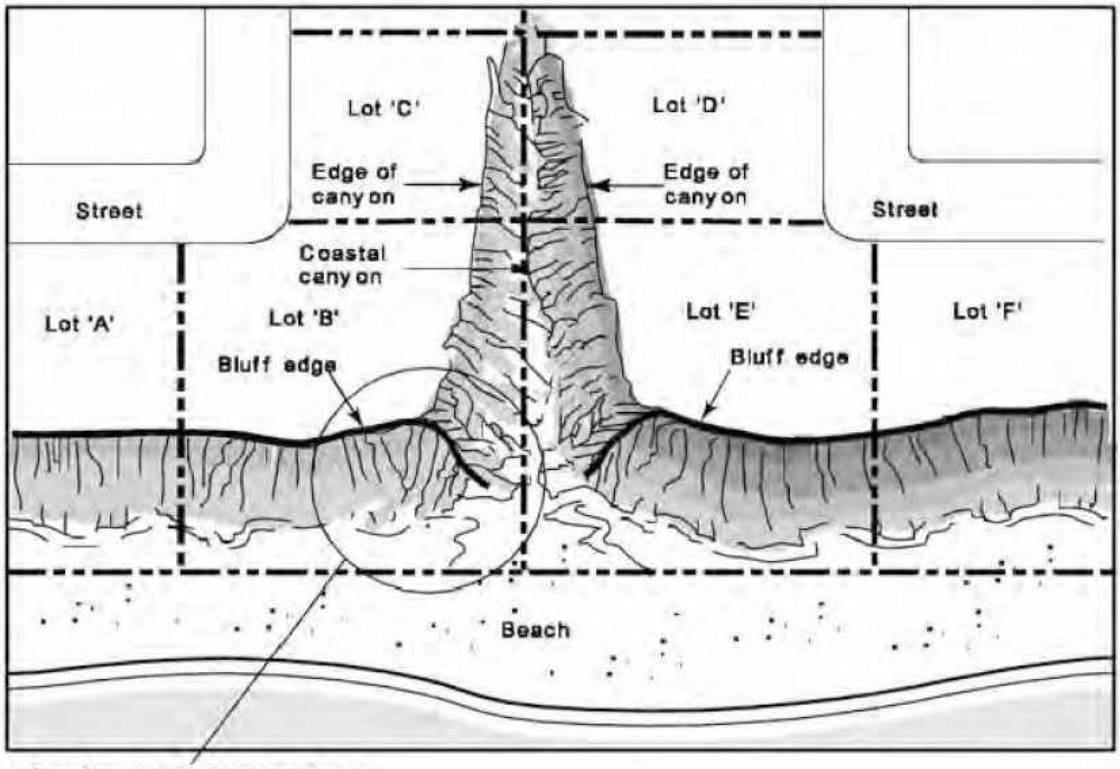
of a gently sloping upper bluff and a steeper lower bluff or sea cliff. The term 'oceanfront bluff' or 'coastal bluff' refers to the entire slope between a marine terrace or upland area and the sea. The term 'sea cliff' refers to the lower, near-vertical portion of an oceanfront bluff." Section 25.50.004(B)(4)(a) of the Laguna Beach Municipal Code (City of Laguna Beach, 2020) states that, "An 'oceanfront bluff' is an oceanfront landform having a slope of forty-five degrees or greater from horizontal whose top is ten or more feet above mean sea level."

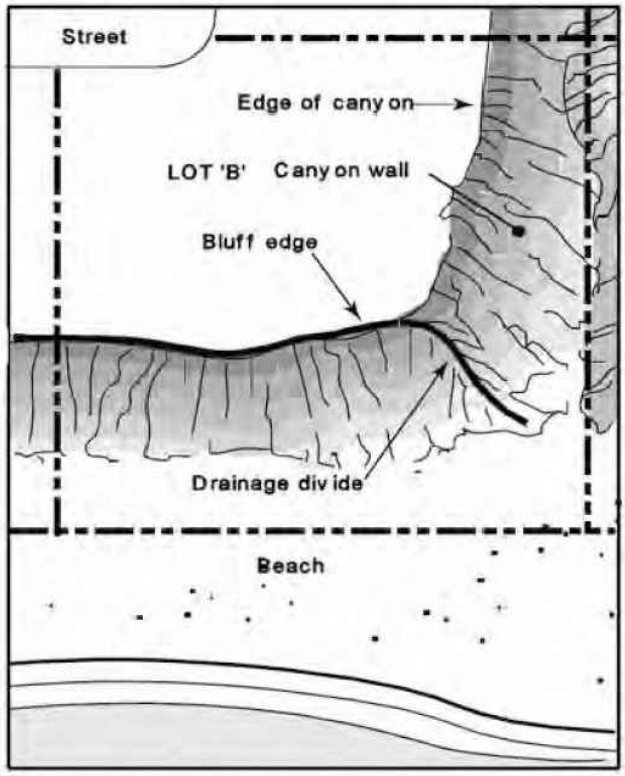
As pointed out in CG (2004), the subject property is situated upon a headland bounded to the north and south by in-filled natural drainage courses. Thus, the subject site occurs along a relatively narrow drainage divide. Prior to anthropogenic alterations, primarily associated with the construction of S. Coast Highway in the early 20th Century, both the headland and natural drainage courses included bluffs. The bluffs associated with the headland feature and the southerly wall of the natural drainage course to the north of the site largely remain visible. However, the bluff related to the southerly natural drainage course is no longer recognizable, due to previous grading and construction of the West Street Beach public-access stairway.

When determining the location of a bluff edge, a distinction should be made between a coastal bluff and a bluff associated with the walls of a natural drainage course. It is the opinion of GSI that City of San Diego (2000) provides a reasonable model for distinguishing between coastal bluffs and bluffs associated with natural drainage courses in proximity to coastlines. According to the City of San Diego (2000), a coastal bluff can only be classified as such if surface runoff, generated thereon, drains directly to the ocean. Conversely, City of San Diego (2000) states that if surface runoff flowing down a bluff discharges into a natural drainage course before entering the ocean, the bluff is not coastal in origin, since it was formed by fluvial processes and not by marine erosion. The City of San Diego (2000) indicates the drainage divide that separates surface flows from entering the ocean and a natural drainage course demarcates the limits of these topographic features. This is depicted in Figure 2, which has been adopted from Diagram III-7 of City of San Diego (2000).

As shown on TEI (2003), the coastline fronting the subject property between its northwesterly and southwesterly property corners generally trends approximately N 3° W. Near the northwesterly corner of the property, the orientation of the coastline changes rather abruptly and trends landward at roughly N 28° E. This marked directional change in the coastline demonstrates the approximate transition between the coastal bluff and the natural drainage course north of the subject site.

Based on our site observations and a review of TEI (2003), the coastal bluff profile, beginning at its toe, along a relatively wide sand beach, is characterized by a near-vertical to locally overhanging terraced seacliff that occurs between approximate elevations ±15 feet and ±52 feet (unknown datum). However, the general gradient of the terrace benches are on the order of 1.5:1 (horizontal:vertical [h:v]), and are generally the





ADOPTED FROM:
DIAGRAM III-7 OF
CITY OF SAN DIEGO (2000)

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.

COASTAL BLUFF/ CANYON DETAIL

Figure 2

W.O. S7823	DATE: 05/20	SCALE: NTS

product of structural geology of the San Onofre Breccia and marine erosion. Above the seacliff and between approximate elevations ±52 and ±62 feet, the slope of the coastal bluff transitions to an approximate 1.2:1 (h:v) or flatter gradient. A relatively level terrace occurs above approximately elevation ±62 feet, and extends northeasterly for approximately 100 feet. Landward of this terrace, approximately 1:1 (h:v) or flatter slopes, associated with the northerly and southerly reentrants, ascend toward a relatively gently sloping coastal terrace with slope gradients on the order of 4:1 (h:v) to 13:1 (h:v).

COASTAL BLUFF EDGE

According to the California Code of Regulations, Title 14, § 13577 (h) (2), the,

> *Bluff line or edge shall be defined as the upper termination of a bluff, cliff, or seacliff. In cases where the top edge of the cliff is rounded away from the face of the cliff as a result of erosional processes related to the presence of the steep cliff face, the bluff line or edge shall be defined as that point nearest the cliff beyond which the downward gradient of the surface increases more or less continuously until it reaches the general gradient of the cliff. In a case where there is a step-like feature at the top of the cliff face, the landward edge of the topmost riser shall be taken to be the cliff edge.*

Our evaluation of the coastal bluff edge location at the subject site considers this legal definition as well as City of Laguna Beach (2012; 2020) explanations for coastal bluffs, and the differences between the edges of coastal bluffs and natural drainage course described in City of San Diego (2000).

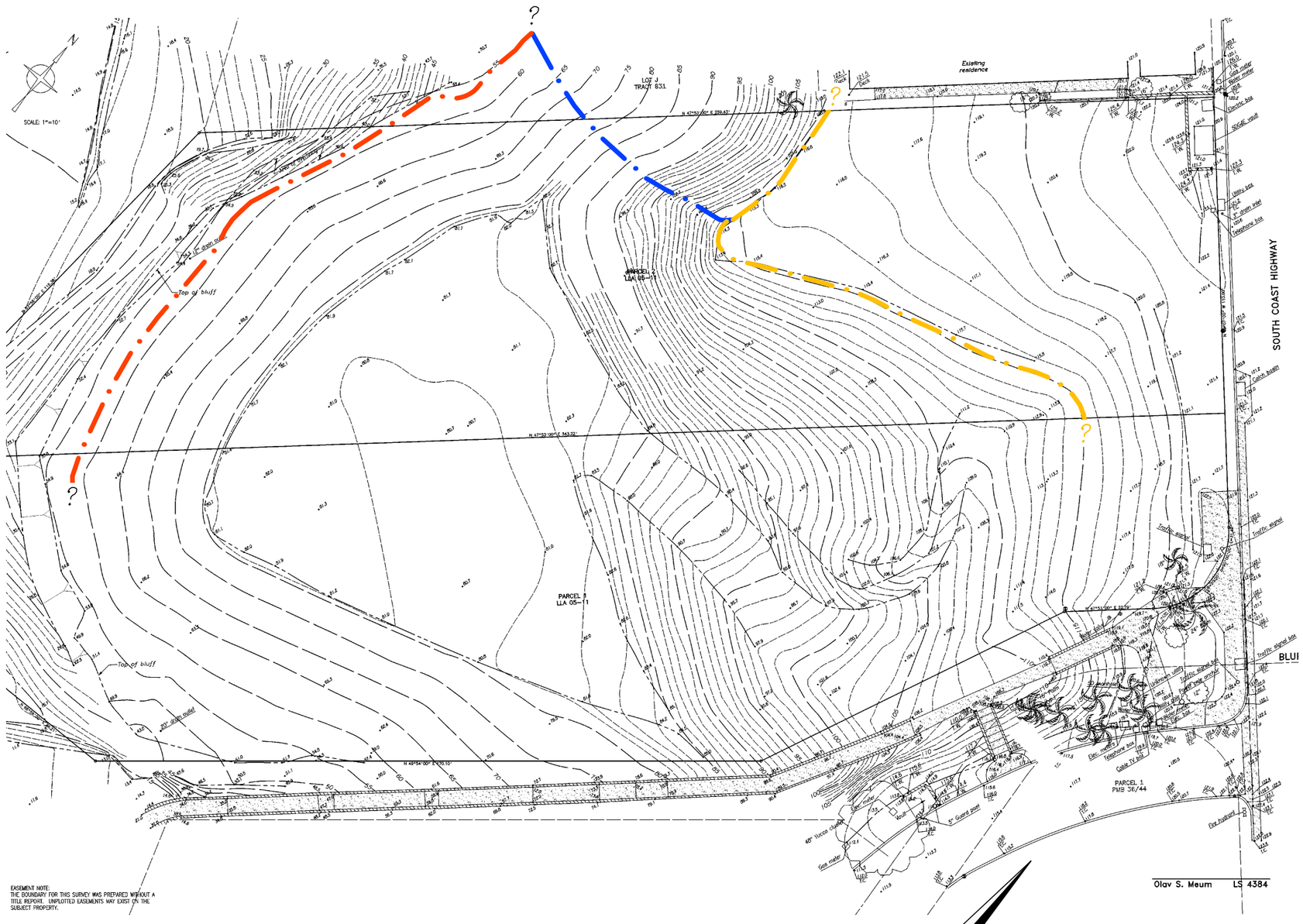
In his 2003 memorandum to the California Coastal Commission (CCC), Dr. Mark Johnsson, former Staff Geologist for the CCC, indicates that the definition of the coastal bluff edge is largely qualitative and subject to various interpretations (CCC, 2003). Thus, using the definition of an "oceanfront bluff" in City of Laguna Beach (2020), the coastal bluff edge at the subject site occurs in the vicinity of elevation ±52 feet. In contrast, using the definition of an oceanfront bluff/coastal bluff, outlined in City of Laguna Beach (2012), the coastal bluff edge occurs along the geologic contact between the lower marine terrace deposits and overlying undocumented fill, which is shown by CG (2004) to occur between approximate elevations 55 and 57½ feet. Conversely, using the definition established by the State of California but recognizing the differences between the edges of coastal bluffs and natural drainage courses, described in City of San Diego (2000), the location of the coastal bluff edge roughly occurs along the seaward edge of the lower terrace or along elevation ±62 feet. However, since the State of California recognizes a bluff edge as a natural morphologic feature, GSI does not consider the top of the anthropogenically modified lower terrace to be the coastal bluff edge.

CONCLUSIONS

It is the opinion of GSI that the coastal bluff edge at the subject site occurs along the geologic contact between the lower terrace deposits and the overlying undocumented fill shown by CG (2004) to occur between approximate elevations ±55 and ±57½ feet. This is considered the likely position of the coastal bluff edge prior to the anthropogenic modifications that occurred with the site and the adjoining southerly property over much of the 20th Century. This location represents the upper terminus of an "oceanfront bluff" or "coastal bluff", per City of Laguna Beach (2012), since the geologic contact between the lower marine terrace deposits and the undocumented fill marks the upper extent of the marine terrace. In addition, this geologic contact is also considered location at which the coastal bluff slope would have transitioned to gradients flatter than 1:1 (h:v) had the undocumented fill not been placed. Thus, it represents the upper terminus of the coastal bluff, per City of Laguna Beach (2020). The locations of the edges of the coastal bluff and the natural drainage course at the subject site are shown in plan view on Figure 3, which has been adopted from TEI (2003). Figures 4 through 6 show the approximate locations of the edges of the coastal bluff and the natural drainage course, and the drainage divide on oblique aerial photograph provided by the California Coastal Records Project website (www.californiacoastline.org) for the years 1972, 1989, and 2013.

LIMITATIONS

Inasmuch as our study is based upon our review, engineering analyses, and laboratory data, the conclusions and recommendations presented herein are professional opinions. These opinions have been derived in accordance with current standards of practice, and no warranty is express or implied. 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.



EASEMENT NOTE:
THE BOUNDARY FOR THIS SURVEY WAS PREPARED WITHOUT A TITLE REPORT. UNPLOTTED EASEMENTS MAY EXIST ON THE SUBJECT PROPERTY.

GSI LEGEND

- APPROXIMATE LOCATION OF COASTAL BLUFF EDGE, QUERIED WHERE UNCERTAIN
- APPROXIMATE LOCATION OF EDGE OF NATURAL DRAINAGE COURSE, QUERIED WHERE UNCERTAIN
- APPROXIMATE LOCATION OF DRAINAGE DIVIDE, QUERIED WHERE UNCERTAIN

GRAPHIC SCALE

30 0 15 30 60

1" = 30'

TOPOGRAPHIC SURVEY

LOTS K & L, TRACT 831
LAGUNA BEACH, CALIFORNIA

PREPARED FOR: TONY REYNA

DATE OF SURVEY: 9-12-03
H. SCALE: 1"=10'
V. SCALE:
TEST LEVEL: Fri May - 1 11:43:20 2009

DRN. & PLOTS
CHD.
APPD.

REVISIONS
APPD. DATE

TOAL ENGINEERING, INC.
Civil Engineers, Land Planners, Land Surveyors
139 Avenida Navarro
San Clemente, California 92672
Ph: (949) 492-8588 Fax: (949) 498-8825

SHEET 1 OF 1
JOB NO. 11553

ALL LOCATIONS ARE APPROXIMATE

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GeoSoils, Inc.

COASTAL BLUFF EDGE LOCATION MAP

Figure 3

W.O. S7823	DATE: 05/20	SCALE: 1" = 30'



BASE PHOTO ADOPTED FROM:
CALIFORNIA COASTAL RECORDS PROJECT
(https://www.californiacoastline.org)

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- ? — APPROXIMATE LOCATION OF DRAINAGE DIVIDE, QUERIED WHERE UNCERTAIN

GeoSoils, Inc.

1972 OBLIQUE AERIAL PHOTOGRAPH

Figure 4

W.O. S7823	DATE: 05/20	SCALE: NTS



BASE PHOTO ADOPTED FROM:
CALIFORNIA COASTAL RECORDS PROJECT
(https://www.californiacoastline.org)

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- ? — APPROXIMATE LOCATION OF DRAINAGE DIVIDE, QUERIED WHERE UNCERTAIN

GeoSoils, Inc.

1987 OBLIQUE AERIAL PHOTOGRAPH

Figure 5

W.O. S7823	DATE: 05/20	SCALE: NTS



BASE PHOTO ADOPTED FROM:
CALIFORNIA COASTAL RECORDS PROJECT
(https://www.californiacoastline.org)

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GSI LEGEND

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- ?– *APPROXIMATE LOCATION OF EDGE OF NATURAL DRAINAGE COURSE, QUERIED WHERE UNCERTAIN*
- ?– *APPROXIMATE LOCATION OF DRAINAGE DIVIDE, QUERIED WHERE UNCERTAIN*

GeoSoils, Inc.

2013 OBLIQUE AERIAL PHOTOGRAPH

Figure 6

W.O. S7823	*DATE:* 05/20	*SCALE:* NTS

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
Project Geologist

RBB/JPF/DWS/mn

Enclosure: Appendix - References

Distribution: (2) Addressee (wet signed US Mail and email pdf)

APPENDIX

REFERENCES

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Fairchild Aerial Surveys, 1947, stereoscopic aerial photographs, flight: C-11730, frame nos.: 4-81 and 4-82, dated August 23, 1:14,400-scale.

_____, 1939, stereoscopic aerial photographs, flight: C-5925, frame nos.: 182 and 183, dated October 15, 1:24,000-scale.

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State of California, California Code of Regulations, 2020, Title 14, § 13577 (h) (2).

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United States Department of Agriculture, 1952, stereoscopic aerial photographs, flight: AXK-1953, frame nos.: 129 and 130, dated December 12, 1:20,000-scale.

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_____, 1996, Topographic survey of the San Juan Capistrano quadrangle, Orange County, California, 7.5-minute series, 1:24,000-scale.

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GeoSoils, Inc.

Geotechnical • Geologic • Coastal • Environmental

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

June 7, 2022

WO S7823

Mr. Tony Reyna
c/o **Horst - Architects**
247a Forest Avenue
Laguna Beach, California 92651

Attention: Mr. Horst Noppenberger

Subject: Updated Onsite Coastal Bluff Geomorphology and Coastal Bluff Edge Evaluations, Proposed Single-Family Residential Development, 31451 South Coast Highway, Laguna Beach, Orange County, California 92651, Assessor's Parcel Number (APN) 056-032-26

Dear Mr. Noppenberger:

In accordance with your request and Mr. Tony Reyna's authorization, GeoSoils, Inc. (GSI) has prepared the following summary of our updated evaluations relative to the coastal bluff geomorphology and the location of the coastal bluff edge at the subject property. Our scope of work included reviews of the referenced maps, literature, and aerial photographs (see the Appendix); geological analyses; and the preparation of this summary report. Unless specifically superceded herein, the conclusions and recommendations contained in GSI (2020 [see the Appendix]) are still considered valid and applicable, and should be appropriately implemented during the balance of project planning, design, and construction.

COASTAL BLUFF AND COASTAL BLUFF EDGE DEFINITIONS

In May 2021, the City of Laguna Beach provided new (clarified) definitions of a coastal bluff and the coastal bluff edge in their "Land Use Element" (City of Laguna Beach [City], 2021). These updated definitions are to be used when determining the coastal bluff edge for oceanfront property that is to receive new development, including accessory structures, major remodels, and additions.

According to City (2021), the coastal bluff, otherwise referred to as an "oceanfront bluff**,**" is defined as, "*. . . a bluff overlooking a beach or shoreline or that is subject to marine erosion. Many oceanfront bluffs consist of a gently sloping upper bluff and a steeper lower bluff or sea cliff. The term 'oceanfront bluff' or 'coastal bluff' refers to the entire slope between a marine terrace or upland area and the sea. The term 'sea cliff' refers to the lower, near vertical portion of an oceanfront bluff.*"

City (2021) defines the coastal bluff edge as, "*. . . the upper termination of a bluff, cliff, or seacliff. In cases where the top edge of the bluff is rounded away from the face of the bluff, the bluff edge shall be defined as that point nearest the bluff face beyond which a downward gradient is maintained continuously to the base of the bluff. In a case where there is a step like feature at the top of the bluff, the landward edge of the topmost riser shall be considered the bluff edge. Bluff edges typically retreat over time as a result of erosional processes, landslides, development of gullies, or by grading (cut). In areas where fill has been placed near or over the bluff edge, the original bluff edge, even if buried beneath fill, shall be taken to be the bluff edge.*"

The topography of Laguna Beach generally consists of rugged coastline typified by numerous coves and pocket beaches backed by a landward succession of steep to near-vertical sea cliffs, gently to moderately sloping terrace terrain, and the moderate to steep resistant hills that form the western flank of the San Joaquin Hills. Numerous seaward-trending drainage courses dissect the region.

Land development in Laguna Beach has significantly modified the natural landforms over the last 100+ years. The beginning of urban sprawl in the area generally coincided with the construction of South Coast Highway. For the most part, construction of South Coast Highway required excavations into sloping topography and the in-filling of canyons and subsidiary drainage courses to create a relatively level roadbed. Similar cut and fill grading has also created the ancillary roadways and properties that now comprise Laguna Beach. The poorly documented, historical earthwork activities make it difficult to develop an understanding of the former (pre-graded) terrain at most locations in coastal Laguna Beach.

There are two sources of information that can be used to evaluate geomorphology and the historical modification of the land. The first are historical topographic maps that can be found on the United States Geological Survey's (USGS's) "Topoview" website (https://ngmdb.usgs.gov/topoview/). The second source are historical aerial photographs. The site-specific information from these sources are further discussed herein.

The USGS historical topographic map data base includes the circa 1885 T-Sheets, which show the prevailing terrain of the Laguna Beach area near the beginning of urbanization (https://www.caltsheets.org/socal/). The subsequent 1901 and 1949 USGS topographic maps do not have sufficient detail to show the original and changing topography in the site area. There are more recent maps available, but these maps show the more altered and current topography resulting from urban expansion. The 1885 USGS T-Sheet is of particular importance because it shows the site prior to construction of any of the adjacent properties, located seaward of South Coast Highway, which was a narrow wagon trail at the time and configured differently than the current highway alignment. The 1885 USGS T-Sheet also shows that the site is situated upon a narrow spur separating a major southwest-trending watercourse and a smaller natural drainage course, both conveying surface runoff from upland areas to the northeast (see Figure 1). The 1885 USGS T-Sheet

shown in Figure 1 includes hatching representing the location of the steep coastal bluff face that existed at the time the topographic mapping was conducted.

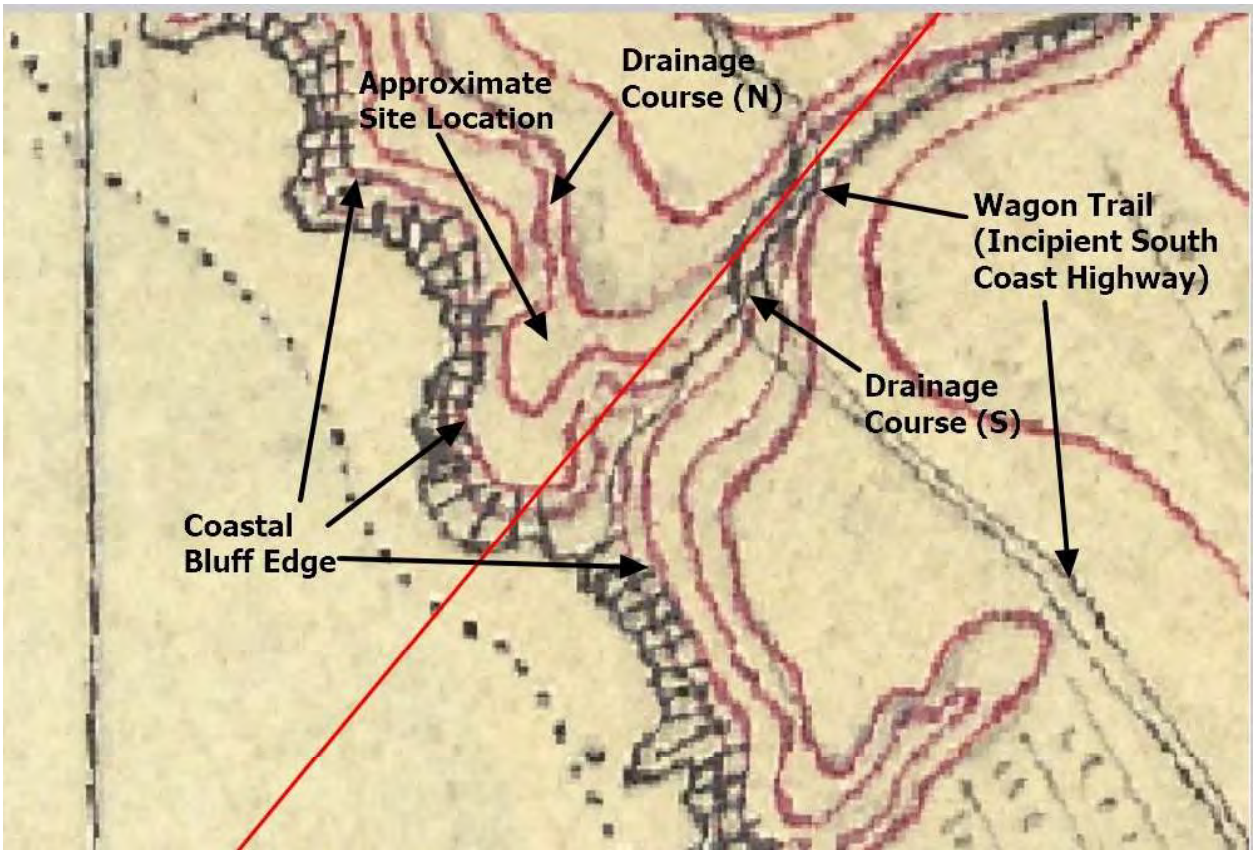


Figure 1 - 1885 USGS T-Sheet showing the approximate site location and vicinity

Figure 2 is an annotated early (circa 1928) oblique aerial photograph of the Coast Royale, Lee Goff Bench, and Aliso Beach areas of Laguna Beach, downloaded from the Laguna Beach Historical Society's website (http://lagunabeachhistory.org/). Figure 2 shows the approximate location of the subject property and nearby South Coast Highway, and Bluff Drive. The topographic conditions visible in Figure 2 corroborate the subject site's location upon a spur separating the two aforementioned drainage courses. Figure 2 also shows that the spur is part of the gently to moderately sloping coastal terrace that terminates at the steep coastal bluff.

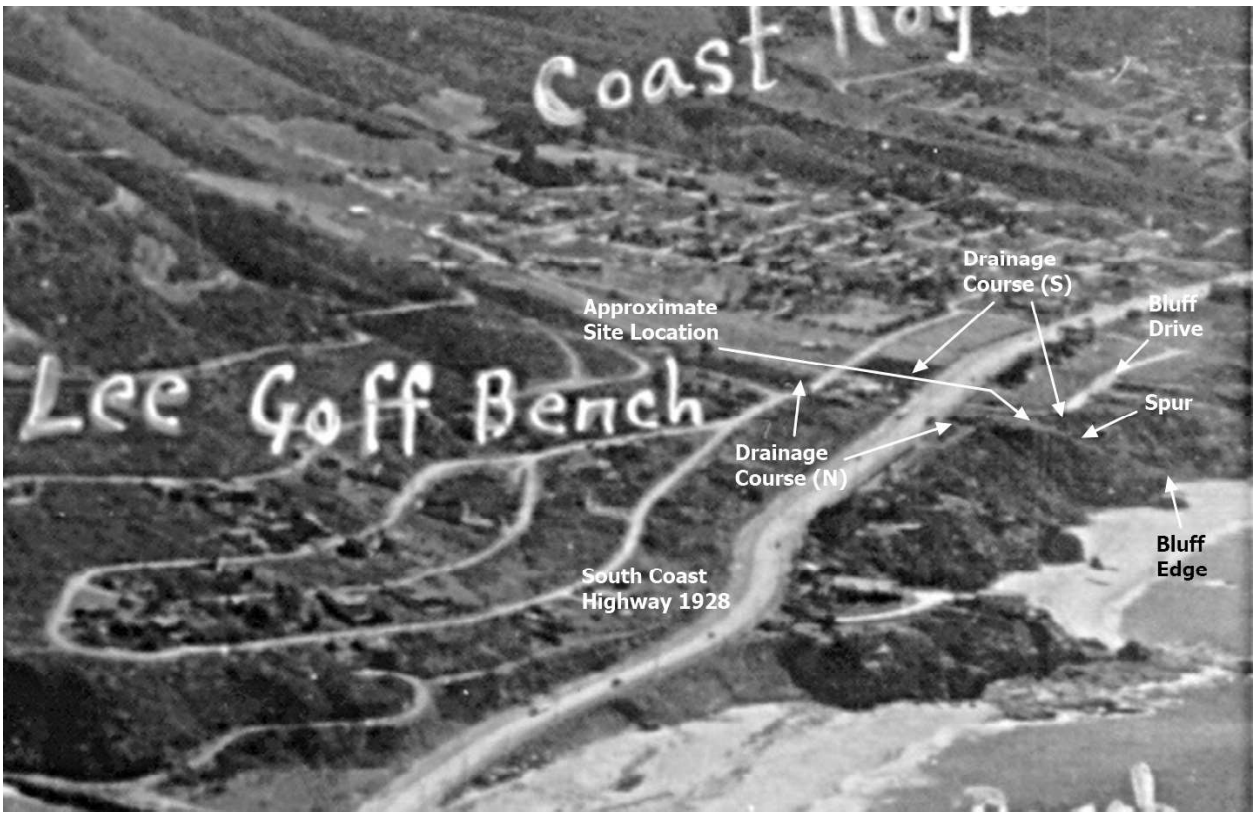


Figure 2 - Circa 1928 oblique aerial photograph showing the approximate site location and vicinity

A previous site-specific geotechnical study by Coastal Geotechnical ([CG], 2004) supports this interpretation of the onsite geomorphology. CG (2004) states that based on reviews of aerial photographs and the body of subsurface data obtained by CG and other geotechnical consultants, it appears that prior to the construction of South Coast Highway in the late 1920s, the subject property was originally bounded by seaward-trending drainage courses. In particular, CG (2004) describes a relatively well-developed, northeast-southwest trending drainage that formerly extended from areas located northeast of South Coast Highway, through the southern portion of the property, and to the beach below the site. CG (2004) further reports that the subject property is locally mantled by existing fill materials placed within this drainage course.

CONCLUSIONS

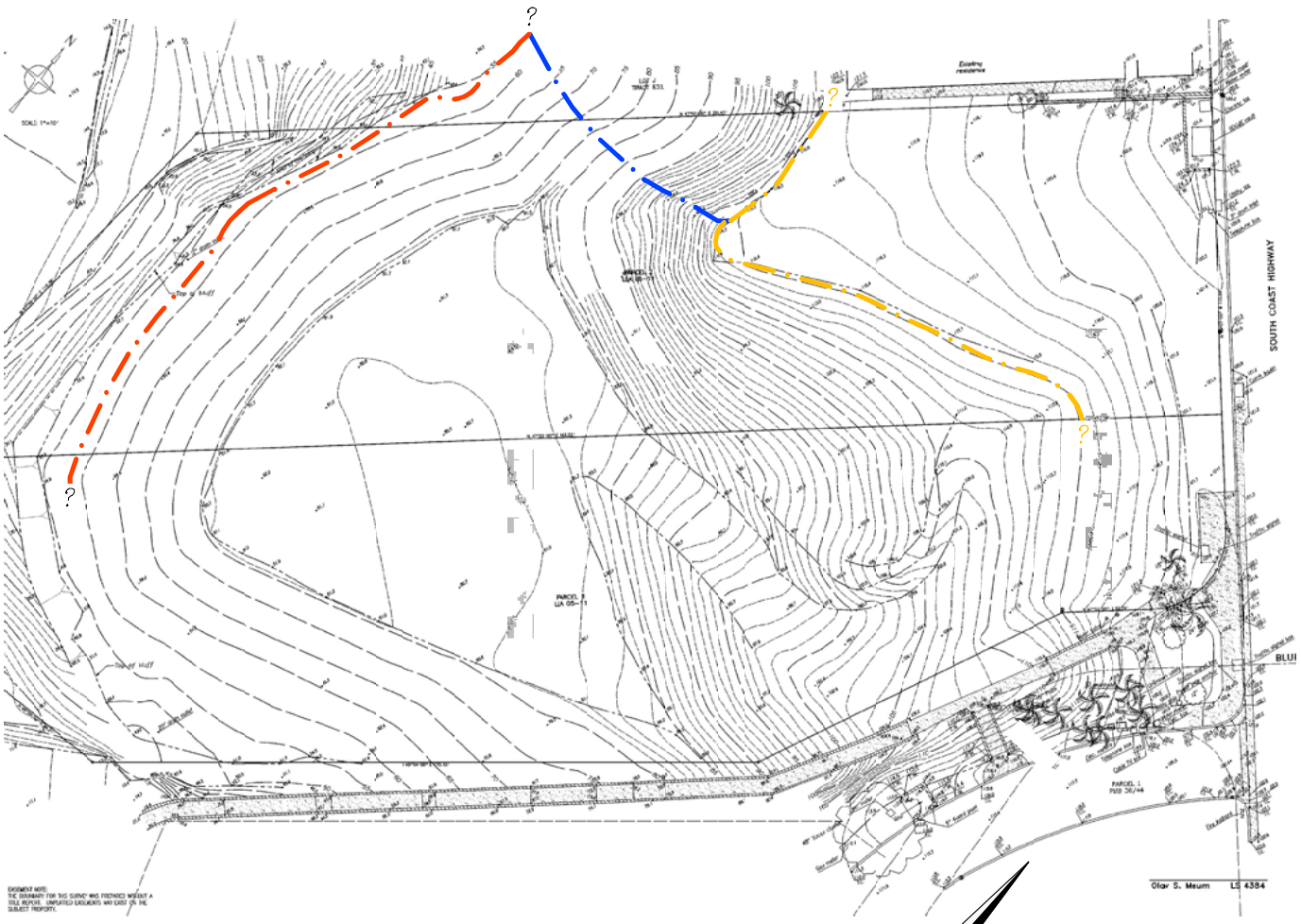
Based on our map, aerial photograph, and geotechnical report reviews, and the field mapping we performed in preparation of GSI (2021), as well as our recent reviews of the 1885 USGS T-Sheet and the circa 1928 oblique aerial photograph, previously described herein, it remains our conclusion that the location of the coastal bluff edge at the subject

site is coincident with the geologic contact between the lower terrace deposits and the overlying undocumented fill. According to CG (2004), this geologic contact occurs between approximate elevations 55 and 57½ feet. This is considered the likely position of the coastal bluff edge prior to the placement of fill within the lower site elevations.

The circa 1928 oblique aerial photograph shows that the spur separating the anthropogenically altered drainage courses to the north and south is part of the gently to moderately sloping coastal terrace. This photograph also indicates that the gradient of the spur was relatively uniform prior to grading at the site. Thus, there were no step-like features along its length through the subject property.

In addition, the circa 1928 oblique aerial photograph shows that the spur is truncated by erosion occurring along the near-vertical coastal bluff, demarcating the upper termination of the coastal bluff. This location is also the point nearest the bluff face beyond which a downward gradient is maintained continuously to the base of the bluff.

Figure 3 shows the location of the coastal bluff edge at the subject site. As shown thereon, the slope breaks between the coastal terrace and the sidewalls of the natural drainage course to the north and south of the former spur are identified as the approximate location of the edge of the natural drainage courses. Our interpretation of the coastal bluff edge is consistent with the City of Laguna Beach Land Use Element definition.



GSI LEGEND

- APPROXIMATE LOCATION OF COASTAL BLUFF EDGE, QUERIED WHERE UNCERTAIN
- APPROXIMATE LOCATION OF EDGE OF NATURAL DRAINAGE COURSE, QUERIED WHERE UNCERTAIN
- APPROXIMATE LOCATION OF DRAINAGE DIVIDE, QUERIED WHERE UNCERTAIN

GRAPHIC SCALE

30 0 15 30 60

1" = 30'

TOPOGRAPHIC SURVEY
LOTS 9 & 11, TRACT 831
LAGUNA BEACH, CALIFORNIA

TOAL ENGINEERING, INC.

SHEET 1 OF 1
JOB NO. 1553

ALL LOCATIONS ARE APPROXIMATE

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GeoSoils, Inc.

COASTAL BLUFF EDGE LOCATION MAP

Figure 3

W.O. S7823	DATE: 06/22	SCALE: 1" = 30'

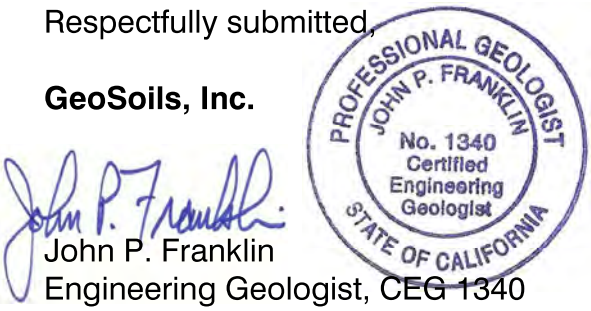
LIMITATIONS

Inasmuch as our study is based upon our review, engineering analyses, and laboratory data, the conclusions and recommendations presented herein are professional opinions. These opinions have been derived in accordance with current standards of practice, and no warranty is express or implied. 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.

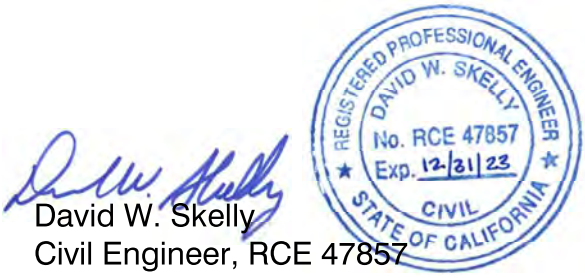
The opportunity to be of service is sincerely appreciated. If you should have any questions, please do not hesitate to contact our office.

Respectfully submitted,

GeoSoils, Inc.



John P. Franklin
Engineering Geologist, CEG 1340



David W. Skelly
Civil Engineer, RCE 47857

Ryan B. Boehmer
Project Geologist

RBB/JPF/DWS/jh

Enclosure: Appendix - References

Distribution: (2) Addressee (wet signed US Mail and email pdf)

APPENDIX

REFERENCES

California Coastal Commission, California Department of Water Resources, 2001, stereoscopic aerial photographs, flight CCC-BQK-C, photograph nos.: 29-7 and 29-8, dated September 24, 1:12,000-scale.

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Fairchild Aerial Surveys, 1947, stereoscopic aerial photographs, flight: C-11730, frame nos.: 4-81 and 4-82, dated August 23, 1:14,400-scale.

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I. K. Curtis Services, Inc. and American Aerial Surveys, Inc., 2001, Stereoscopic aerial photographs, flight: CCC-BQK-C, photograph nos. 29-6 and 29-7, dated September 24, 1:12,000-scale.

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Teledyne Geotronics, 1968, stereoscopic aerial photographs, flight: TG-2400, frame nos.: 4-69 and 4-70, dated August 28, 1:28,800-scale.

Toal Engineering, Inc., 2003, Topographic survey, Lots K & L, Tract 831, Laguna Beach, California, 1 sheet, 10-scale, job no.: 11553, dated September 12.

United States Department of Agriculture, 1952, stereoscopic aerial photographs, flight: AXK-1953, frame nos.: 129 and 130, dated December 12, 1:20,000-scale.

APPENDIX B: Fuel Modification Plan

27 January 2022

Laguna Beach Fire Department
James Brown, Fire Prevention Department
505 Forest Avenue
Laguna Beach, CA 92651

PROJECT ADDRESS: 31451 South Coast Highway, Laguna Beach, CA

SUBJECT: AM&M Request for Joe Reyna, 718 The Strand, Hermosa Beach, CA 90254

Dear Chief James Brown,

In accordance with section 104.9 of the 2019 California Fire Code, we are requesting an alternate method of fire protection for the proposed project detailed below.

PROJECT INFORMATION

Project/Owner: Joe Reyna
718 The Strand
Hermosa Beach, CA 90254

Reviewer: Mel Johnson, Owner
FIREWISE 2000, LLC
PO Box 339
Lower Lake, CA 95457
(415) 793-8661
(760) 745-3947

PROPOSAL

The proposed project is located at 31451 S. Coast Highway, Laguna Beach, CA. Planned development on the vacant lot will include proposed construction is of a new 3-story single family residential structure and three car garage with a total area of approximately 7326 square feet. Property and build information APN: 056-032-26, construction type VB, occupancy group R-3, U-1.

The property sits above a steep bluff overlooking the beach. It is surrounded by developed residential single and multi-story properties the Zoning is R-1. As with most of the properties in the City of Laguna Beach, the area is designated as a Very High Fire Hazard Severity Zone (VHFHSZ) for wildland fire and all new construction must comply with California Fire Code (CFC), Building Code - Chapter 7A and the City of Laguna Beach Ordinance No. 1619.

The lot dimensions is an approximate 140 feet wide by 221.80 feet at the longest run. The building is setback a minimum of 25ft from the bluff as required by the City of Laguna Beach building code. The existing vegetation on the bluff does not pose a wildland fire threat and shall be retained to maintain slope stability. The buildable area will be a majority of hardscape surfaces; driveways, stair walkways, and patio areas with some landscaping. The project Landscape Plan shows all surface area surrounding the structure as Zone A. All plantings and ongoing maintenance within the parcel will conform to the requirements found in the City of Laguna Beach Landscape Guidelines.

- The Fire Department Site Access Plan (FDSAP) prepared for this project shows that with the fire apparatus parked on the Coast Highway, the 150’ hose pull requirement (CFC 503.1.1) cannot be met. *FIREWISE2000* proposes the following alternative materials and methods to mitigate for the inability to meet the hose pull requirement or provide for the Guidelines fuel treatment measures.

MITIGATION MEASURES

- The automatic fire sprinkler system shall be upgraded to a 4-head sprinkler design to be applied to all rooms including garages, storage areas, closets and bathrooms regardless of size.
  The design and projected flow demand of the system shall be deigned and calculated by a qualified Fire Protection Contractor. The four head calculation system must have a minimum .05 density design, QR and intermediate temperature heads; the heads may be of a small orifice type such as 3/8" or 7/16". Copper piping is required in the attics; CPVC will only be permitted in the attic if listed heads are used in accordance with their listing.

  A Fire Sprinkler subcontractor shall submit plans to the architect and LBFD, showing sprinkler head layout prior to installation. The Fire Sprinkler System shall be inspected annually by a qualified Fire Protection Contractor and the report submitted to LBFD.

- To meet the required hose pull distances, install two (2) wet manual Class 1 Standpipe System with 2-2 ½ outlets at the hose connection, with 2-2½ snoots at the FDC. Location is noted on the FDSAP Appendix A. System shall be designed to meet the requirements of 2019 CFC, NFPA 13, NFPA 14 & Laguna Beach Municipal Codes (LBMC). Submitted under a separate deferred submittal by a qualified Fire Protection System Contractor. Plans will be submitted to the LBFD for review and approval, a permit issued, and final inspection required. Appropriate signage shall be provided for standpipe hose connection and FDC at the time of installation. All underground piping shall be 3 inch, wet standpipe must connect to fire sprinklers system above sprinkler flow switch. Standpipe hose connection to be accessible from firefighter access pathway. Two (2) standpipe locations on project site, one in the northwest corner of travel pathway and the second on southeast side at 150ft hose pull distance. FDC located northeast of garage entry point, from Coast Highway. FDC must be accessible from street and can not be blocked by vehicles, wall, gates or vegetation.

JUSTIFICATION

The building plans for the Joe Reyna residence has incorporated all of the ignition-resistant building features required by the 2019 California Fire and Building Code, and approved LBFD Ordinance No. 1619. For those features that are non-conforming, the additional requirements listed in this AM&M letter will result in the structure having improved survivability from fire and reduce the chance of ignition. In its overall fire hazard assessment of the project and the implementation of the mitigation measures prescribed, it is the expert assessment by *FIREWISE* 2000 that the Joe Reyna Residence is at least equivalent to, if not better than, what is prescribed in the CFC in terms of quality, effectiveness, fire resistance, durability, and safety. In addition, the Landscape Plans provide for a low fuel planting scheme that will avoid fuel loading in future years.

ADDITIONAL COMMENTS

We appreciate your consideration of this proposal. Should you find that the proposed items provide an equivalent level of protection to that prescribed in the CFC and LBFD Ordinance No. 1619. Once approved this AM&M letter shall become a part of the approved plan set for **31451 S. Coast Highway**. If you have any questions regarding this AM&M proposal or the Joe Reyna project in general, please contact me.

Sincerely,



Monty Kalin
Associate Planner
FIRE*WISE* 2000 LLC
Phone: 760-533-7096

Attachments:
Exhibit A– Site Plan
Exhibit B - Fire Department Site Access Plan (FDSAP)
Exhibit C –Elevation Profile
Exhibit D – Property Photo, Three-dimensional image

EXHIBIT A

Residence Site Plan

For submittal insert in 11 X 17 sheet size

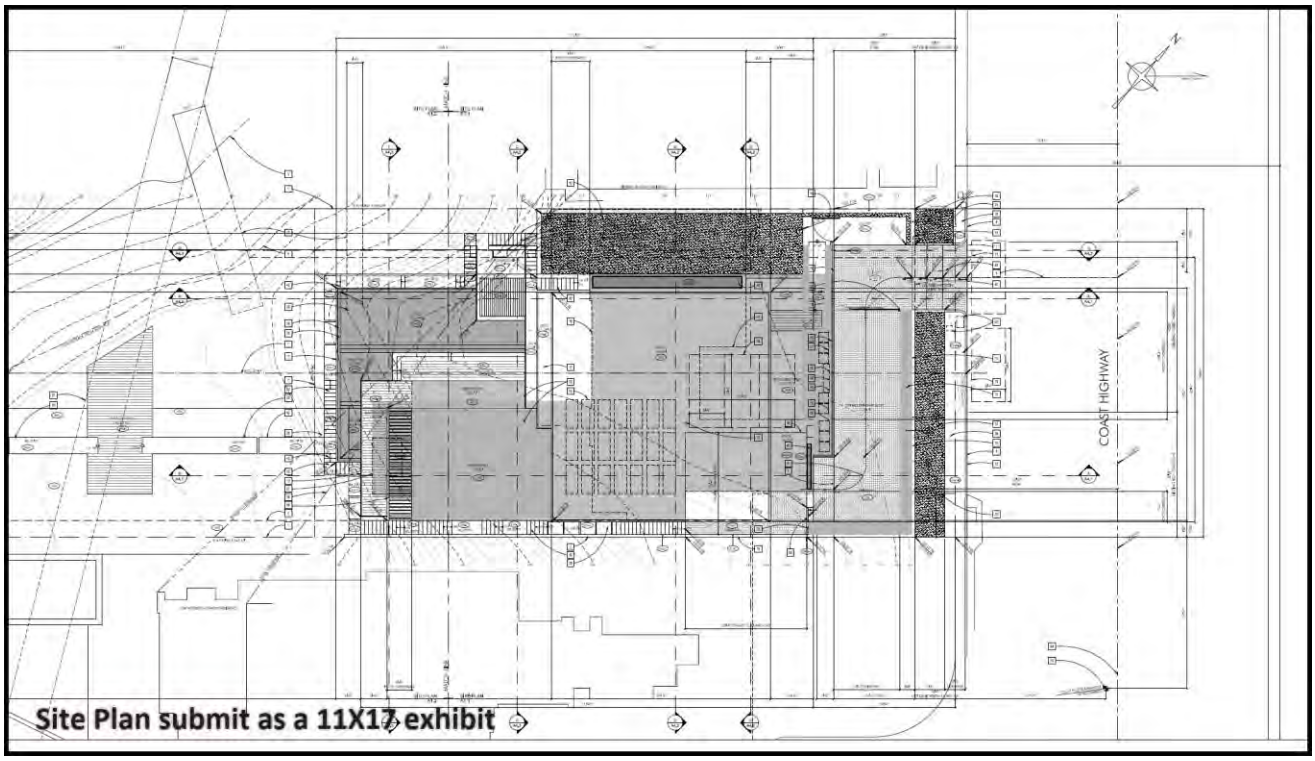
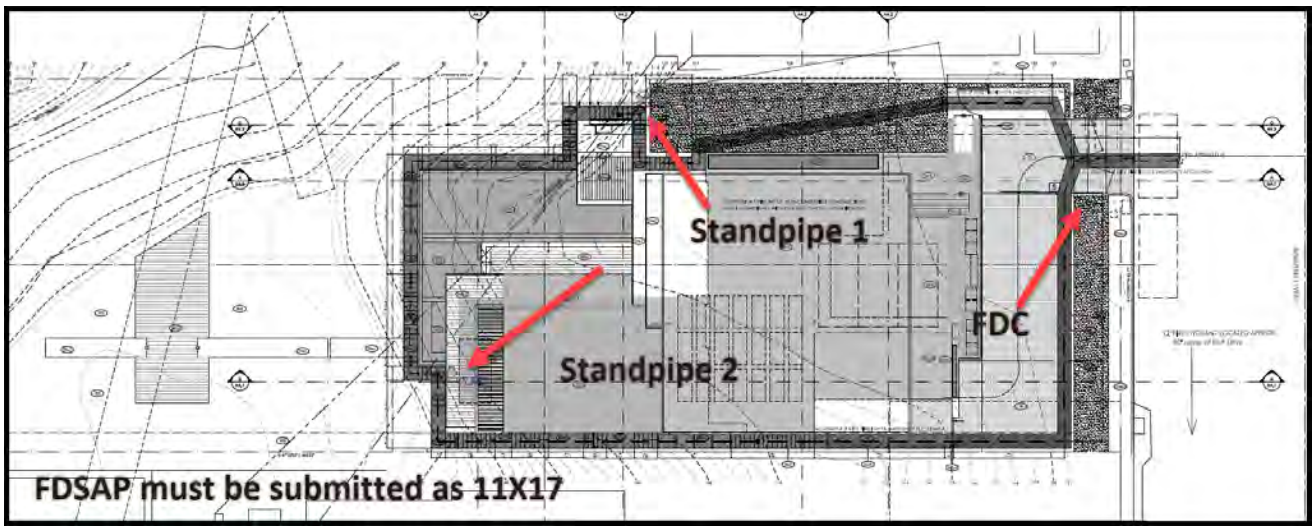


EXHIBIT B

Fire Department Site Access Plan (FDSAP) For 31451 South Coast Highway, Laguna Beach, CA

For submittal insert in 11 X 17 sheet size



Overview of standpipe locations and FDC.

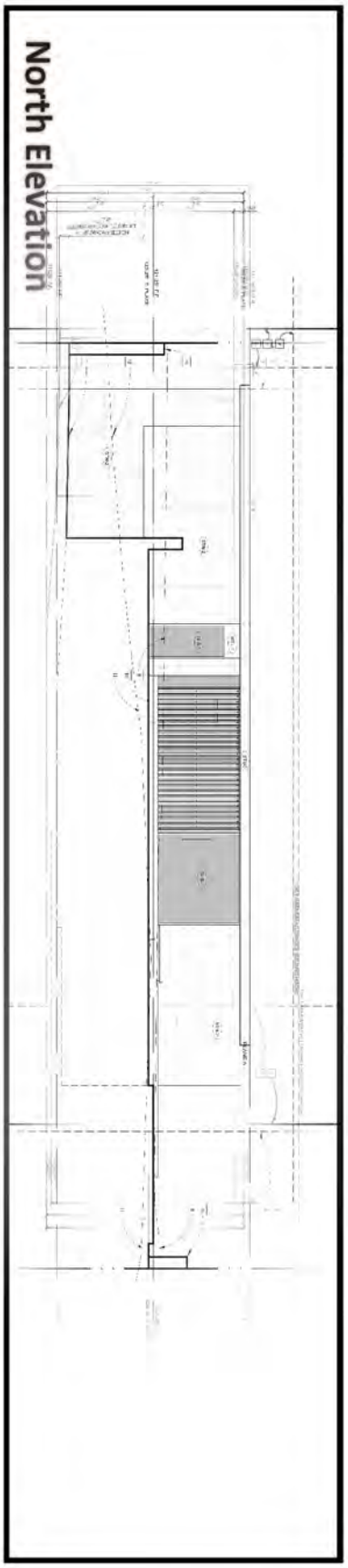
FDSAP must be submitted as an 11X17 Exhibit.

EXHIBIT C

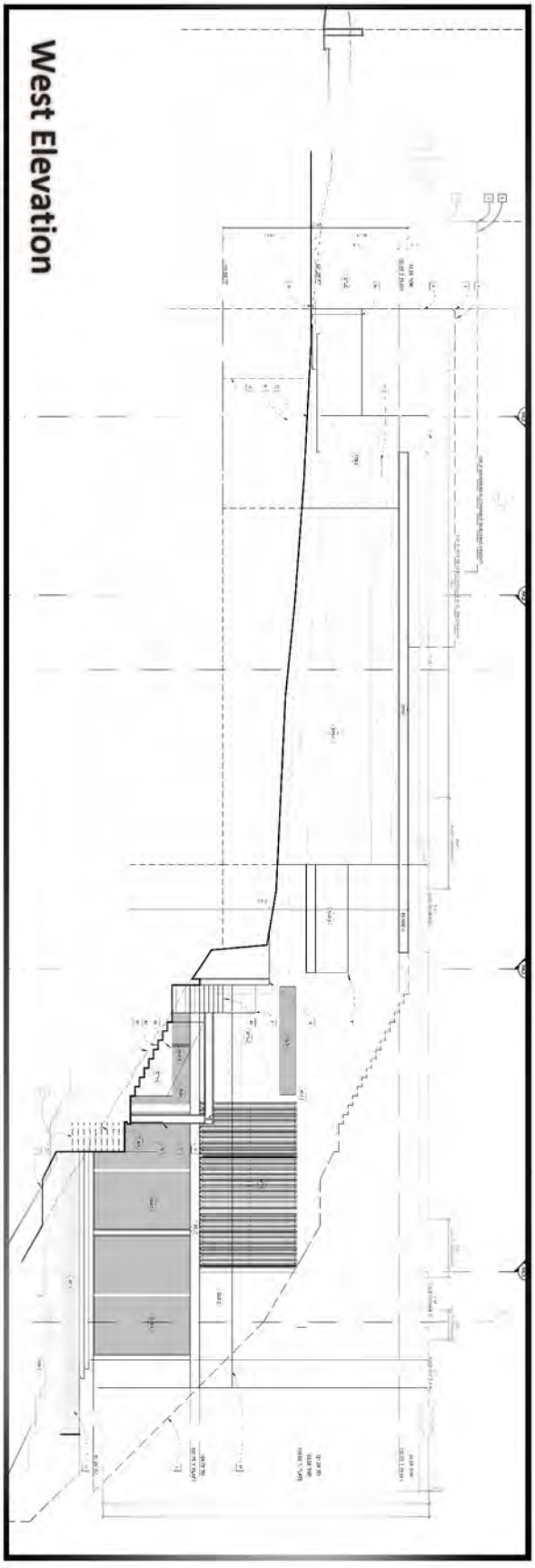
Elevations

Insert 11X17 for Submittal

North Elevation



West Elevation





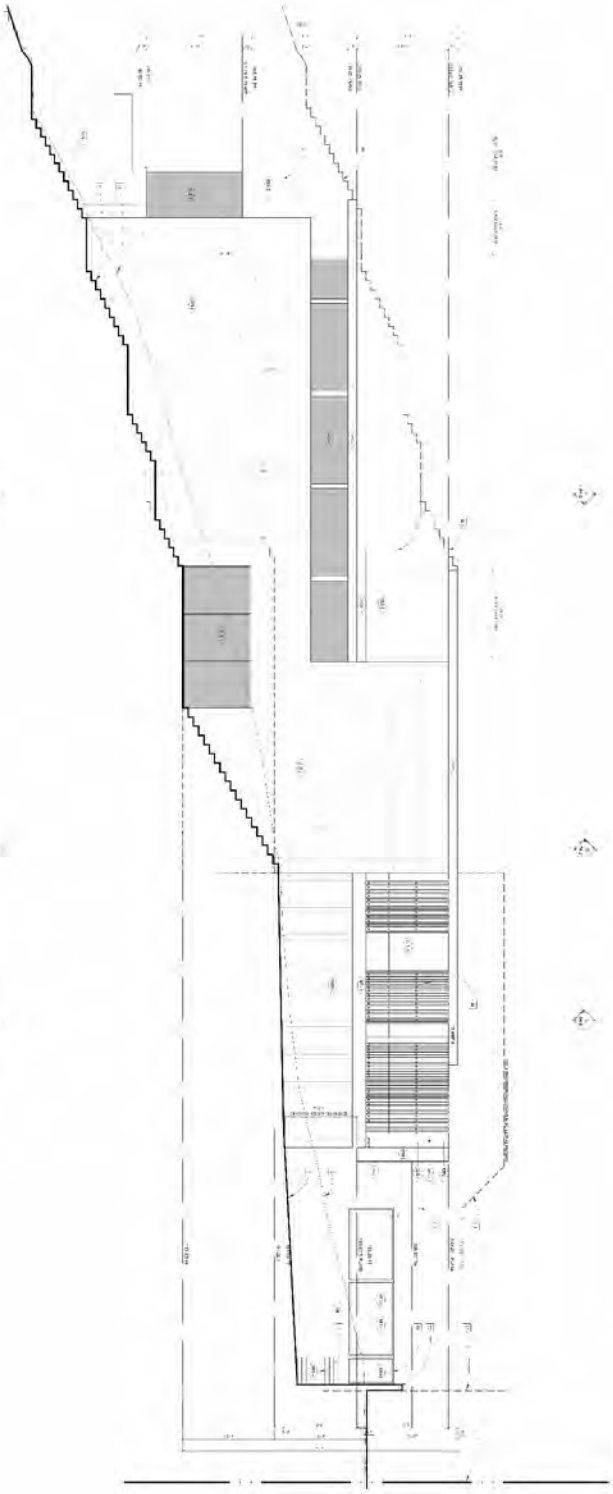
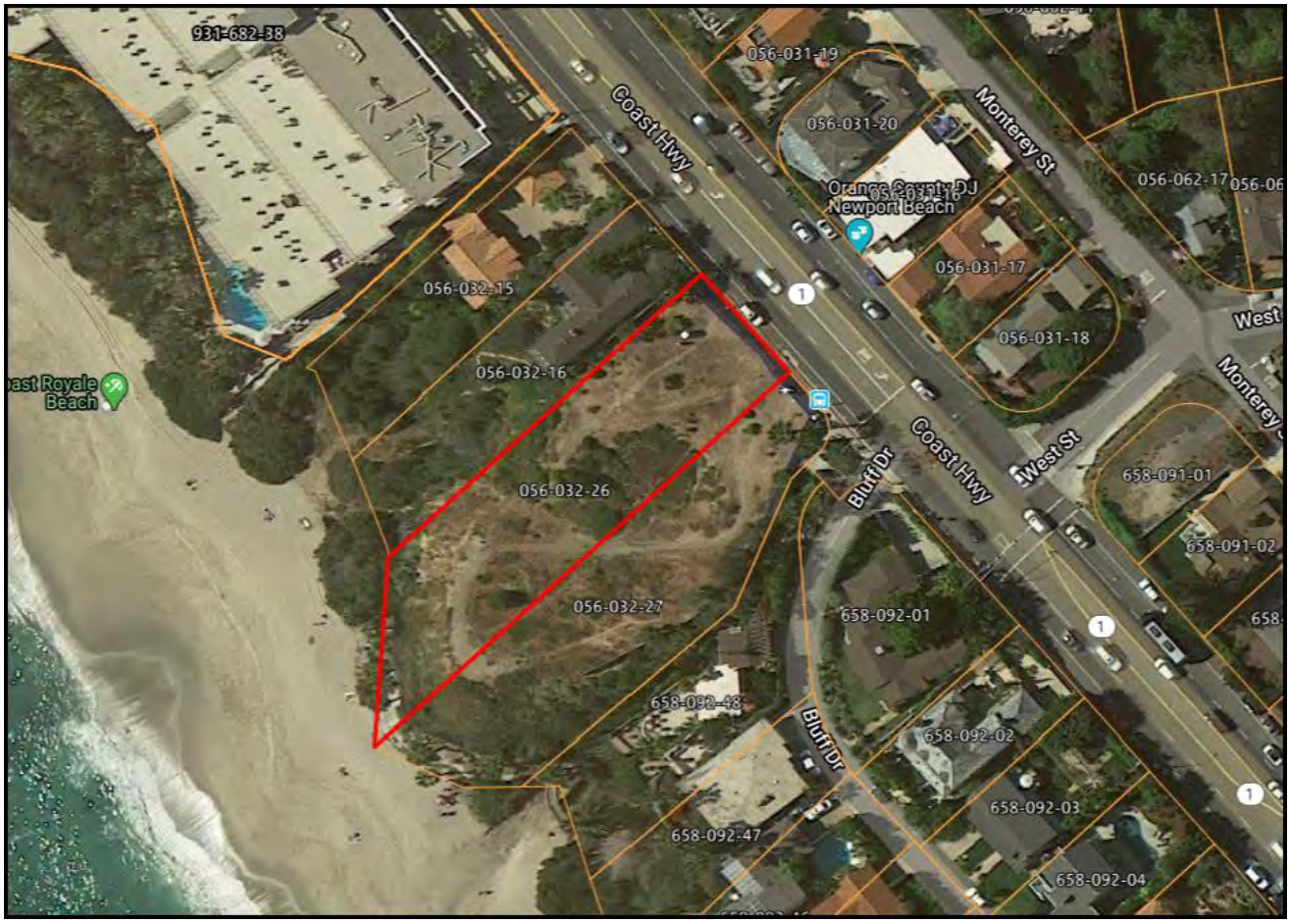
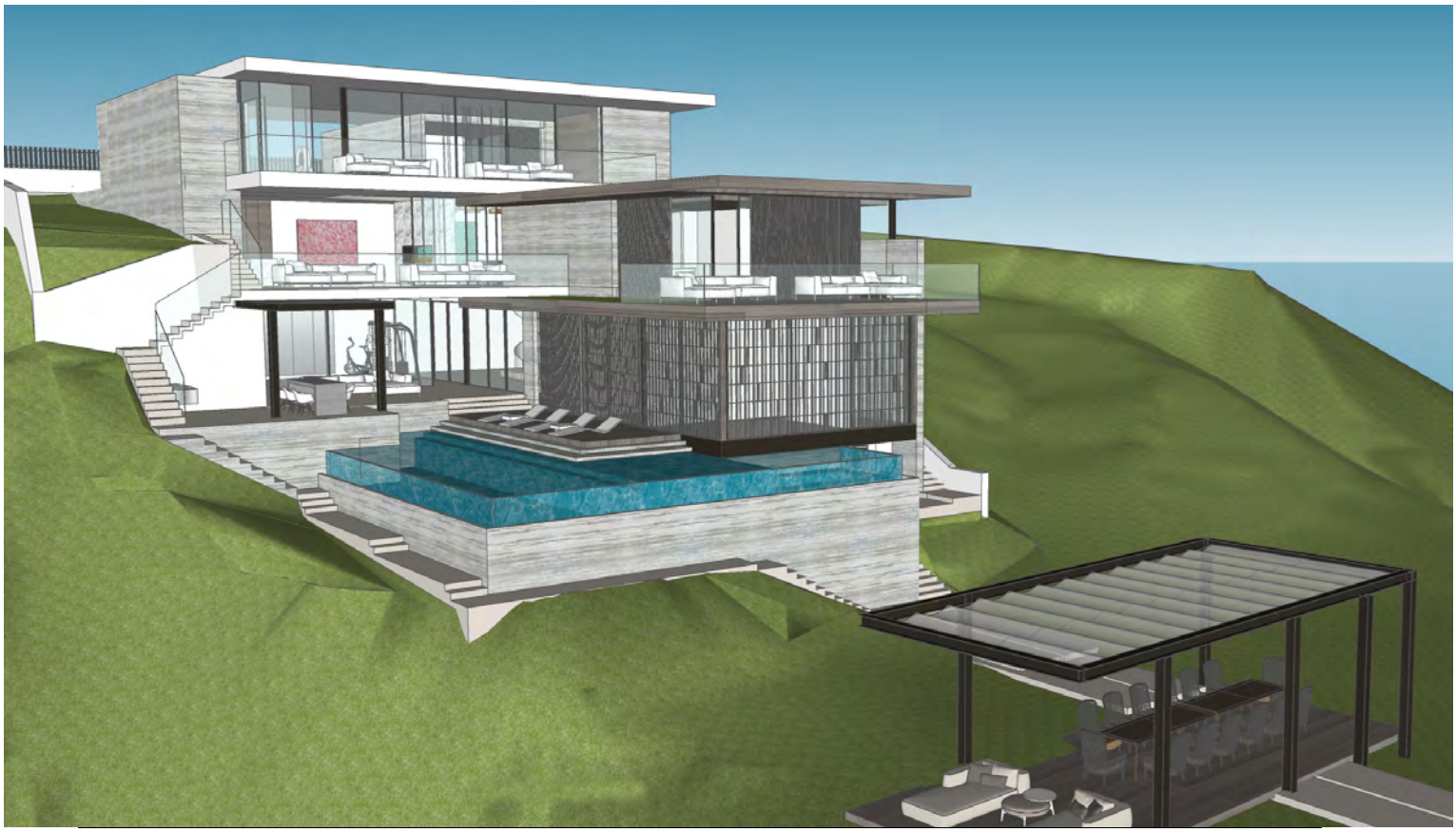


EXHIBIT "D"
Property APN





APPENDIX C: Biological Report

CARLSBAD
CLOVIS
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

January 18, 2023

Joe Reyna
Property Owner
718 The Strand
Hermosa Beach, CA 90254

Subject: Revised Biological Resources Assessment for 31451 Coast Highway, Laguna Beach, Orange County, California

Dear Mr. Reyna:

LSA is pleased to provide this Revised Biological Resources Assessment for a proposed single-family residential construction project (project) located at 31451 Coast Highway in Laguna Beach, California (refer to Figure 1, Project Location; all figures are provided in Attachment A). The purpose of this letter report is to describe and document biological resources—including special-status species—known to occur or with the potential to occur on the proposed project site. This technical information is provided for project planning purposes and review under the California Environmental Quality Act (CEQA), California Endangered Species Act (CESA), federal Endangered Species Act (FESA), and other pertinent regulations.

PROJECT DESCRIPTION

The proposed project consists of the development of one new single-family home and its appurtenant features. Project activities would include vegetation clearing, grading, and construction of a residential building, retaining walls, driveway, deck, pool, and other site finishes (e.g., landscaping). The proposed project also includes the establishment of fuel modification zones, including irrigated fuel modification, for fire prevention and protection of homes and other structures in the immediate vicinity.

PROJECT SETTING

The project site is located on an undeveloped lot (Assessor's Parcel Number 056-032-26) situated in the southwest corner of the *San Juan Capistrano, California* 7.5-minute United States Geological Survey (USGS) topographic quadrangle map (Figure 1). The project site is approximately 20 to 120 feet (ft) above mean sea level in elevation and is surrounded by residential land uses to the north and south, residential and commercial land uses to the east, and coastal bluffs and beaches along the Pacific Ocean to the west. Based on available mapping,[1] the project site is underlain by Bosanko clay, Cieneba sandy loam, and Modjeska gravelly loam soils. The current City of Laguna Beach (City) Zoning Map (2009) designates the project site as Residential Low Density.

[1] United States Department of Agriculture Natural Resources Conservation Service. 2019. Web Soil Survey. Website: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx (accessed August 2019).

METHODS

Literature Review and Records Search

LSA Biologist Jessica Lieuw conducted a literature review and records search on January 13, 2020, to identify the existence and potential for occurrence of special-status[1] plant and animal species and sensitive natural communities in the vicinity of the project site. Federal and State lists of special-status species were also examined. Current electronic database records reviewed included the following:

- **California Natural Diversity Database information (CNDDB—RareFind 5)** is administered by the California Department of Fish and Wildlife (CDFW). This database covers special-status plant and animal species as well as sensitive natural communities that occur in California. Records from eight USGS quadrangles surrounding the project site (*Laguna Beach*, *San Juan Capistrano*, *Canada Gobernadora*, *Dana Point*, *San Clemente*, *Tustin*, *El Toro*, and *Santiago Peak*) were obtained from this database to inform the field survey.
- **The California Native Plant Society (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants** utilizes four specific categories or "lists" of special-status plant species to assist with the conservation of rare or endangered botanical resources. All of the plants constituting California Rare Plant Ranks (CRPRs) 1A, 1B, 2A, and 2B are intended to meet the status definitions of "threatened" or "endangered" in CESA and the California Department of Fish and Game Code, and are considered by CNPS to be eligible for State listing. At the discretion of the CEQA Lead Agency, impacts to these species may be analyzed as such, pursuant to the *State CEQA Guidelines* Sections 15125(c) and 15380. Plants that are CRPR 3 (limited information; review list) or CRPR 4 (limited distribution; watch list) or that are considered Locally Unusual and Significant may be analyzed under CEQA if there is sufficient information to assess potential significant impacts. Records from the eight USGS quadrangles surrounding the project area were obtained from this database to inform the field survey.
- **The United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) Online System** lists all proposed, candidate, threatened, and endangered species managed by the Endangered Species Program of the USFWS that have the potential to occur on or near a particular site. This database also lists known critical habitats, national wildlife refuges, jurisdictional wetlands, and migratory birds that could potentially be impacted by activities from a proposed project. An IPaC Trust Resource Report was generated for the project site and was used to inform the field survey.
- **The USFWS Critical Habitat Mapper** was reviewed to determine whether critical habitat has been designated within or in the vicinity of the project area.

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[1] For the purposes of this report, the term "special-status species" refers to those species that are listed or proposed for listing under the California Endangered Species Act and/or Federal Endangered Species Act; California Fully Protected Species; plants with a California Rare Plant Rank of 1, 2, or 3; California Species of Special Concern; and California Special Animals. It should be noted that "Species of Special Concern" and "California Special Animal" are administrative designations made by the California Department of Fish and Wildlife and carry no formal legal protection status. However, Section 15380 of the *State CEQA Guidelines* indicates that these species should be included in an analysis of project impacts if they can be shown to meet the criteria of sensitivity outlined therein.

- **The USFWS National Wetlands Inventory** was reviewed to determine whether any wetlands or surface waters of the United States have been previously identified in the project area.

In addition to the databases listed above, historic and current aerial imagery, existing environmental reports for developments in the project vicinity, and regional habitat conservation plans and local land use policies related to biological resources were reviewed.

Field Survey

A general biological survey of the project site was conducted by LSA Biologist Jessica Lieuw on January 14, 2020. The project site was surveyed on foot, and all biological resources observed were noted and mapped. Suitable habitat for any species of interest or concern was noted, and general site conditions were photographed. The field survey took place on a sunny afternoon with weather conditions conducive to the detection of plant and animal species. A follow-up springtime special-status plant survey was conducted by LSA biologists Jim Harrison and Jessica Lieuw on April 24, 2020, to confirm the presence or absence of special-status plant species during the typical blooming season. The project site was surveyed on foot to determine locations and quantities of any special-status plant species occurring on site. LSA biologists determined that the April 24, 2020 survey date would be the optimal time to survey for those special-status plant species having a reasonable probability of occurring on site. Those special-status plant species from the record searches having a blooming period after April were not considered to have a reasonable likelihood of occurring on site, primarily due to the lack of suitable conditions on site or past site disturbances. Therefore, additional focused plant surveys following the April 24 survey were not deemed to be necessary.

RESOURCES EVALUATED

Vegetation

Descriptions of the vegetation and land cover types occurring within the project site are listed below, using the Orange County Habitat Classification System (HCS) as articulated by Jones & Stokes Associates, Inc.[1] The acreages of each vegetation community and land cover type occurring in the project parcel are shown in Table A, below. Figure 2 in Attachment A provides a map of these vegetation and land cover types within the project parcel boundary. A complete list of plant species identified within and adjacent to the proposed project site is contained in Attachment B. Representative site photographs taken during the January 2020 survey are contained in Attachment C.

Table A: Vegetation and Land Cover Types within the Project Area

Vegetation/Land Cover Type	Acreage
Coastal Bluff Scrub	0.27
Disturbed Encelia Scrub	0.04
Disturbed Sage Scrub-Grassland Ecotone	0.02
Ruderal	0.23
Total Project Area	**0.56**

Source: Compiled by LSA (2020)

[1] Jones & Stokes Associates, Inc. 1993. *Methods Used to Survey the Vegetation of Orange County Parks and Open Space Areas and the Irvine Company Property.* February 10.

There are no "high value" or "very high value" habitats, as designated by the Laguna Beach General Plan, Open Space and Conservation Element (2006),[1] mapped within or adjacent to the proposed project area limits. With the exception of coastal bluff scrub, which in this case is considered a "moderate value" habitat (see the description below), the other existing habitats described below are considered "low value" habitats.

Coastal Bluff Scrub (2.1 of the HCS): Areas classified as coastal bluff scrub have at least 20 percent cover by native perennial shrubs and occur on the slopes seaward of the undeveloped parcel, downslope of disturbed vegetation. Dominant plant species in this mixed scrub community include California encelia (*Encelia californica*) and lemonade berry (*Rhus integrifolia*). Other native components of this habitat type observed on site include cliff spurge (*Euphorbia misera*) (a special-status species having a CNPS California Rare Plant Rank of 2B.2), coastal prickly pear (*Opuntia littoralis*), lance-leaved dudleya (*Dudleya lanceolata*), wild cucumber (*Marah macrocarpus*), California wishbone bush (*Mirabilis laevis* var. *crassifolia*), seacliff wild buckwheat (*Eriogonum parvifolium*), bushrue (*Cneoridium dumosum*), California box-thorn (*Lycium californicum*), and salt grass (*Distichlis spicata*). Several cliff spurge individuals were observed on site within coastal bluff scrub during the January and April 2020 field surveys.

Several nonnative species were also observed within coastal bluff scrub habitat, including hottentot-fig (*Carpobrotus edulis*), coppery mesembryanthemum (*Malephora crocea*), crystal iceplant (*Mesembryanthemum crystallinum*), Australian saltbush (*Atriplex semibaccata*), Russian-thistle (*Salsola tragus*), pig's ear (*Cotyledon orbiculata*), acacia (*Acacia* sp.), tree tobacco (*Nicotiana glauca*), Mexican fan palm (*Washingtonia robusta*), and pampas grass (*Cortaderia selloana*).

The coastal bluff scrub habitat occurring on site is a mixture of native and nonnative (ruderal and ornamental) plant species, as described above. Moreover, the project site is surrounded by urban development (residential homes and Coast Highway) and is fragmented or isolated from larger open space areas. As such, the faunal carrying capacity and native floral diversity is lower than that of "high value" or "very high value" habitats described previously.

In addition, the remaining habitats described below have an even greater degree of previous disturbance and overall habitat degradation than the "moderate value" coastal bluff scrub habitat on site, and native plant species diversity is lower. Therefore, the following habitats are considered "low value." Because of the fragmentation of habitats on site and lack of connectivity to larger open space habitats in the region, the impacts associated with development of the site are not expected to have an adverse effect on higher-value habitats in the vicinity.

Disturbed Encelia Scrub (2.3.13 of the HCS): Areas mapped as disturbed encelia scrub were dominated by California encelia. Lemonade berry was also present in small numbers. The understory in these areas comprised weedy, nonnative species including hottentot-fig, redstem filaree (*Erodium cicutarium*), common burclover (*Medicago polymorpha*), and common sow-thistle (*Sonchus oleraceus*), among many others.

[1] "High value" habitats are defined by the City of Laguna Beach as extensive areas dominated by indigenous plant communities that possess good species diversity and are often linked to extensive open space areas. Habitats having the characteristics of "high value" habitats may be considered "very high value" when associated with the occurrence of endangered, rare, or locally unique native species and/or their habitats.

Disturbed Sage Scrub-Grassland Ecotone (2.8 of the HCS): The area classified as disturbed sage scrub-grassland ecotone has approximately 15 percent cover by shrubs including coastal goldenbush (*Isocoma menziesii* var. *vernonioides*) and California encelia. There is also an understory composed of subshrubs and forbs including coastal deerweed (*Acmispon glaber*), redstem filaree, hottentot-fig, and various nonnative grasses including ripgut grass (*Bromus diandrus*), red brome (*Bromus madritensis* ssp. *rubens*), hare barley (*Hordeum murinum* ssp. *leporinum*), and Mediterranean grass (*Schismus barbatus*).

Ruderal (4.6 of the HCS): Ruderal areas consist of early successional grassland dominated by pioneering herbaceous plants that readily colonize disturbed ground. Areas mapped as ruderal look to have been graded in the past. These areas consist of nonnative annual grasses and herbaceous plants including purple false brome (*Brachypodium distachyon*), red brome, hare barley, redstem filaree, sourclover (*Melilotus indicus*), scarlet pimpernel (*Anagallis arvensis*), Russian-thistle, common burclover, sow thistles (*Sonchus* spp.), tocalote (*Centaurea melitensis*), shortpod mustard (*Hirschfeldia incana*), and sweet fennel (*Foeniculum vulgare*). Patches of escaped ornamental species including hottentot-fig, coppery mesembryanthemum, and crystal iceplant occur throughout areas mapped as ruderal. Isolated native and nonnative shrubs also occur in these areas.

Wildlife

The disturbed vegetation occurring on the majority of the project site is considered low-quality habitat for most native wildlife species. The westernmost portion of the parcel contains coastal bluff scrub that provides marginally suitable foraging, breeding, and sheltering habitat for native wildlife species. A total of 15 wildlife species were observed on or near the project site during the field survey: American crow (*Corvus brachyrhynchos*), northern mockingbird (*Mimus polyglottos*), western gull (*Larus occidentalis*), Heermann's gull (*Larus heermanni*), brown pelican (*Pelecanus occidentalis*), red-shouldered hawk (*Buteo lineatus*), Anna's hummingbird (*Calypte anna*), rufous/Allen's hummingbird (*Selasphorus rufus/sasin*), California towhee (*Melozone crissalis*), black phoebe (*Sayornis nigricans*), Say's phoebe (*Sayornis saya*), white-crowned sparrow (*Zonotrichia leucophrys*), western fence lizard (*Sceloporus occidentalis*), European honeybee (*Apis mellifera*), and California ground squirrel (*Otospermophilus beecheyi*). All of these species are commonly encountered in and around developed areas within Orange County.

Special-Status Species

Attachment D contains tables that identify those special-status plant and animal species known to occur or that potentially occur in the vicinity of the project site and includes detailed information about each species' habitat and distribution, activity period, State and federal status designations, and probability of occurrence within the construction footprint and associated fuel modification areas. These species were compiled from the CNPS and CNDDB records search from the eight USGS quadrangles surrounding the project site and from LSA's extensive knowledge and experience in the region.

As mentioned above, one special-status species—i.e., cliff spurge—was observed during the January and April 2020 field surveys. Figure 2 shows the locations of cliff spurge on site. No other special-status plant species were found to occur on site. While technically not considered "special-status" species, sparsely scattered (non-dominant) California box-thorn (*Lycium californicum*) and bushrue (*Cneoridium dumosum*) individuals, both of which are of local, distributional interest to the City and

are identified in the City's General Plan, were identified as present on site. However, given the limited abundance of these two species on site and their more abundant occurrence in local chaparral habitats, these species were not mapped and did not warrant further analysis or mitigation. No special-status animal species were determined to have a moderate or higher potential for occurrence on the project site, and none were observed or detected during either site survey.

Wetlands and Potential Jurisdictional Drainage Features

There are no records or maps of any wetlands, potentially jurisdictional waterbodies, riparian resources, or significant drainage courses within or adjoining the project area, and none were observed during the January or April 2020 site surveys. The Pacific Ocean, a jurisdictional navigable water of the United States, does occur to the west of the project site but is outside of the proposed project disturbance limits.

IMPACT FINDINGS

Vegetation and Habitat Impacts

The project construction activities would result in permanent direct impacts to coastal bluff scrub, disturbed encelia scrub, disturbed sage scrub-grassland, and ruderal habitats (Figure 3, Attachment A). This impact analysis is based on the current project design plans provided by Horst Architects and Landscape Architect Jim Dockstader. The permanent impact area shown on Figure 3 includes all areas corresponding to the proposed residential footprint (e.g., structures, hardscape) as well as associated irrigated landscape areas. Temporary impact areas shown on Figure 3 correspond to non-irrigated landscape areas where native plants (consisting of native plant species occurring on site) will be planted and established. Watering of the new plants in these temporary impact areas will be conducted manually and only as needed initially to establish the plants. The remainder of the project site (0.14 acre of coastal bluff scrub) will be preserved in place. Table B provides a summary of permanent and temporary impacts to vegetation types identified on the project site and identifies the vegetation (i.e., coastal bluff scrub) to be preserved in place. Due to the highly disturbed habitat quality and regionally isolated nature of the disturbed encelia scrub and disturbed sage scrub-grassland, permanent impacts to these habitat types are not expected to require mitigation.

Table B: Impacts to and Preservation of Vegetation and Land Cover Types within the Project Area

Vegetation/Land Cover Type	Permanent Impacts (ac.)	Temporary Impacts (ac.)	Preserved In Place (ac.)
Coastal Bluff Scrub	0.09	0.04	0.14
Disturbed Encelia Scrub	0.04	---	---
Disturbed Sage Scrub-Grassland Ecotone	0.02	---	---
Ruderal	0.21	0.02	---
Total Project Area	**0.36**	**0.06**	**0.14**

Source: Compiled by LSA (2023)

While the coastal bluff scrub existing on site is a "moderate value" habitat, it is also regionally isolated from other larger, contiguous habitat and open space areas. The habitat is degraded due to the prevalence of nonnative weeds and ornamental species. Because of the degraded and fragmented nature of the coastal bluff scrub existing on the project site, this habitat is considered low-quality habitat for most native wildlife species. Furthermore, the project as proposed would permanently impact only a small quantity of coastal bluff scrub (0.09 acre), and more than twice as much coastal bluff scrub (0.20 acre) will be either restored to equal or greater quality habitat or preserved in place. Therefore, permanent impacts to coastal bluff scrub are not expected to warrant mitigation.

In addition, it is anticipated that construction activities on site would result in temporary impacts to biological resources/habitats adjacent to permanent impact areas, as shown on Figure 3. However, in such cases the temporarily impacted areas, which correspond to non-irrigated landscape areas, would be restored in place to predisturbance conditions of equal or greater quality to avoid adverse impacts to these resources. This will involve the planting and establishment of additional native plant species (including cliff spurge, California box-thorn, bushrue, and other native species identified on the Landscape and Planting Plans) in these temporary impact areas.

Consistency with the Adopted Natural Community Conservation Plan/Habitat Conservation Plan

The project site is within the Orange County Central-Coastal Natural Community Conservation Plan/ Habitat Conservation Plan (NCCP/HCP) Planning Area. However, the City is not a signatory jurisdiction under the NCCP/HCP. Nonparticipating landowners within a nonsignatory jurisdiction in the Planning Area may satisfy the requirements of FESA and CESA with respect to potential incidental take of listed species in either of the following ways: (1) on-site avoidance of take; or (2) satisfaction of applicable FESA and CESA provisions under the consultation and permit provisions of these statutes (e.g., Section 10(a)(1)(B) of FESA or Section 2081(b) of the California Fish and Game Code, respectively).

The project site is not located within a designated NCCP/HCP Reserve Area or Existing Use Area, or otherwise restricted/conservation area. While cliff spurge is mentioned in the NCCP/HCP as a covered species, coverage for incidental take/management applies only to the Dana Point Headlands property. Therefore, the project is not anticipated to adversely impact any species covered under the NCCP/HCP or other regional/local plans. Thus, implementation of the proposed project would not conflict with any adopted State, regional, or local conservation plan, and no mitigation is required.

Coastal Zone

The proposed project site is located within the Coastal Zone. Therefore, through provisions of the California Coastal Act, the California Coastal Commission is empowered to issue a Coastal Development Permit for many projects located within the Coastal Zone. In areas where a local entity has a certified Local Coastal Program (LCP), the local entity (e.g., the City) can issue a Coastal Development Permit only if it is consistent with the LCP. The proposed project may require authorization under the City's LCP. However, there are no "high value" or "very high value" habitats or designated or proposed Environmentally Sensitive Habitat Areas (ESHAs) within the proposed project site limits. In addition, there are no significant drainages courses on site or within 100 ft of

the proposed project limits. Consequently, the proposed project would be considered consistent with the California Coastal Zone Act.

Special-Status Species

Cliff spurge was the only special-status species found to occur on the project site. While cliff spurge does have a California Rare Plant Rank of 2B.2 (considered rare, threatened, or endangered in California but more common elsewhere) by CNPS, this plant species is neither federally listed nor State-listed and is not proposed for either federal or State listing status. The proposed project would result in the permanent loss of 40 cliff spurge individuals out of a total of 45 individuals within the project area limits (see Figure 3). Although this would appear to be a substantial number of cliff spurge to be impacted, there are thousands of individuals throughout its known range. For instance, 3 other occurrences of cliff spurge along coastal Orange County support a cumulative total of approximately 1,600 individuals. The cliff spurge to be permanently impacted would represent only 2.5 percent cumulatively when taking just those 3 populations into consideration. When taking into consideration the cumulative number of cliff spurge individuals distributed throughout the species' known range in Southern California, this impact would not be considered substantial enough to this species to warrant mitigation. However, LSA nevertheless recommends that cliff spurge, as well as California box-thorn and bushrue (both of which are of local interest to the City of Laguna Beach), be added to the plant palette of the Landscape and Planting Plans as an impact minimization measure (see Bio-Measure #5, below).

Nesting Birds

The project site and immediate vicinity contain vegetation that provides suitable nesting habitat for a variety of native and migratory bird species. To ensure compliance with the Federal Migratory Bird Treaty Act and California Fish and Game Code Sections 3500–3516, preconstruction nesting bird surveys are recommended to occur prior to any vegetation clearing or construction activities planned to occur during the nesting bird season (February 15 through August 31). With successful implementation of the recommended impact avoidance and minimization measures (see below), impacts to nesting birds would be avoided.

Critical Habitat

No portion of the proposed project site is within designated or proposed critical habitat for any federally listed species. Thus, no impacts to critical habitat would result from project implementation, and no mitigation is required.

Wildlife Movement

Because the proposed project site is adjacent to existing residential developments outside of any known wildlife movement corridor, project implementation would not have a substantial impact on wildlife movement. No mitigation would be required.

Jurisdictional Waters

The proposed project would not result in direct impacts to any delineated jurisdictional waters on the project site. Indirect temporary effects on water quality could occur during construction. Such effects include a potential increase in erosion and sediment transport into adjacent or downstream aquatic areas. Chemical spills or leaks of fuel, transmission fluid, lubricating oil, or motor oil from

construction equipment could also contaminate waters and degrade their quality. These potential indirect effects to hydrology and water quality would be avoided or substantially minimized through the implementation of best management practices (BMPs), project design features, and a water quality management plan and/or a storm water pollution and prevention plan (if required). With successful implementation of the recommended impact avoidance and minimization measures (see below), adverse indirect impacts on water quality (from erosion, runoff, etc.) would be effectively avoided. In that case, no mitigation would be required.

RECOMMENDED IMPACT AVOIDANCE AND MINIMIZATION MEASURES

The following measures are recommended to avoid or minimize potential project-related impacts on adjacent native habitat, wildlife, water quality, and nesting birds during construction activities.

Bio-Measure #1: Invasive Species Control

Prior to ground disturbance and during construction activities, measures should be included to ensure that invasive plant material is not spread to areas outside the proposed project limits by tracking seed on equipment, clothing, and/or shoes. Equipment/material imported from an area where invasive plants exist must be identified, and measures (e.g., equipment cleaning) must be implemented to prevent importation and spreading of nonnative plant material within and outside the proposed project limits. All construction equipment accessing unpaved areas would be cleaned with water to remove dirt, seeds, vegetative material, or other debris that could contain or hold seeds of noxious weeds before arriving at and leaving the proposed project limits. Only certified weed-free straw, mulch, and/or fiber rolls would be used for erosion control.

Bio-Measure #2: Construction Site Housekeeping

A. Prior to ground disturbance, the Project Contractor should install adequate erosion and sedimentation barriers (e.g., silt fencing) at the project site boundaries to prevent any sediment-laden runoff or debris from reaching the coastal bluffs and Pacific Ocean located to the west of the project site.

B. The project disturbance limits should be clearly marked with construction fencing (or other highly visible material), and vehicle/equipment maintenance and fueling areas should be located at least 100 ft away from the western project site boundaries.

C. To prevent inadvertent entrapment of animals during the construction phase of the proposed project, all excavated, steep-walled holes or trenches more than 2 ft deep should be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen fill or wooden planks should be installed. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals. In the case of trapped animals, escape ramps or structures should be installed immediately to allow the animal(s) to escape.

D. For the duration of construction activities, all food-related trash items such as wrappers, cans, bottles, and food scraps should be disposed of in securely closed containers and removed at least daily from the construction site.

E. Use of rodenticides and herbicides in project sites should be restricted. This is necessary to prevent primary or secondary poisoning of predators and the depletion of prey populations on which they depend. All uses of such compounds should observe label and other restrictions mandated by the United States Environmental Protection Agency, California Department of Food and Agriculture, and other State and federal legislation.

Construction site housekeeping measures would effectively minimize temporary construction effects on biological resources by limiting construction equipment and personnel from entering areas where wildlife may be impacted; limiting the potential for erosion, fuel, or chemical spills that could adversely impact water quality and adjacent aquatic habitats; reducing the likelihood of attracting or introducing predators of special-status species; and preventing the primary or secondary poisoning of wildlife in the project vicinity.

Bio-Measure #3: Preconstruction Nesting Bird Surveys and Active Nest Avoidance Buffers

If vegetation removal, construction, or grading activities are planned to occur within the active nesting bird season (February 15 through August 31), a qualified biologist should conduct a preconstruction nesting bird survey no more than 3 days prior to the start of such activities. The nesting bird survey should include the project site and areas immediately adjacent to the site that could potentially be affected by project-related activities such as noise, vibration, increased human activity, and dust. If active bird nests are found within areas that could be directly or indirectly impacted by project-related activities, the qualified biologist should establish an appropriate buffer zone around the active nest(s). The appropriate buffer should be determined by the qualified biologist based on species, location, and the nature of the proposed activities. Project activities should be avoided within the buffer zone until the nest is deemed no longer active by the qualified biologist.

Bio-Measure #4: Restoration of Temporary Impact Areas

Where construction activities on site would result in temporary impacts to biological resources/ habitats adjacent to permanent impact areas, the temporarily impacted areas, which correspond to non-irrigated landscape areas, would be restored in place to predisturbance conditions of equal or greater quality in order to avoid adverse impacts to these resources. This includes the restoration of 0.02 acre of ruderal habitat to coastal bluff scrub and the enhancement, or improvement, of 0.04 acre of coastal bluff scrub by augmenting the existing conditions with a variety of native species that occur on site, including cliff spurge, California box-thorn, bushrue, and other native species identified on the Landscape and Planting Plans.

Bio-Measure #5: Add Select Plants to Landscape and Planting Plans

To offset any potential impacts to cliff spurge, California box-thorn, and bushrue, these three species would be added to the plant palette identified on the Landscape and Planting Plans for the proposed project.

CONCLUSION

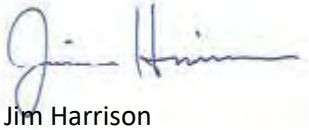
The project site consists of ruderal and disturbed vegetation, as well as some “moderate value” coastal bluff scrub. Project construction would result in minor impacts to coastal bluff scrub and would primarily occur on presently disturbed areas. Cliff spurge, a special-status plant species with a

CNPS California Rare Plant Rank of 2B.2, exists within areas mapped as coastal bluff scrub; however, while the permanent loss of 40 cliff spurge individuals would not be considered substantial enough to warrant mitigation in this case, LSA recommends an impact minimization measure to add cliff spurge and two species of local interest (i.e., California box-thorn and bushrue) to the plant palette on the Landscape and Planting Plans. With the implementation of recommended impact avoidance and minimization measures, potential project-related effects on plants, wildlife, nesting birds, and water quality would be avoided or minimized to the extent practicable. If substantive project design changes occur to the current plans, additional biological resources studies may be warranted to accurately assess the scope of impacts and/or site conditions.

If you have any questions regarding the contents of this letter report, please contact Jim Harrison at (949) 553-0666 or via email at jim.harrison@lsa.net.

Sincerely,

LSA Associates, Inc.



Jim Harrison
Senior Biologist

Attachments: A: Figures 1 through 3
B: Vascular Plant Species Observed
C: Representative Site Photographs
D: Summary of Special-Status Species

ATTACHMENT A

FIGURES 1 THROUGH 3



LSA

LEGEND

Project Location

FIGURE 1

N

0 1000 2000

FEET

31451 Coast Highway

Project Location

SOURCE: USGS 7.5' Quad - *Dana Point* (1975), *Laguna Beach* (1981), *San Juan Capistrano* (1981), CA

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LSA

FIGURE 2

LEGEND

Project Location

Special-Status Plants

Euphorbia misera (Multiple Plants)

Euphorbia misera (Single Plant)

Vegetation Type

Coastal Bluff Scrub

Disturbed Encelia Scrub

Disturbed Sage Scrub-Grassland

Ruderal

N

0 25 50

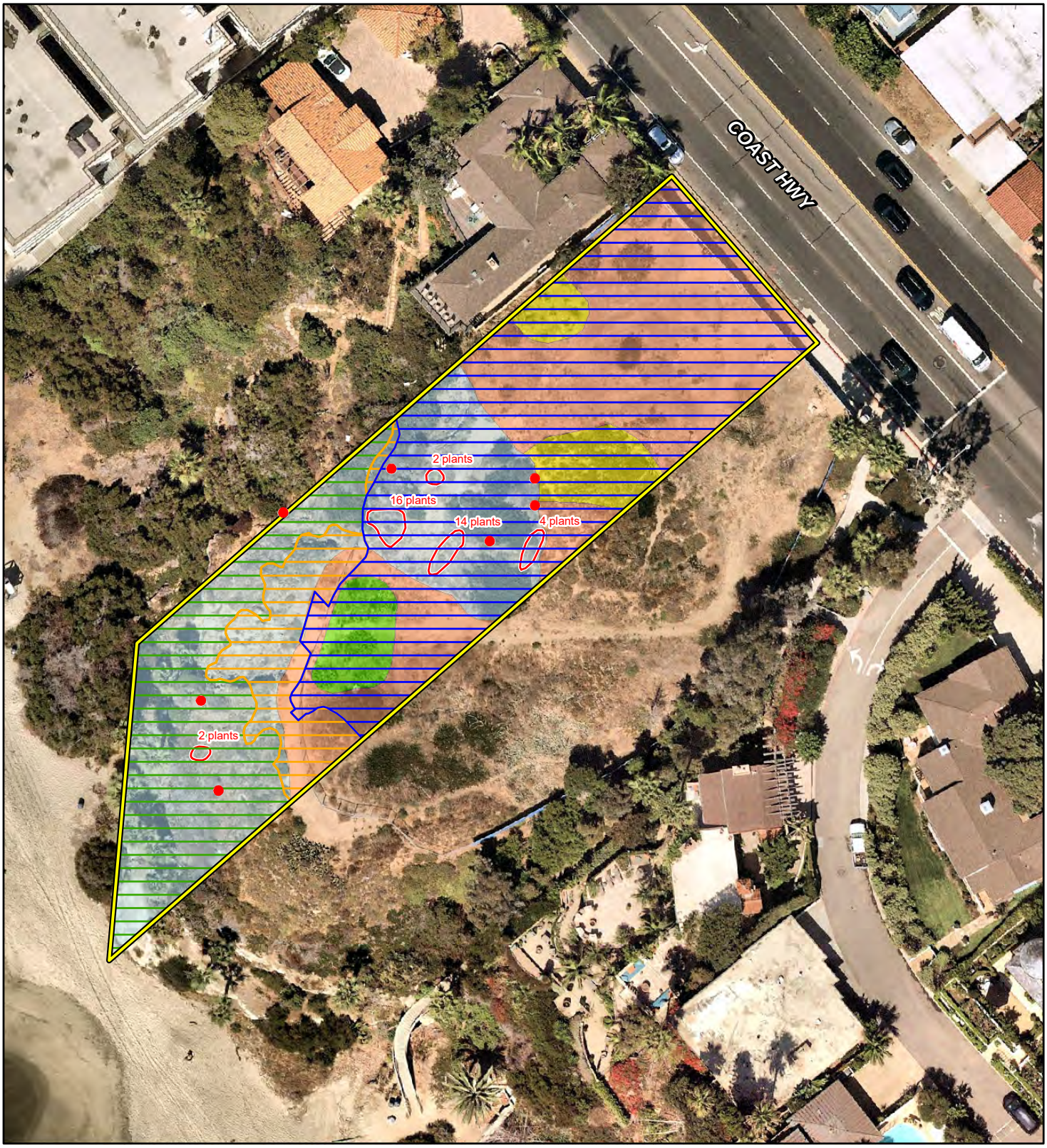
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31451 Coast Highway

Vegetation Types and Special-Status Plant Occurrences

SOURCE: Nearmap (9/30/2019)

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LSA

FIGURE 3

LEGEND

Project Location

Permanent Impact Area

Temporary Impact Area (Native Vegetation Planting)

Conditions/Resources Preserved in Place

Special-Status Plants

Euphorbia misera (Multiple Plants)

Euphorbia misera (Single Plant)

Vegetation Type

Coastal Bluff Scrub

Disturbed Encelia Scrub

Disturbed Sage Scrub-Grassland

Ruderal

N

0 25 50

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SOURCE: Nearmap (9/30/2019)

31451 Coast Highway

Impacts to Vegetation Types and Special-Status Plant Occurrences

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ATTACHMENT B

VASCULAR PLANT SPECIES OBSERVED

VASCULAR PLANT SPECIES OBSERVED

The following vascular plant species were observed in the specified study area by LSA biologists.
* introduced species not native to California

FERNS

Pteridaceae		**Brake Family**
	Adiantum capillus-veneris	Southern maiden-hair

EUDICOTS

Aizoaceae		**Iceplant Family**
*	*Carpobrotus edulis*	Hottentot-fig
*	*Malephora crocea*	Coppery mesembryanthemum
*	*Mesembryanthemum crystallinum*	Crystal iceplant
*	*Tetragonia tetragonioides*	New Zealand spinach
Anacardiaceae		**Sumac Family**
	Malosma laurina	Laurel sumac
	Rhus integrifolia	Lemonade berry
Apiaceae		**Carrot Family**
*	*Foeniculum vulgare*	Sweet fennel
*	*Petroselinum crispum*	Parsley
Apocynaceae		**Dogbane Family**
*	*Carissa macrocarpa*	Natal plum
Asteraceae		**Sunflower Family**
	Artemisia californica	California sagebrush
*	*Centaurea melitensis*	Tocalote
	Encelia californica	California encelia
	Erigeron canadensis	Common horseweed
	Isocoma menziesii var. vernonioides	Coastal goldenbush
	Laennecia coulteri	Coulter's horseweed
	Logfia filaginoides	California filago
*	*Pulicaria paludosa*	Spanish sunflower
	Pseudognaphalium lutealbum	Weedy cudweed
*	*Sonchus arvensis*	Perennial sow-thistle
*	*Sonchus asper ssp. asper*	Prickly sow-thistle
*	*Sonchus oleraceus*	Common sow-thistle

Boraginaceae		**Borage Family**
	Eucrypta chrysanthemifolia var. chrysanthemifolia	Common eucrypta
Brassicaceae		**Mustard Family**
*	*Brassica nigra*	Black mustard
*	*Hirschfeldia incana*	Shortpod mustard
*	*Lepidium didymum*	Lesser wart-cress
	Lepidium nitidum var. nitidum	Shining peppergrass
*	*Sisymbrium irio*	London rocket
Cactaceae		**Cactus Family**
	Opuntia littoralis	Coastal prickly pear
Chenopodiaceae		**Goosefoot Family**
*	*Atriplex semibaccata*	Australian saltbush
*	*Chenopodium album*	Lamb's quarters
*	*Salsola tragus*	Russian-thistle
Cleomaceae		**Spiderflower Family**
	Peritoma arborea	Bladderpod
Crassulaceae		**Stonecrop Family**
*	*Cotyledon orbiculata*	Pig's ear
	Crassula connata	Sand pygmy-stonecrop
*	*Crassula ovata*	Jade plant
	Dudleya lanceolata	Lance-leaved dudleya
Cucurbitaceae		**Gourd Family**
	Cucurbita foetidissima	Calabazilla
	Marah macrocarpus	Wild cucumber
Euphorbiaceae		**Spurge Family**
*	*Chamaesyce maculata*	Spotted spurge
	Euphorbia misera	Cliff spurge
Fabaceae		**Legume Family**
*	*Acacia longifolia*	Sydney golden wattle
*	*Acacia sp.*	Acacia
	Acmispon glaber	Coastal deerweed
*	*Medicago polymorpha*	Common burclover
*	*Melilotus indicus*	Sourclover

Geraniaceae		**Geranium Family**
*	*Erodium cicutarium*	Redstem filaree
*	*Erodium moschatum*	Greenstem filaree
Malvaceae		**Mallow Family**
*	*Malva parviflora*	Cheeseweed
Montiaceae		**Miner's Lettuce Family**
	Calandrinia ciliata	Red maids
Myrsinaceae		**Myrsine Family**
*	*Anagallis arvensis*	Scarlet pimpernel
Nyctaginaceae		**Four O'clock Family**
	Mirabilis laevis var. *crassifolia*	California wishbone bush
Oxalidaceae		**Oxalis Family**
*	*Oxalis pes-caprae*	Bermuda buttercup
*	*Oxalis sp.*	Pink wood-sorrel
Plantaginaceae		**Plantain Family**
	Antirrhinum nuttallianum ssp. *nuttallianum*	Nuttall's snapdragon
Polygonaceae		**Buckwheat Family**
	Eriogonum fasciculatum	California buckwheat
	Eriogonum parvifolium	Seacliff wild buckwheat
Rutaceae		**Rue Family**
	Cneoridium dumosum	Bushrue
Scrophulariaceae		**Figwort Family**
*	*Myoporum laetum*	Myoporum
Solanaceae		**Nightshade Family**
	Lycium californicum	California box-thorn
*	*Nicotiana glauca*	Tree tobacco
	Solanum douglasii	Douglas' nightshade
MONOCOTS		
Agavaceae		**Century Plant Family**
*	*Yucca gigantea*	Spineless yucca
Arecaceae		**Palm Family**
*	*Washingtonia robusta*	Mexican fan palm

Poaceae		**Grass Family**
*	*Avena barbata*	Slender wild oat
*	*Avena fatua*	Wild oat
*	*Brachypodium distachyon*	Purple false brome
*	*Bromus diandrus*	Ripgut grass
*	*Bromus madritensis ssp. rubens*	Red brome
*	*Cortaderia selloana*	Pampas grass
	Distichlis spicata	Salt grass
*	*Eleusine indica*	Goose grass
*	*Hordeum murinum ssp. leporinum*	Hare barley
*	*Indocalamus tessellatus*	Large-leaved bamboo
	Melica imperfecta	little California melica
*	*Polypogon monspeliensis*	Rabbitfoot grass
*	*Schismus barbatus*	Mediterranean grass
Themidaceae		**Brodiaea Family**
	Dichelostemma capitatum ssp. *capitatum*	Blue dicks

ATTACHMENT C

REPRESENTATIVE SITE PHOTOGRAPHS



1. View of ruderal vegetation at the northern end of the parcel, looking north. This area will be permanently impacted during construction under preliminary site plans. April 20, 2020.



2. View of disturbed encelia scrub located at the northern end of the parcel, looking north. This area will be permanently impacted during construction under preliminary site plans. January 14, 2020.

31451 Coast Highway
Biological Resources Assessment
Representative Site Photographs



3. View of disturbed sage scrub-grassland ecotone located at the southern end of the parcel, looking south. A portion of this vegetation type will be permanently impacted during construction under preliminary site plans. January 14, 2020.



4. View of coastal bluff scrub located at the center of the parcel, containing cliff spurge individuals, looking north. Portions of the coastal bluff scrub habitat will be permanently impacted during construction under preliminary site plans. January 14, 2020.



5. Several cliff spurge individuals within area mapped as coastal bluff scrub. These cliff spurge individuals will be permanently impacted during construction under preliminary site plans. January 14, 2020.



6. View of coastal bluff scrub located at the western edge of the parcel, looking north. This area will not be impacted during construction under preliminary site plans. January 14, 2020.

ATTACHMENT D

SUMMARY OF SPECIAL-STATUS SPECIES

Table D-1: Special-Status Plant Species Identified as Potentially Occurring or Known to Occur in the Project Vicinity

Common Name	Scientific Name	Status	General Habitat Description	Flowering Period	Likelihood of Occurrence
Aphanisma	*Aphanisma blitoides*	US: – CA: – CNPS: 1B.2 NCCP: NC	Annual herb. Occurs on sandy or clay soils on slopes or bluffs near the ocean, usually in coastal bluff scrub, coastal dunes, or coastal scrub, below 1,000 ft in elevation.	March–June	**Low to Moderate**. There are known occurrences in the general vicinity of the project site and some suitable habitat in the project site.
Coulter's saltbush	*Atriplex coulteri*	US: – CA: – CNPS: 1B.2 NCCP: NC	Perennial herb. Occurs in coastal bluff scrub, coastal dunes, coastal scrub, and valley and foothill grasslands, usually on ocean bluffs and ridge tops in alkaline or clay soils, from 10 to 1,510 ft in elevation.	March–October	**Low to Moderate**. There are known occurrences in the general vicinity of the project site and some suitable habitat in the project site.
South coast saltscale	*Atriplex pacifica*	US: – CA: – CNPS: 1B.2 NCCP: NC	Annual herb. Is found on alkaline soils in coastal scrub, coastal dunes, coastal playas, and coastal bluff scrub habitats below 460 ft in elevation.	March–October	**Low to Moderate**. There are known occurrences in the general vicinity of the project site and some suitable habitat in the project site.
Parish's brittlescale	*Atriplex parishii*	US: – CA: – CNPS: 1B.1 NCCP: NC	Annual herb. Occurs on alkaline soils in playas, vernal pools, and chenopod scrub habitats, from 82 to 6,235 ft in elevation.	June–October	**Not Expected.** While there are known occurrences in the general vicinity of the project site, suitable habitat is absent from the site.
Davidson's saltscale	*Atriplex serenana* var. *davidsonii*	US: – CA: – CNPS: 1B.2 NCCP: NC	Annual herb. Is found on alkaline soils in coastal bluff scrub and coastal scrub up to 657 ft in elevation.	April–October	**Low to Moderate**. There are known occurrences in the general vicinity of the project site and some suitable habitat in the project site.
Thread-leaved brodiaea	*Brodiaea filifolia*	US: FT CA: CE CNPS: 1B.1 NCCP: NC	Perennial herb (bulb). Occurs usually on clay soils or is associated with vernal pools or alkaline flats; is occasionally in vernally moist sites in fine soils (clay loam, silt loam, fine sandy loam, loam, or loamy fine sand). Is typically associated with needlegrass or alkali grassland or vernal pools. Occurs from 80 to 3,700 ft in elevation.	March–June	**Not Expected.** While there is one known occurrence in the general vicinity of the project site, suitable habitat is absent from the site.
Intermediate mariposa lily	*Calochortus weedii* var. *intermedius*	US: – CA: – CNPS: 1B.2 NCCP: C	Perennial herb (bulb). Occurs in dry, open rocky slopes and rock outcrops in chaparral, CSS, and grassland, from 340 to 2,800 ft in elevation.	May–July	**Low**. There are known occurrences in the general vicinity of the project site; however, suitable habitat in the project site is marginal.

Table D-1: Special-Status Plant Species Identified as Potentially Occurring or Known to Occur in the Project Vicinity

Common Name	Scientific Name	Status	General Habitat Description	Flowering Period	Likelihood of Occurrence
Lewis' evening-primrose	*Camissoniopsis lewisii*	US: – CA: – CNPS: 3 NCCP: NC	Annual herb. Occurs in sandy or clay areas in coastal scrub, grassland, and woodland below 1,000 ft elevation. In California, is known only from Los Angeles and San Diego Counties. Is believed extirpated from Orange County. Also occurs in Mexico.	March–June	**Not Expected.** There are no known occurrences in the project vicinity, and this species is believed to be extirpated from Orange County.
Southern tarplant	*Centromadia parryi* ssp. *australis*	US: – CA: – CNPS: 1B.1 NCCP: NC	Occurs in vernally wet areas such as edges of marshes and vernal pools; at edges of roads and trails; and in other areas of compacted, poorly drained, or alkaline soils where competition from other plants is limited, often due to disturbance, below 425 m (1,400 ft) elevation. In California, is known only from Santa Barbara, Ventura, Los Angeles, Orange, and San Diego Counties. Also occurs in Mexico.	May–November	**Low to Moderate**. While there are no known occurrences in the project vicinity, some suitable habitat is present in the project site.
Orcutt's pincushion	*Chaenactis glabriuscula* var. *orcuttiana*	US: – CA: – CNPS: 1B.1 NCCP: NC	Annual herb. Occurs in sandy areas of coastal bluff scrub and coastal sand dunes below 300 ft in elevation. In California, is known only from Los Angeles, Orange (believed extirpated), San Diego, and Ventura Counties.	January–August	**Low**. There is a known historic (1931) occurrence in the general vicinity of the project site; however, this species is believed to be extirpated in Orange County.
Long-spined spineflower	*Chorizanthe polygonoides* var. *longispina*	US: – CA: – CNPS: 1B.2 NCCP: NC	Annual herb. Occurs in chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, and vernal pools, often in clay soils, from 98 to 5,020 ft in elevation.	April–July	**Low.** There are no known occurrences within the vicinity of the project site, and suitable habitat in the project site is marginal.
San Miguel savory	*Clinopodium chandleri*	US: – CA: – CNPS: 1B.2 NCCP: NC	Perennial shrub. Occurs on rocky, gabbroic, or metavolcanic soils within chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland, from 390 to 3,530 ft in elevation.	March–July	**Not expected.** There are no known occurrences within the vicinity of the project site, and the site is out of this species' elevation range.
Summer holly	*Comarostaphylis diversifolia* ssp. *diversifolia*	US: – CA: – CNPS: 1B.1 NCCP: NC	Perennial Shrub. Occurs in chaparral or cismontane woodland, from 100 to 2,600 ft in elevation. In California, is known only from Orange, Riverside, Santa Barbara, and San Diego Counties.	April–June	**Absent.** There are known occurrences in the general vicinity of the project site; however, this conspicuous shrub would have been observed if present.

Table D-1: Special-Status Plant Species Identified as Potentially Occurring or Known to Occur in the Project Vicinity

Common Name	Scientific Name	Status	General Habitat Description	Flowering Period	Likelihood of Occurrence
Slender-horned spineflower	*Dodecahema leptoceras*	US: FE CA: CE CNPS: 1B.1 NCCP: NC	Annual herb. Occurs on sandy soils within chaparral, cismontane woodland, or coastal scrub from 600 to 2,500 ft in elevation.	April–June	**Not Expected.** There are no known occurrences within the vicinity of the project site, and the site is out of this species' elevation range.
Blochman's dudleya	*Dudleya blochmaniae* ssp. *blochmaniae*	US: – CA: – CNPS: 1B.2 NCCP: NC	Perennial herb. Occurs in dry rocky places, often on clay or serpentine, in chaparral, CSS, or grassland, below 1,500 ft in elevation.	May–June	**Low to Moderate**. There are known occurrences in the general vicinity of the project site and some suitable habitat in the project site.
Santa Monica dudleya	*Dudleya cymosa* ssp. *ovatifolia*	US: FT CA: – CNPS: 1B.1 NCCP: NC	Perennial herb. Occurs on volcanic or sedimentary rocky soils within chaparral or coastal scrub, from 490 to 5,500 ft in elevation.	March–June	**Not Expected.** There are no known occurrences within the vicinity of the project site, and the site is out of this species' elevation range.
Many-stemmed dudleya	*Dudleya multicaulis*	US: – CA: – CNPS: 1B.2 NCCP: NC	Perennial herb. Occurs in chaparral, coastal scrub, and valley and foothill grassland, usually in heavy, often clayey soils, from 45 to 2,370 ft in elevation.	April–July	**Low**. There are known occurrences in the general vicinity of the project site; however, suitable habitat in the project site is marginal.
Laguna Beach dudleya	*Dudleya stolonifera*	US: FT CA: CT CNPS: 1B.1 NCCP: C	Perennial herb. Occurs in rocky areas (generally north-facing sandstone cliffs), from 30 to 850 ft in elevation. Is known only from Orange County, California, near Laguna Beach, with most occurrences in Laguna Canyon west of SR-73.	May–July	**Not Expected.** While there are known occurrences in the vicinity of the project site, suitable habitat is absent from the project site.
Sticky dudleya	*Dudleya viscida*	US: – CA: – CNPS: 1B.2 NCCP: NC	Perennial herb. Occurs in rocky areas within coastal bluff scrub, chaparral, cismontane woodland, and coastal scrub, from 30 to 1,805 ft in elevation.	May–June	**Low.** There are no known occurrences within the vicinity of the project site, and suitable habitat in the project site is marginal.
Pendleton button-celery	*Eryngium pendletonense*	US: – CA: – CNPS: 1B.1 NCCP: NC	Perennial herb. Occurs on clay, vernally mesic soils within coastal bluff scrub, valley and foothill grassland, and vernal pools, from 50 to 360 ft in elevation.	April–June (July)	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
Cliff spurge	*Euphorbia misera*	US: – CA: – CNPS: 2B.2 NCCP: C	Shrub. Occurs in rocky sites within coastal bluff scrub, CSS, and Mojavean desert scrub, from 30 to 1,600 ft in elevation. In California, is known only from the Channel Islands, coastal Orange and San Diego Counties, and Riverside County deserts.	December–August	**Present**. This species was observed on the project site during the January and April 2020 field surveys. There were a total of 45 individuals present on site.

Table D-1: Special-Status Plant Species Identified as Potentially Occurring or Known to Occur in the Project Vicinity

Common Name	Scientific Name	Status	General Habitat Description	Flowering Period	Likelihood of Occurrence
Los Angeles sunflower	*Helianthus nuttallii* ssp. *parishii*	US: – CA: – CNPS: 1A NCCP: NC	Perennial herb. Occurs in natural springs in riparian woodland at about 300 m (1,000 ft) in elevation. Is known only from a single occurrence in the Santa Clara River near Newhall, Los Angeles County.	August–October	**Not Expected.** There are no known occurrences in the project vicinity, and suitable habitat is absent from the project site.
Tecate cypress	*Hesperocyparis forbesii*	US: – CA: – CNPS: 1B.1 NCCP: C	Evergreen tree. Is found in closed-cone coniferous forest and chaparral at elevations from 255 to 1,500 m (800 to 5,000 ft). In California, is known from Orange and San Diego Counties. Also occurs in Mexico.	Year-round	**Absent.** There are no known occurrences within the vicinity of the project site, and the site is out of this species' elevation range. Moreover, this conspicuous tree would have been observed if present.
Bobtail barley	*Hordeum intercedens*	US: – CA: – CNPS: 3.2 NCCP: NC	Annual herb. Occurs in coastal dunes, coastal scrub, valley and foothill grassland (saline flats and depressions), and vernal pools, from 15 to 3,280 ft in elevation.	March–June	**Low.** There are no known occurrences within the vicinity of the project site, and suitable habitat in the project site is marginal.
Mesa horkelia	*Horkelia cuneata* var. *puberula*	US: – CA: – CNPS: 1B.1 NCCP: NC	Perennial herb. Occurs on sandy and gravelly soils in chaparral, cismontane woodland, and coastal scrub habitats, from 230 to 2,658 ft in elevation.	February–September	**Low.** While there are known occurrences within the vicinity of the project site, suitable habitat in the project site is marginal.
California satintail	*Imperata brevifolia*	US: – CA: – CNPS: 2B.1	Perennial rhizomatous herb. Occurs on mesic soils within chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps (often alkali), and riparian scrub, from 0 to 3,400 ft in elevation.	September–May	**Low.** There are no known occurrences within the vicinity of the project site, and suitable habitat in the project site is marginal.
Decumbent goldenbush	*Isocoma menziesii* var. *decumbens*	US: – CA: – CNPS: 1B.2 NCCP: NC	Occurs on sandy soils, often in disturbed areas, in coastal scrub and chaparral from 30 to 440 ft in elevation. Is known from mainland Orange and San Diego Counties and from San Clemente and Santa Catalina Islands in California.	April–November	**Low to Moderate**. There are no known occurrences within the vicinity of the project site, and suitable habitat in the project site is marginal.
Coulter's goldfields	*Lasthenia glabrata* ssp. *coulteri*	US: – CA: – CNPS: 1B.1 NCCP: NC	Annual herb. Occurs in marshes and swamps, playas, and vernal pools up to 4,000 ft in elevation.	February–June	**Not Expected**. There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.

Table D-1: Special-Status Plant Species Identified as Potentially Occurring or Known to Occur in the Project Vicinity

Common Name	Scientific Name	Status	General Habitat Description	Flowering Period	Likelihood of Occurrence
Heart-leaved pitcher sage	*Lepechinia cardiophylla*	US: – CA: – CNPS: 1B.2 NCCP: C	Perennial herb. Occurs in closed-cone coniferous forest, chaparral, and cismontane woodland, from 550 to 1,370 m (1,800 to 4,500 ft) in elevation. Occurs in the Santa Ana Mountains in Riverside and Orange Counties. Also is reported from San Diego County and Baja California.	April–July	**Not Expected.** There are no known occurrences within the vicinity of the project site, and the site is out of this species' elevation range.
Santa Catalina Island desert-thorn	*Lycium brevipes* var. *hassei*	US: – CA: – CNPS: 3.1 NCCP: NC	Perennial deciduous shrub. Occurs in coastal bluff scrub and coastal scrub, from 210 to 985 ft in elevation.	June (August)	**Absent.** There are no known occurrences within the vicinity of the project site, and this shrub was not observed on site.
Intermediate monardella	*Monardella hypoleuca* ssp. *intermedia*	US: – CA: – CNPS: 1B.3 NCCP: NC	Perennial rhizomatous herb. Usually occurs in the understory within chaparral, cismontane woodland, and lower montane coniferous forest (sometimes), from 1,310 to 4,100 ft in elevation.	April–September	**Not Expected.** There are no known occurrences within the vicinity of the project site, and the site is out of this species' elevation range.
Felt-leaved monardella	*Monardella hypoleuca* ssp. *lanata*	US: – CA: – CNPS: 1B.2 NCCP: NC	Occurs in chaparral and cismontane woodland from 300 to 1,575 m (1,000 to 5,200 ft) in elevation. Is known from the Peninsular Ranges in Orange and San Diego Counties and from northern Baja California.	June–August	**Not Expected.** There are no known occurrences within the vicinity of the project site, and the site is out of this species' elevation range.
Hall's monardella	*Monardella macrantha* ssp. *hallii*	US: – CA: – CNPS: 1B.3 NCCP: NC	Perennial herb. Occurs in dry slopes and ridges in openings in chaparral, woodland, and forest at 695 to 2,195 m (2,280 to 7,200 ft) elevation. Is known only from Los Angeles, San Diego, Orange, Riverside, and San Bernardino Counties, California.	June–October	**Not Expected.** There are no known occurrences within the vicinity of the project site, and the site is out of this species' elevation range.
Little mousetail	*Myosurus minimus* ssp. *apus*	US: – CA: – CNPS: 3.1 NCCP: NC	Annual herb. Occurs in valley and foothill grassland and vernal pools (alkaline), from 65 to 2,100 ft in elevation.	March–June	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
Mud nama	*Nama stenocarpa*	US: – CA: – CNPS: 2B.2 NCCP: NC	Occurs in lake shores, riverbanks, and similar intermittently wet areas, from 20 to 1,600 ft in elevation. Is known in California from San Diego, Orange, and Riverside Counties and from San Clemente Island.	January–July	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.

Table D-1: Special-Status Plant Species Identified as Potentially Occurring or Known to Occur in the Project Vicinity

Common Name	Scientific Name	Status	General Habitat Description	Flowering Period	Likelihood of Occurrence
Gambel's water cress	*Nasturtium gambelii*	US: FE CA: CT CNPS: 1B.1 NCCP: NC	Occurs in marshes from 5 to 330 m (20 to 1,100 ft) elevation. Currently is believed to occur in California only in Santa Barbara and San Luis Obispo Counties. There are historical records from Los Angeles, Orange, and San Bernardino Counties. Also occurs in Baja California.	April–September	**Absent.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
Prostrate vernal pool navarretia	*Navarretia prostrata*	US: – CA: – CNPS: 1B.1 NCCP: NC	Annual herb. Occurs on mesic soils in coastal scrub, meadows and seeps, vernal pools, and valley and foothill grassland habitats up to 3,970 ft in elevation.	April–July	**Not Expected.** While there are known occurrences within the vicinity of the project site, suitable habitat is absent from the project site.
Chaparral nolina	*Nolina cismontane*	US: – CA: – CNPS: 1B.2 NCCP: NC	Perennial evergreen shrub. Occurs on sandstone or gabbro within chaparral and coastal scrub, from 460 to 4,185 ft in elevation.	(March) May–July	**Absent.** There are no known occurrences within the vicinity of the project site, and this conspicuous shrub was not observed during surveys.
Allen's pentachaeta	*Pentachaeta aurea* ssp. *allenii*	US: – CA: – CNPS: 1B.1 NCCP: NC	Occurs in grasslands and openings in coastal scrub, from 250 to 1,700 ft in elevation. Is known only from Orange County, California.	March–June	**Low**. There are known occurrences in the general vicinity of the project site; however, suitable habitat in the project site is marginal.
Santiago Peak phacelia	*Phacelia keckii*	US: – CA: – CNPS: 1B.3 NCCP: NC	Annual herb. Occurs in closed-cone coniferous forest and chaparral in elevations from 545 to 1,600 m (1,800 to 5,200 ft). Is known from Orange and Riverside Counties.	May–June	**Not Expected.** There are no known occurrences within the vicinity of the project site, and the site is out of this species' elevation range.
South coast branching phacelia	*Phacelia ramosissima* var. *austrolitoralis*	US: – CA: – CNPS: 3.2 NCCP: NC	Perennial herb. Occurs on sandy, sometimes rocky soils within chaparral, coastal dunes, coastal scrub, and marshes and swamps (coastal salt), from 15 to 985 ft in elevation.	March–August	**Low.** There are no known occurrences within the vicinity of the project site, and suitable habitat in the project site is marginal.
White rabbit-tobacco	*Pseudognaphalium leucocephalum*	US: – CA: – CNPS: 2B.2 NCCP: NC	Occurs in sand and gravel at the edges of washes or mouths of steep canyons up to 7,000 ft in elevation. In California, is known from Los Angeles, Orange, Riverside, Santa Barbara, San Diego, San Luis Obispo, and Ventura Counties.	August–November	**Low.** There are known occurrences in the general vicinity of the project site; however, suitable habitat in the project site is generally absent.

Table D-1: Special-Status Plant Species Identified as Potentially Occurring or Known to Occur in the Project Vicinity

Common Name	Scientific Name	Status	General Habitat Description	Flowering Period	Likelihood of Occurrence
Nuttall's scrub oak	*Quercus dumosa*	US: – CA: – CNPS: 1B.1 NCCP: C	Perennial shrub. Occurs on sandy and clay loam soils near the coast within closed-cone coniferous forest, chaparral, and coastal scrub from 50 to 1,300 ft in elevation. In California, is known only from western Orange, Santa Barbara, and San Diego Counties.	Year-round	**Absent**. There are known occurrences in the general vicinity of the project site; however, suitable habitat in the project site is marginal. This conspicuous shrub was not observed on site during either of the surveys.
California groundsel	*Senecio aphanactis*	US: – CA: – CNPS: 2B.2 NCCP: NC	Annual herb. Sometimes occurs on alkaline soils. Occurs in chaparral, cismontane, and coastal scrub habitats, from 50 to 2,625 ft in elevation.	January–April	**Low to Moderate**. There are known occurrences in the general vicinity of the project site; however, suitable habitat in the project site is marginal.
Salt spring checkerbloom	*Sidalcea neomexicana*	US: – CA: – CNPS: 2B.2 NCCP: NC	Perennial herb. Occurs on alkaline, mesic soils within chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, and playas, from 50 to 5,020 ft in elevation.	March–June	**Low.** There are no known occurrences within the vicinity of the project site, and suitable habitat in the project site is marginal.
Estuary sea-blite	*Suaeda esteroa*	US: – CA: – CNPS: 1B.2 NCCP: NC	Perennial herb. Is found in coastal marshes and swamps up to 17 ft in elevation.	May–January	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
San Bernardino aster	*Symphyotrichum defoliatum*	US: – CA: – CNPS: 1B.2 NCCP: NC	Perennial herb. Occurs in vernally wet sites (such as ditches, streams, and springs) in many plant communities below 2,040 m (6,700 ft) in elevation. In California, is known from Ventura, Kern, San Bernardino, Los Angeles, Orange, Riverside, and San Diego Counties. May also occur in San Luis Obispo County.	July–November	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
Parry's tetracoccus	*Tetracoccus dioicus*	US: – CA: – CNPS: 1B.2 NCCP: NC	Perennial deciduous shrub. Occurs in chaparral and coastal scrub, from 540 to 3,280 ft in elevation.	April–May	**Absent.** There are no known occurrences within the vicinity of the project site, and the site is out of this species' elevation range. This conspicuous shrub was not observed on site during either of the site surveys.

Table D-1: Special-Status Plant Species Identified as Potentially Occurring or Known to Occur in the Project Vicinity

Common Name	Scientific Name	Status	General Habitat Description	Flowering Period	Likelihood of Occurrence
Crownbeard	*Verbesina dissita*	US: FT CA: CT CNPS: 1B.1 NCCP: NC	Occurs in steep, rocky, primarily north-facing slopes in maritime chaparral from 150 to 675 ft in elevation within 1.5 mi of the ocean, and rarely in CSS near the bottoms of south-facing slopes opposite north-facing slopes of maritime chaparral. Is known only from Orange County in the central and southern areas of Laguna Beach, and from Baja California.	April–July	**Not Expected**. There are known occurrences within the vicinity of the project site and some suitable habitat in the project area. However, this shrubby perennial was not observed on site during the April 2020 survey when nearby reference populations had blooming individuals.

Status: Federal Endangered (FE), Federal Threatened (FT), Federal Candidate (FC), Federal Proposed (FP, FPE, FPT), Federal Delisted (FD), California Endangered (CE), California Threatened (CT), California Species of Special Concern (SSC), California Fully Protected Species (CFP), California Special Plant (CSP), California Special Animal (CSA), NCCP/HCP Covered Species (C), Species Not Covered by the NCCP/HCP (NC)

CNPS Designations:
1A = Plants presumed extirpated in California and either rare or extinct elsewhere
1B = Rare threatened, or endangered in California and elsewhere
2A = Plants presumed extirpated in California but common elsewhere
2B = Rare, threatened, or endangered in California, but not elsewhere
3 = Plants about Which More Information Is Needed—Review List
4 = Plants of Limited Distribution—Watch List

CNPS Threat Rankings:
0.1 = Seriously threatened in California
0.2 = Moderately threatened in California
0.3 = Not very threatened in California

Abbreviation/Acronym Definitions:
CA = California
CNPS = California Native Plant Society
CSS = coastal sage scrub
ft = foot/feet
HCP = Habitat Conservation Plan
m = meter/meters
mi = mile/miles
NCCP = Natural Community Conservation Plan
SR-73 = State Route 73
US = United States

Table D-2: Special-Status Animal Species Identified as Potentially Occurring or Known to Occur in the Project Vicinity

Common Name	Scientific Name	Status Listing	Habitat and Comments	Likelihood of Occurrence
INVERTEBRATES				
Crotch bumble bee	*Bombus crotchii*	US: – CA: CSA NCCP: NC	Is found from coastal California east to the Sierra-Cascade crest and south into Mexico. Feeds on *Antirrhinum* ssp., *Phacelia* ssp., *Clarkia* ssp., *Dendromecon* ssp., *Eschscholzia* ssp., and *Eriogonum* ssp.	**Low.** There are known occurrences within the vicinity of the project site; however, suitable food plants in the project site are limited.
San Diego fairy shrimp	*Branchinecta sandiegonensis*	US: FE CA: – NCCP: C	Is endemic to southern California. Is found in vernal pools and other nonvegetated temporary basins 2–12 inches deep.	**Absent.** There are no known occurrences within the vicinity of the project site, and suitable vernal pool habitat is absent from the project site.
Globose dune beetle	*Coelus globosus*	US: – CA: CSA NCCP: NC	Occurs in fore dunes, sand hummocks, and sometimes back dunes along the immediate coast. Larvae and pupae spend most of the time in the sand; they can be found under vegetation or accumulated debris. Adults spend the hotter summer months aggregating under vegetation or debris and come to the surface at night and on cool, foggy days.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
Monarch butterfly (California overwintering population)	*Danaus plexippus*	US: – CA: CSA NCCP: NC	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts are located in wind-protected tree groves (e.g., eucalyptus, Monterey pine, and cypress) with nectar and water sources nearby.	**Not Expected.** There are no known roosting sites within the vicinity of the project site, and suitable roosting habitat is absent from the project site.
Riverside fairy shrimp	*Streptocephalus woottoni*	US: FE CA: – NCCP: C	Is restricted to deep vernal pools and ponds that retain water for 2–8 months within annual grasslands, which may be interspersed with chaparral or CSS vegetation.	**Absent.** There are no known occurrences within the vicinity of the project site, and suitable vernal pool habitat is absent from the project site.
Mimic tryonia	*Tryonia imitator*	US: – CA: CSA NCCP: NC	Inhabits coastal lagoons, estuaries, and salt marshes, from Sonoma County south to San Diego County. Is found only in permanently submerged areas in a variety of sediment types; is able to withstand a wide range of salinities.	**Absent.** There are no known occurrences within the vicinity of the project site, and suitable aquatic habitat is absent from the project site.

Table D-2: Special-Status Animal Species Identified as Potentially Occurring or Known to Occur in the Project Vicinity

Common Name	Scientific Name	Status Listing	Habitat and Comments	Likelihood of Occurrence
AMPHIBIANS				
Arroyo toad	*Anaxyrus californicus*	US: FE CA: SSC NCCP: C	Inhabits washes, arroyos, sandy riverbanks, and riparian areas with willows, sycamores, oaks, and cottonwoods. Has extremely specialized habitat needs, which include exposed sandy streamsides with stable terraces for burrowing with scattered vegetation for shelter, and areas of quiet water or pools free of predatory fishes with sandy or gravel bottoms without silt for breeding.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
Western spadefoot	*Spea hammondii*	US: – CA: SSC NCCP: C	Occurs primarily in grassland and other relatively open habitats. Found in elevations ranging from sea level to 4,500 ft. Requires temporary pools for breeding.	**Not Expected.** While there are known occurrences within the vicinity of the project site, suitable habitat is absent from the project site.
California newt	*Taricha torosa*	US: – CA: SSC NCCP: NC	Is found in wet forests, oak forests, chaparral, and rolling grasslands. In Southern California, drier chaparral, oak woodland, and grasslands are used.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
REPTILES				
San Diegan legless lizard	*Anniella stebbinsi*	US: – CA: SSC NCCP: NC	Occurs in moist warm loose soil with plant cover. Moisture is essential. Occurs in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Leaf litter under trees and bushes in sunny areas and dunes stabilized with bush lupine and mock heather often indicate suitable habitat. Often can be found under surface objects such as rocks, boards, driftwood, and logs.	**Not Expected.** While there are known occurrences within the vicinity of the project site, suitable habitat is absent from the project site.
California glossy snake	*Arizona elegans occidentalis*	US: – CA: SSC NCCP: NC	Inhabits arid scrub, rocky washes, grasslands, and chaparral. This subspecies occurs from the eastern part of the San Francisco Bay Area south to northwestern Baja California.	**Low.** While there are known occurrences within the vicinity of the project site, suitable habitat in the project site is marginal.
Orange-throated whiptail	*Aspidoscelis hyperythra*	US: – CA: SSC NCCP: C	Inhabits low-elevation coastal scrub, chaparral, and valley hardwood habitats. Prefers washes and other sandy areas with patches of brush and rocks. Perennial plants are necessary for its major food, termites.	**Low.** While there are known occurrences within the vicinity of the project site, suitable habitat in the project site is marginal.

Table D-2: Special-Status Animal Species Identified as Potentially Occurring or Known to Occur in the Project Vicinity

Common Name	Scientific Name	Status Listing	Habitat and Comments	Likelihood of Occurrence
Coastal whiptail	*Aspidoscelis tigris stejnegeri*	US: – CA: CSA NCCP: C	Occurs in deserts and semiarid areas with sparse vegetation. Is typically found in open chaparral, woodland, and riparian areas.	**Low.** While there are known occurrences within the vicinity of the project site, suitable habitat in the project site is marginal.
Red-diamond rattlesnake	*Crotalus ruber*	US: – CA: SSC NCCP: C	Is associated with chaparral, woodland, grassland, and desert communities from Los Angeles County to Baja California Sur. Prefers rocky areas with dense vegetation. Needs rodent burrows, cracks in rocks, or surface cover objects for shelter.	**Low.** There are no known occurrences within the vicinity of the project site, and suitable habitat in the project site is marginal.
Western pond turtle	*Emys marmorata*	US: – CA: SSC NCCP: NC	Occurs in a variety of habitats, including woodland, grassland, and open forest. Is thoroughly aquatic, existing in good-quality ponds, marshes, rivers, streams, and irrigation ditches that have rocky or muddy bottoms. Requires basking sites such as partially submerged logs, vegetation mats, or open mud banks.	**Absent.** While there are known occurrences within the vicinity of the project site, suitable habitat is absent from the project site.
Blainville's horned lizard	*Phrynosoma blainvillii*	US: – CA: SSC NCCP: C	Occurs in open areas of sandy soil within CSS, chaparral, riparian woodland, and annual grassland habitats that support adequate prey species.	**Low.** While there are known occurrences within the vicinity of the project site, suitable habitat in the project site is marginal.
Coronado skink	*Pestiodon skiltonianus interparietalis*	US: – CA: CSA NCCP: C	Occurs in grassland, woodlands, pine forests, and chaparral, especially in open sunny areas such as clearings and the edges of creeks and rivers. Prefers rocky areas near streams with a lot of vegetation, but can also be found in areas away from water.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
Coast patch-nosed snake	*Salvadora hexalepis virgultea*	US: – CA: SSC NCCP: NC	Occurs in coastal chaparral, washes, sandy flats, and rocky areas. Is widely distributed throughout lowlands, up to 2,130 m (7,000 ft) in elevation, of Southern California from the coast to the eastern border.	**Low.** There are no known occurrences within the vicinity of the project site, and suitable habitat in the project site is marginal.
Two-striped gartersnake	*Thamnophis hammondii*	US: – CA: SSC NCCP: NC	Is generally found around pools, creeks, cattle tanks, and other water sources, often in rocky areas, in oak woodland, chaparral, brushland, and coniferous forest. Is primarily aquatic and diurnal. Ranges from the central coast of California to the central coast of Baja California.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.

Table D-2: Special-Status Animal Species Identified as Potentially Occurring or Known to Occur in the Project Vicinity

Common Name	Scientific Name	Status Listing	Habitat and Comments	Likelihood of Occurrence
BIRDS				
Cooper's hawk (nesting)	*Accipiter cooperii*	US: – CA: CSA NCCP: NC	Nests in a wide variety of woodland and forest habitats.	**Low.** While there are known occurrences within the vicinity of the project site, suitable habitat is absent from the project site. Marginally suitable foraging habitat is present in the project site.
Tricolored blackbird (nesting colony)	*Agelaius tricolor*	US: – CA: SSC NCCP: NC	Is a highly colonial nester largely endemic to California. Is most numerous in the Central Valley and vicinity. Requires open water, protected nesting substrate, and a foraging area with insect prey within a few kilometers of the colony.	**Not Expected.** While there are known occurrences within the vicinity of the project site, suitable habitat is absent from the project site.
Southern California rufous-crowned sparrow	*Aimophila ruficeps canescens*	US: – CA: CSA NCCP: C	Is a resident in Southern California CSS and sparse mixed chaparral. Frequents relatively steep, often rocky hillsides with grass and forb patches.	**Low**. While there are known occurrences within the vicinity of the project site, suitable habitat in the project site is marginal.
Grasshopper sparrow (nesting)	*Ammodramus savannarum*	US: – CA: SSC NCCP: NC	Occurs in dense grasslands, preferring native grasslands with a mixture of forbs and shrubs.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
Golden eagle (nesting and wintering)	*Aquila chrysaetos*	US: – CA: CFP NCCP: C	Lives in open and semiopen country featuring native vegetation. Avoids developed areas and uninterrupted stretches of forest. Nests on cliffs and steep escarpments in grassland, chaparral, shrubland, forest, and other vegetated areas.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
Long-eared owl	*Asio otus*	US: – CA: SSC	Roosts in dense vegetation and forages in grasslands, shrublands, and woodlands. Nests in brushy vegetation adjacent to open habitats or in forests.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
Burrowing owl (burrow sites and some wintering sites)	*Athene cunicularia*	US: – CA: SSC NCCP: NC	Burrows in open, dry, annual, or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Is a subterranean nester, dependent upon burrowing mammals, most notably the California ground squirrel.	**Low.** There are no known occurrences within the vicinity of the project site, and suitable habitat in the project site is marginal.
Ferruginous hawk (wintering)	*Buteo regalis*	US: – CA: CSA NCCP: NC	Forages in open fields, grasslands and agricultural areas, sagebrush flats, desert scrub, fringes of pinyon-juniper habitats, and other open country in western North America. Is not known to breed in California.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.

Table D-2: Special-Status Animal Species Identified as Potentially Occurring or Known to Occur in the Project Vicinity

Common Name	Scientific Name	Status Listing	Habitat and Comments	Likelihood of Occurrence
San Diego cactus wren (San Diego and Orange Counties only)	*Campylorhynchus brunneicapillus sandiegensis*	US: – CA: SSC NCCP: C	Occurs in CSS habitats. Requires tall *Opuntia* cactus for nesting and roosting.	**Low.** While there are known occurrences within the vicinity of the project site, suitable habitat in the project site is marginal.
Northern harrier (nesting)	*Circus hudsonius*	US: – CA: SSC NCCP: C	Occurs in marshy habitats, grassland, and other open country; is uncommon in open desert and brushlands. Nests on the ground in open (treeless) wetland and upland areas, including cultivated cropland and dry grassland. Usually constructs nests in tall, dense clumps of vegetation. Is found in the Temperate Zone worldwide.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
Western yellow-billed cuckoo (nesting)	*Coccyzus americanus occidentalis*	US: FT CA: CE NCCP: NC	Breeds and nests in extensive stands of dense cottonwood/willow riparian forest along broad, lower flood bottoms of larger river systems at scattered locales in western North America; winters in South America.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
Yellow rail	*Coturnicops noveboracensis*	US: – CA: SSC NCCP: NC	Occurs in shallow marshes and wet meadows; in winter, occurs in drier freshwater and brackish marshes, as well as dense, deep grass and rice fields.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
White-tailed kite (nesting)	*Elanus leucurus*	US: – CA: CFP NCCP: NC	Breeds in riparian trees such as oaks, willows, and cottonwoods in lower-elevation areas, particularly coastal valleys and plains.	**Not Expected.** While there are known occurrences within the vicinity of the project site, suitable nesting habitat is absent from the project site.
Southwestern willow flycatcher (nesting)	*Empidonax traillii extimus*	US: FE CA: CE NCCP: C	Is found in thickets, scrubby and brushy areas, open second growth, swamps, and open woodland. Prefers forested areas around rivers and streams. Usually nests in trees growing near water, often in willows.	**Not Expected.** While there are known occurrences within the vicinity of the project site, suitable nesting habitat is absent from the project site.
California horned lark	*Eremophila alpestris actia*	US: – CA: CSA NCCP: NC	Favors bare, dry ground and areas of short, sparse vegetation. Avoids places where grasses grow more than a couple of inches high. Common habitats include prairies, deserts, beaches, dunes, and heavily grazed pastures. Also is found in areas cleared by humans, such as plowed fields and mowed expanses around airfields. Nests in depressions on bare ground.	**Low.** There are no known occurrences within the vicinity of the project site, and suitable habitat in the project site is marginal.

Table D-2: Special-Status Animal Species Identified as Potentially Occurring or Known to Occur in the Project Vicinity

Common Name	Scientific Name	Status Listing	Habitat and Comments	Likelihood of Occurrence
Yellow-breasted chat (nesting)	*Icteria virens*	US: – CA: CSA NCCP: NC	Typically occurs in dense shrubbery, including abandoned farm fields, clearcuts, powerline corridors, fencerows, forest edges and openings, swamps, and edges of streams and ponds. Its habitat often includes blackberry bushes. In arid regions of the West, it is frequently found in shrubby habitats along rivers.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
California black rail	*Laterallus jamaicensis coturniculus*	US: – CA: CT NCCP: NC	Requires shallow water in salt marshes, freshwater marshes, wet meadows, or flooded grassy vegetation. Prefers areas of moist soil vegetated by fine-stemmed emergent plants, rushes, grasses, or sedges, with scattered small pools. Is known from coastal California, northwestern Baja California, the lower Imperial Valley, and the lower Colorado River of Arizona and California. Is now extirpated from virtually all of coastal Southern California.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
Belding's savannah sparrow	*Passerculus sandwichensis beldingi*	US: – CA: CE NCCP: NC	Lives in grasslands with few trees, including meadows, pastures, grassy roadsides, sedge wetlands, and cultivated fields. Also inhabits tidal saltmarshes and estuaries.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
Coastal California gnatcatcher	*Polioptila californica californica*	US: FT CA: SSC NCCP: C	Is an obligate, permanent resident of CSS habitats below 2,500 ft in elevation in Southern California.	**Low.** While there are known occurrences within the vicinity of the project site, suitable habitat in the project site is marginal.
Light-footed Ridgway's rail	*Rallus obsoletus levipes*	US: FE CA: CE NCCP: NC	Is found primarily in coastal salt marshes but can also be found in brackish and freshwater cattail or bulrush marshes.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
Yellow warbler (nesting)	*Setophaga petechia*	US: – CA: SSC NCCP: NC	Occurs in bushes, swamp edges, streams, and gardens. Breeds in a variety of habitats in the east, including woods and thickets along edges of streams, lakes, swamps, and marshes, favoring willows, alders, and other moisture-loving plants. Also occurs in drier second-growth woods, orchards, and roadside thickets. In the west, is restricted to streamside thickets. In winter in the tropics, favors semiopen country, woodland edges, and towns.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.

Table D-2: Special-Status Animal Species Identified as Potentially Occurring or Known to Occur in the Project Vicinity

Common Name	Scientific Name	Status Listing	Habitat and Comments	Likelihood of Occurrence
California least tern (nesting colony)	*Sternula antillarum browni*	US: FE CA: CE NCCP: NC	Lives along the coast. Nests on open beaches kept free of vegetation by the tide.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
Least Bell's vireo (nesting)	*Vireo bellii pusillus*	US: FE CA: CE NCCP: C	Occurs in moist thickets and riparian areas that are predominantly composed of willow and mulefat.	**Not Expected.** While there are known occurrences within the vicinity of the project site, suitable habitat is absent from the project site.
MAMMALS				
Pallid bat	*Antrozous pallidus*	US: – CA: SSC NCCP: NC	Roosts in a variety of places such as caves, rock crevices, mines, hollow trees, and buildings. Also occurs in oak and pine forested areas and open farmland. Roosts are usually near a source of water.	**Low.** There are no known occurrences within the vicinity of the project site, and suitable foraging and roosting habitat in the project site is marginal.
Dulzura pocket mouse	*Chaetodipus californicus femoralis*	US: – CA: SSC NCCP: NC	Is found in a variety of habitats including CSS, chaparral, and grassland in northern Baja California, San Diego, and extreme southwestern and western Riverside Counties. The limit of the range to the northwest (at the interface with *C. c. dispar*) is unclear.	**Low.** While there are known occurrences within the vicinity of the project site, suitable habitat in the project site is marginal.
Northwestern San Diego pocket mouse	*Chaetodipus fallax fallax*	US: – CA: SSC NCCP: NC	Habitats tend to be stony soils above sandy desert fans and rocky areas within shrub communities such as CSS, chamise-redshank chaparral, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent scrub, pinyon-juniper, and annual grassland.	**Low.** There are no known occurrences within the vicinity of the project site, and suitable habitat in the project site is marginal.
Mexican long-tongued bat	*Choeronycteris mexicana*	US: – CA: SSC NCCP: NC	Is occasionally found in San Diego County. Feeds on nectar and pollen of night-blooming succulents. Roosts in relatively well-lit caves as well as in and around buildings.	**Low**. There are no known occurrences within the vicinity of the project site, and suitable foraging and roosting habitat in the project site is marginal.
Stephens' kangaroo rat	*Dipodomys stephensi*	US: FE CA: CT NCCP: NC	Occurs primarily in annual and perennial grassland habitats, but may occur in coastal scrub or sagebrush with sparse canopy cover, or in disturbed areas. Preferred perennials are buckwheat and chamise; preferred annuals are brome grass and filaree.	**Low.** There are no known occurrences within the vicinity of the project site, and suitable habitat in the project site is marginal.

Table D-2: Special-Status Animal Species Identified as Potentially Occurring or Known to Occur in the Project Vicinity

Common Name	Scientific Name	Status Listing	Habitat and Comments	Likelihood of Occurrence
Western mastiff bat	*Eumops perotis californicus*	US: – CA: SSC NCCP: NC	Inhabits many open, semiarid to arid habitats including conifer and deciduous woodlands, coastal scrub, grasslands, and chaparral communities. Roosts in crevices in cliff faces, high buildings, trees, and tunnels.	**Low.** While there are known occurrences within the project vicinity, suitable foraging and roosting habitat in the project site is marginal.
Western red bat	*Lasiurus blossevillii*	US: – CA: SSC NCCP: NC	Roosts in the foliage of trees and shrubs in forests. Often relies on riparian trees for roosting and foraging; often is associated with mature stands of cottonwood, sycamore, and willows adjacent to streams.	**Not expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
Yuma myotis	*Myotis yumanensis*	US: – CA: CSA NCCP: NC	Is common and widespread in California. Is found in a wide variety of habitats in elevations ranging from sea level to 11,000 ft. Optimal habitats are open forests and woodlands with sources of water over which to feed.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
San Diego desert woodrat	*Neotoma lepida intermedia*	US: – CA: SSC NCCP: C	Is common to abundant in Joshua tree, pinyon-juniper, mixed and chamise-redshank chaparral, sagebrush, and most desert habitats. Is also found in a variety of other habitats. Is the most abundant in rocky areas with Joshua trees. Elevation ranges from sea level to 8,500 ft.	**Low.** While there are known occurrences within the vicinity of the project site, suitable habitat in the project site is marginal.
Pocketed free-tailed bat	*Nyctinomops femorasaccus*	US: – CA: SSC NCCP: NC	Has a spotty distribution in California, ranging from Southern California south to the Baja Peninsula, and through southwestern Arizona to at least central Mexico. In California, is typically found in rocky, desert areas with relatively high cliffs.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
Big free-tailed bat	*Nyctinomops macrotis*	US: – CA: SSC NCCP: NC	Inhabits low-lying arid areas in Southern California. Needs high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.	**Low.** There are no known occurrences within the vicinity of the project site, and suitable foraging and roosting habitat in the project site is marginal.

Table D-2: Special-Status Animal Species Identified as Potentially Occurring or Known to Occur in the Project Vicinity

Common Name	Scientific Name	Status Listing	Habitat and Comments	Likelihood of Occurrence
Southern grasshopper mouse	*Onychomys torridus ramona*	US: – CA: SSC NCCP: NC	Is believed to inhabit sandy or gravelly valley floor habitats with friable soils in open and semiopen scrub, including CSS, mixed chaparral, low sagebrush, riparian scrub, and annual grassland with scattered shrubs, preferring low to moderate shrub cover. Is more susceptible to small- and large-scale habitat loss and fragmentation than most other rodents, due to its low fecundity, low population density, and large home range size. Occurs in arid portions of southwestern California and northwestern Baja California.	**Low.** There are no known occurrences within the vicinity of the project site, and suitable habitat in the project site is marginal.
Pacific pocket mouse	*Perognathus longimembris pacificus*	US: FE CA: SSC NCCP: NC	Has historically occupied open habitats on sandy soils along the coast from Los Angeles to the Mexican border. Is now known from only four sites in Orange and San Diego Counties.	**Low.** While there are known occurrences within the vicinity of the project site, suitable habitat in the project site is marginal.
Southern California saltmarsh shrew	*Sorex ornatus salicornicus*	US: – CA: SSC NCCP: NC	Occurs in coastal marshes with dense vegetation and woody debris for cover. Is known only from Los Angeles, Ventura, and Orange Counties.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
American badger	*Taxidea taxus*	US: – CA: SSC NCCP: NC	Prefers to live in dry, open grasslands, fields, and pastures. Lives in burrows.	**Not Expected.** There are no known occurrences within the vicinity of the project site, and suitable habitat is absent from the project site.
FISH				
Tidewater goby	*Eucyclogobius newberryi*	US: FE CA: SSC NCCP: NC	Inhabits coastal lagoons and brackish bays at the mouth of freshwater streams. Is subjected to wide variation in salinity (1–28 ppt) and temperature (9–25°C) both within and among habitat types. The substrate and vegetation can also differ among lagoon, creek, and marsh habitats.	**Absent.** While there are known occurrences within the project vicinity, no suitable fish habitat is present in the project site.
Arroyo chub	*Gila orcuttii*	US: – CA: SSC NCCP: NC	Inhabits sandy and muddy bottoms of flowing pools and runs of headwaters creeks and small to medium rivers. Is often found in intermittent streams.	**Absent.** While there are known occurrences within the project vicinity, no suitable fish habitat is present in the project site.
Steelhead—southern California DPS	*Oncorhynchus mykiss irideus* pop. 10	US: FE CA: – NCCP: NC	Requires streams with adequate dissolved oxygen. Spawning habitat consists of gravel substrates free of excessive silt.	**Absent.** While there are known occurrences within the project vicinity, no suitable fish habitat is present in the project site.

Table D-2: Special-Status Animal Species Identified as Potentially Occurring or Known to Occur in the Project Vicinity

Common Name	Scientific Name	Status Listing	Habitat and Comments	Likelihood of Occurrence
Santa Ana speckled dace	*Rhinichthys osculus* ssp. 3	US: – CA: SSC NCCP: NC	Is found in the headwaters of the Santa Ana and San Gabriel River drainages. Is found in riffles in small streams and shore areas with abundant gravel and rock.	**Absent.** While there are known occurrences within the project vicinity, no suitable fish habitat is present in the project site.

Status: Federal Endangered (FE), Federal Threatened (FT), Federal Candidate (FC), Federal Proposed (FP, FPE, FPT), Federal Delisted (FD), California Endangered (CE), California Threatened (CT), California Species of Special Concern (SSC), California Fully Protected Species (CFP), California Special Plant (CSP), California Special Animal (CSA), NCCP/HCP Covered Species (C), Species Not Covered by the NCCP/HCP (NC)

Abbreviation/Acronym Definitions:
°C = degrees centigrade
CA = California
CSS = coastal sage scrub
DPS = Distinct Population Segment
ft = foot/feet
HCP = Habitat Conservation Plan
m = meter/meters
NCCP = Natural Community Conservation Plan/
ppt = parts per thousand
US = United States

APPENDIX D.1: Geotechnical Investigation

September 16, 2004
Project No. 474.2
Log No. CG6399

Mr. Tony Reyna
C/o Texican Inc.
12631 E. Imperial Highway, Suite 223A
Santa Fe Springs, CA 90670

Subject: PRELIMINARY GEOTECHNICAL INVESTIGATION
Proposed Single-Family Residence
31451 South Coast Highway
Laguna Beach, California

References: Attached

Dear Mr. Reyna:

In accordance with your request, we have performed a preliminary geotechnical investigation at the subject site. Our work was performed during June through September 2004. The purpose of our investigation was to evaluate the geotechnical conditions beneath the portion of the property intended for new development, and to provide grading and foundation recommendations for the proposed construction of a custom, two to three-story, single-family residence. To assist with our investigation, we were provided with several architectural plans for the proposed project, prepared by Mr. Dean Nota, Architect (Reference 22), and a topographic map of the site, prepared by Toal Engineering Inc. (Reference 23).

With the above in mind, our scope of services included the following:

- Research and review of available geotechnical reports, plans, geologic literature, and aerial photographs for the site and immediate vicinity (see References).
- Four large-diameter exploratory borings for geologic observation and soil/bedrock sampling.
- Geologic mapping of the seacliff.
- Laboratory testing of samples obtained during our subsurface exploration.
- Engineering and geologic analysis of the data.

- Preparation of this report presenting the results of our field and laboratory work, analyses, and our conclusions and recommendations.

SITE DESCRIPTION

The subject property, located at 31451 South Coast Highway, Laguna Beach, California, is also identified as a portion of Lot xx of Tract xxx (see Location Map, Figure 1). The residential property consists generally of a vacant approximate x-acre irregular-shaped ocean front lot. Topographically, the property consists generally of gently to moderately and locally steep west to southwest sloping ground that is bounded to the southwest, west, and northwest by an approximate 45 to 55-feet high, approximate 1:5:1 (horizontal to vertical) to near vertical fill slope and seacliff. A typically wide sandy beach and the Pacific Ocean extend along the seaward margin of the property.

The property is bounded to the north/northwest by the remnants of a partially infilled drainage and an existing single-family residence situated at a similar elevation as the inland portion of the subject site, to the south/southeast by a concrete public beach access stairway and single-family residences situated at a similar elevation as the subject site, to the southwest and northwest by the seacliff/shoreline and Pacific Ocean, and to the northeast by South Coast Highway.

Overall topographic relief within the boundaries of the property is approximately 107-feet, with elevations ranging from approximately 122-feet (msl) along the northeast property boundary near South Coast Highway to approximately 15-feet (msl) along the general western property boundary and toe of the seacliff.

Based on our review of available maps and discussion with South Coast Water District personal, a general northwest/southeast trending tunnel containing a sewer main extends beneath the western portion of the property (see Geologic Map, Plate 1). The estimated floor of the tunnel is thought to be roughly 19-feet (msl) based solely on field measurements.

Vegetation on the site consists generally of locally occurring native shrubs, seasonal weeds/grasses, and iceplant over the majority of the gently to moderately sloping terrain of the property, and iceplant over the seaward facing fill slope along the top of the seacliff.

PROPOSED DEVELOPMENT

Our review of the available architectural plans (Reference 22) indicates that the proposed construction consists generally of a new, two to three-story, custom, single-family residence with a detached garage and swimming pool. The lower level of the residence will consist of subterranean living space and daylight at the seacliff within the southwest portion of the site. The location of the proposed new residence, garage, and swimming pool are shown on the accompanying Geologic Map, Plate 1. We anticipate wood-frame and steel construction founded on a drilled pier/grade beam foundation system with structural concrete and/or raised-wood floors. Building loads are expected to be typical for this type of relatively light construction. Retaining walls up to a maximum height of about 10-feet are anticipated in order to facilitate grade changes between the various levels of the residence. We anticipate site grading with respect to the proposed lower level will consist of cutting approximately 2 to x-feet from the existing topography, with grading for the other levels consisting of backfilling behind retaining walls to achieve design finished grades along with some minor cuts and fills on the order of 3-feet and less. No new slopes are planned.

SUBSURFACE EXPLORATION

Subsurface exploration consisted of drilling four large-diameter exploratory borings to depths ranging from approximately 7 to 40-feet below existing site grades utilizing a truck-mounted bucket-auger type drill rig. The approximate locations of borings are shown on the accompanying Geologic Map, Plate 1.

The borings were logged during excavation by an engineering geologist from this office, who visually classified the soil (Unified Soil Classification System), and obtained relatively undisturbed and bulk samples for laboratory testing. The Boring Logs are attached as Figures 2 through 6.

LABORATORY TESTING

Laboratory testing was performed on samples obtained during the subsurface exploration. Tests performed consisted of the following:

- Dry Density and Moisture Content (ASTM: D 1188 and D 2216)
- Direct Shear (ASTM: D 3080)
- Sulfate Content (EPA 9038)
- Expansion (ASTM: D 4829)

- Maximum Dry Density/Optimum Moisture Content (ASTM: D 1557-00)

Results of the dry density and moisture content determinations are presented on the Boring Logs, Figures 2 through 6. The remaining laboratory tests are presented on Figure 7.

GEOLOGIC CONDITIONS

1. Geologic Setting

The subject site is located in the extreme southwest portion of the U.S.G.S. San Juan Capistrano 7.5-minute quadrangle and within the coastal plain region of the Peninsular Ranges geomorphic province. The site and vicinity are situated along an irregular trending stretch of coastline that is characterized by numerous coves and pocket beaches that are backed by a landward succession of steep to near vertical sea cliffs, typically gently to moderately seaward sloping terrace terrain, and ultimately by moderately to steeply sloping resistant hills that comprise the western flank of the San Joaquin Hills. The property lies within a promontory of the shoreline approximately 700-feet northwest of a prominent headland known as Table Rock, and is fronted by a seasonally variable but typically wide sandy beach.

The geology of the subject lot is characterized by locally deep fills associated with a pre-existing drainage, regressive marine and continental terrace deposits that were laid down during glacio-eustatic changes in sea level in the Pleistocene, and ultimately marine sedimentary bedrock assigned to the middle Miocene San Onofre Breccia. Based on our subsurface exploration and review of the available geologic reports it appears that two wave-cut platforms, representing essentially two ancient high sea-level stands, exist within the property. The wave-cut platforms and associated geologic contacts between the terrace deposits and San Onofre Breccia lie approximately 5 to xx-feet below the existing lot grade and at approximate elevations of xx and xx-feet (msl). Structurally, the terrace deposits are considered essentially massive, while bedding attitudes observed or reported in the underlying San Onofre Breccia within the site and vicinity indicate variable dips ranging from approximately 08 to 26-degrees to the southeast and southwest. Review of the referenced aerial photographs indicates and the results of our subsurface exploration indicates the subject property appears to have been essentially bound by seaward trending drainages prior to the construction of South Coast Highway in the late 1920's. In particular, it appears that a relatively well-developed northeast/southwest trending drainage extended from east of South Coast Highway and through the general southern portion of the site to the beach (see Geologic Map, Plate 1). No evidence of

sea caves within the property boundaries were observed during our site observations and mapping.

There are no active faults or landslides known to exist or mapped within the property, and the site is not located within the presently defined boundaries of an Alquist-Priolo Earthquake Fault Zone. Localized northwest to northeast trending faulting mapped and/or reported within the seacliff near the site appears to be confined to the middle Miocene bedrock and is not considered to be active. Active fault zones within the general site region include the Newport-Inglewood, Palos Verdes, and Elsinore which are located approximately 2-miles southwest (offshore), 17-miles southwest (offshore), and 21.5-miles northeast of the site, respectively. The postulated San Joaquin Hills Blind Thrust fault (Model by Grant, et al, 1999), which has been classified as a Type B active fault by the California Geological Survey, reportedly extends from offshore to beneath the Laguna Beach area at a depth of approximately 3.5 to 4-miles (Reference 8).

Our review of the available geotechnical/coastal reports and aerial photographs pertinent to the site vicinity (see References) suggests that the mean long-term rate of seacliff retreat for this section of coastline exposing dense San Onofre Breccia is relatively low, with estimated rates ranging from approximately 0.05 to 0.2-feet/year (References 5 and 11). It should be realized, however, that seacliff retreat is typically episodic, with periods of little to no retreat to a number of feet over a short period of time. Topographic evidence of several apparent surficial failures were observed within the fill slope that bounds the general seaward portion of the property along with an apparent block fall within the northwest portion of the seacliff.

Based on the results of our subsurface exploration, geologic mapping, and review of the referenced geologic and geotechnical documents, the subject property appears to be underlain by variable but locally deep fill soils associated with the infilling of a drainage course and creation of the existing lower level pad area, variably thick surficial soils consisting of colluvium, and ultimately by a succession of Pleistocene terrace deposits and middle Miocene San Onofre Breccia bedrock.

A brief description of the geologic units observed within the site follows. The distribution of the geologic units is indicated on the accompanying Geologic Map, Plate 1, and Geologic Cross-Sections, Plate 2.

2. Geologic Units

   a. Fill – The subject site is mantled by approximately 3 to 4-feet of undifferentiated fill and colluvium that consist generally of porous, damp to moist, loose, dark brown silty fine sand with minor scattered roots. The fill/colluvium is not considered suitable for support of the proposed new construction in its existing condition.
   b. Colluvium – The undocumented fill material and natural terrain of the property are mantled by a variable but approximate x to x-feet deposit of colluvium. The colluvium consists generally of damp, loose, light brown to orange brown silty fine to medium sand with locally abundant sub-angular gravel to cobble metamorphic rock clasts. The colluvium is not considered suitable for support of the proposed structures of improvements in its existing condition.

   c. Terrace Deposits – The fill and colluvium are underlain by continental and marine terrace deposits. The terrace deposits consist generally of damp to moist, medium dense to dense, reddish brown to orange brown slightly clayey and silty fine to medium sand with locally abundant sub-angular gravel to cobble metamorphic rock clasts that grade at depth to friable fine to coarse sand with a scattered basal gravel zone along the contact with the underlying bedrock. Moderate to heavy caving was observed within the lower section of the terrace deposits during the drilling operation.

   d. San Onofre Breccia – Sedimentary bedrock deposits assigned to the middle Miocene San Onofre Breccia were encountered beneath the terrace deposits in both exploratory borings and crop-out along the seacliff backing the site and vicinity. The section of bedrock observed consisted generally of damp, dense to very dense, olive gray silty fine to coarse sandy breccia and sandstone. Gravel to boulder-size metamorphic rock clasts are typical in the breccia, and general drilling refusal was encountered in both borings in the breccia.

3. Groundwater

   Groundwater seepage was observed at several locations within the promontory headland and seacliff at the general southern and northern portion of the site from what is believed to be the terrace deposit/bedrock contact. Additionally, heavy water is evident from near the terrace deposit/bedrock contact where an apparent storm drain pipe discharges at the face of the seacliff at the southwest portion of the site near the beach access stairs. Localized perched groundwater conditions have been known to exist within the south Laguna area and site vicinity along the

terrace/bedrock contact, with the perched water believed to be the consequence of lateral migration of water from offsite areas through the relatively permeable terrace deposits and along the relatively impermeable bedrock. It should be noted that fluctuations in the amount and level of groundwater might occur due to variations in rainfall, irrigation, and other factors.

SEISMICITY

There are no known active or potentially active faults that pass through the site. The localized faulting within the bedrock mapped and/or reported in the site vicinity appear confined to the middle Miocene strata and are not considered active or construction limiting features. The nearest fault of significance is the mapped extension of the Laguna Canyon fault, which passes approximately 2000-feet northeast of the site. Recent activity on this fault has not been established within the last 11,000-years; consequently, it is not considered active. Active fault zones within the site region include the Newport-Inglewood (offshore extension), San Joaquin Hills Blind Thrust, Palos Verdes, and the Elsinore, which are located approximately 2-miles southwest, 3.5 to 4-miles below, 17-miles southwest, and 21.5-miles northeast of the site, respectively. Strong ground motion could also be expected from earthquakes occurring along the San Jacinto and San Andreas fault zones, which lie northeast of the site at distances of approximately 45.5-miles and 55 to 60-miles, respectively. The San Clemente fault, which lies approximately 58-miles southwest of the site, as well as numerous other offshore faults, could also provide strong ground motion.

The following table lists the known active faults that would have the most significant impact on the site:

Fault	Maximum Probable Earthquake (Moment Magnitude)	Slip Rate	Fault Type
Newport-Inglewood (offshore extension) 3.25-kilometers (2-miles SW)	6.9	1.5 mm/year	B
San Joaquin Hills Blind Thrust 6-kilometers (3.5 to 4-miles below)	6.6	0.5 mm/year	B
Elsinore (Glen Ivy Segment) 35.5-kilometers (21.5-miles NE)	6.8	5 mm/year	B

SEISMIC EFFECTS

1. Ground Accelerations

   The most significant probable earthquake to effect the property would be a 6.9 magnitude earthquake on the Newport-Inglewood fault. Depiction of probabilistic seismic hazard analysis utilizing a consensus of historical seismic data and the respective regional geologic conditions that are shown on the "Seismic Shaking Hazard Maps of California," CDMG Map Sheet 48 (Reference 20) and "Seismic Hazard Zone Report…" (Reference 8), indicates that peak ground accelerations of about 0.30 to 0.40g are possible with a 10% probability of being exceeded in 50 years.

2. Ground Cracks

   The risk of surface rupture due to active faulting is considered low due to the absence of an active fault on site. Ground cracks due to shaking from seismic events in the region are possible, as with all southern California.

3. Landsliding

   Review of the State of California Seismic Hazard Zones for the San Juan Capistrano quadrangle (Reference 6) indicates that the proposed building area of the site is

bounded by an area considered susceptible to seismically induced landsliding (the seacliff). The risk of gross seismically induced landsliding to effect the proposed new structure is considered low due to the generally dense and favorable structure of the underlying geologic materials and our recommendation that a drilled pier retaining structure founded in the dense underlying bedrock be constructed along the seaward side of the proposed structure to retain the terrace deposits. Surficial instability is considered possible within the seawardly exposed terrace deposits and block-falls are considered possible in the bedrock seacliff in the event of a significant earthquake.

4. Liquefaction

Review of the State of California Seismic Hazard Zones for the San Juan Capistrano quadrangle (Reference 6) indicates that the site is not located within an area considered susceptible to liquefaction. The risk of seismically induced liquefaction is considered low due to the dense underlying geologic materials and lack of shallow groundwater.

5. Tsunamis

The risk for seismically generated ocean waves to affect the site is considered low due to the elevation of the property above sea level.

CONCLUSIONS AND RECOMMENDATIONS

1. General

Based on the results of our preliminary geotechnical investigation, construction of the proposed new single-family residence is considered feasible from a geotechnical standpoint. Grading and foundation plans should take into account the appropriate geotechnical features of the site. Assuming that the conclusions and recommendations provided in this report are implemented during design and construction of the project, the proposed construction is not expected to adversely impact existing adjacent properties from a geotechnical standpoint.

The following geotechnical parameters and recommendations for the proposed residence are provided with the provision that a drilled pier retaining structure founded in the underlying bedrock will be constructed to retain the terrace deposits along the seaward margin of the building area. Modifications to this concept will require additional geotechnical analyses and revised foundation recommendations.

2. Seismic Parameters for Structural Design

Seismic considerations that may be used for structural design at the site include the following:

a. Ground Motion – The proposed residence should be designed and constructed to resist the effects of seismic ground motions as provided in Chapter 16, Division IV of the 2001 California Building Code. The basis for the design is dependent on and considers seismic zoning, site characteristics, occupancy, configuration, structural system and building height.

b. Soil Profile Type – In accordance with Section 1629.3.1, Table 16-J, and the underlying geologic conditions, a site Soil Profile of Type S_D is considered appropriate for the subject property.

c. Seismic Zone – In accordance with Section 1629.4.1 and Figure 16-2, the subject site is situated within Seismic Zone 4.

d. Seismic Zone Factor (z) – A Seismic Zone Factor of 0.40 is assigned based on Table 16-I. Since the site is within Seismic Zone 4, Section 1629.4.2 requires a Seismic Source Type and Near Source Factor.

e. Near-Source Factor (Na and Nv) – Based on the known active faults in the region and distance of the faults from the site, a Seismic Source Type of B per Table 16-U, and Near Source Factors of Na = 1.15 per Table 16-S and Nv = 1.4 per Table 16-T are provided.

f. Seismic Coefficients (Ca and Cv) – Using the Soil Profile Type and Seismic Zone Factor along with Tables 16-Q and 16-R, the Seismic Coefficients Ca = 0.44 (Na) and Cv = 0.64 (Nv) are provided, or Ca = 0.51 and Cv = 0.90.

3. Slope Stability

No new slopes are planned. Based on review of previous work relative to the development of nearby properties, our field observations, and our interpretation of the referenced aerial photographs, the existing seacliff does not exhibit evidence of gross instability. The near surface portion of the seacliff mantled by surficial soils and terrace deposits is considered to have a low to moderate potential for surficial instability during the design life of the structure. In the event of surficial instability within the seacliff, it is not expected to adversely impact the proposed residence as we have recommended that a drilled pier retaining structure extending into sound bedrock with a sufficient slope setback be constructed along the seaward side of the proposed structure to retain the terrace deposits. Typical existing exposures of the San

Onofre Breccia from within the site vicinity and the results of our subsurface work indicate coarse-grained sandstone/breccia sedimentary rock, with the measured bedding within the seacliff backing the lot appearing to dip at a gentle to moderate angle and normal or obliquely into the seacliff. Periodic maintenance of the portion of seacliff not modified by development may be necessary during the life of the residence.

4. Site Grading

Prior to grading, the site should be cleared of any existing debris and vegetation. Materials generated during clearing should be properly disposed of at an approved location off-site. Holes resulting from the removal of buried obstructions, old septic tanks/seepage pits that may be encountered during construction, or other underground structures should be removed in accordance with local ordinances and replaced with compacted fill.

In areas where the proposed cuts for the various levels of the residence or improvements do not remove all of the existing fill and colluvium, the existing fill and colluvium should be removed down to approved terrace deposits and replaced as compacted fill in order to achieve design grades. Removal depths of approximately 2 to 3-feet below existing site grades should be anticipated and should extend outside the building footprint or any hardscape improvements at least 3-feet where possible. Final removal depths should be determined in the field during grading by the Geotechnical Consultant.

Fill should be compacted by mechanical means in uniform horizontal lifts of 6 to 8-inches in thickness. All fill should be moisture conditioned to near optimum moisture content and compacted to a minimum relative compaction of 90 percent based upon ASTM: D 1557-00. The on-site materials are suitable for use as compacted fill provided all vegetation and debris are removed. Rock fragments over 6-inches in maximum dimension and other perishable or unsuitable materials should be excluded from the fill.

All grading and fill placement should be observed and tested as necessary by the Geotechnical Consultant.

5. Drilled Piers

A drilled pier retaining structure founded in the dense underlying bedrock should be constructed on the seaward side of the proposed structure to support the terrace deposits and mitigate the impact of seacliff retreat.

Drilled piers should be spaced at no more than 2.5 pier diameters and designed to resist lateral loads of 35-pounds-per-cubic-foot, equivalent fluid pressure, above the bedrock. Any additional surcharge pressures behind the drilled piers retaining structure should be added to this value. The lateral load should be applied to a continuous vertical plane and distributed to the piers in a tributary fashion. If future erosion exposes the drilled piers, the area between the piers should be supported by lagging, shotcrete, poured in place concrete, etc., structurally connected to the drilled piers and designed for a lateral pressure of 500-pounds-per-square-foot.

Drilled piers may resist lateral loads by a passive pressure of 600-pounds-per-square-foot per foot in bedrock to a maximum value of 4000-pounds-per-square-foot. The passive resistance for piers may be calculated over two pier diameters.

Drilled piers at least 24-inches in diameter may be supported by both end-bearing and skin friction. An end-bearing capacity of 4000-pounds-per-square-foot may be assumed for drilled piers founded at least 5-feet into bedrock. Skin friction may be assumed to be 250-pounds-per-square-foot for bedrock. The drilled piers should extend to a sufficient depth in order to provide a horizontal setback of at least 25-feet between the pier and the face of the adjacent seacliff.

Drilled pier excavations should be observed by the Geotechnical Consultant prior to placement of reinforcing steel and concrete.

6. Foundations and Slabs

Provided that a drilled pier retaining structure founded in the dense underlying bedrock as previously recommended in this report is constructed along the seaward side of the proposed structure, the structure may be supported by conventional continuous/spread footings founded in approved terrace deposits. Conventional continuous/spread footings extending at least 18-inches into approved bearing materials and at least 15-inches wide may be designed for a dead plus live load bearing capacity of 2000-pounds-per-square-foot. This value may be increased by one-third for loads including wind and seismic forces. A lateral bearing value of 250-pounds-per-square-foot per foot of depth and a coefficient of friction between

foundation soil and concrete of 0.35 may be assumed. Continuous footings should be reinforced with at least four No. 4 bars, two top and two bottom. Foundations located adjacent to utility trenches should extend below a 1:1 (horizontal to vertical) plane projected upward from the bottom of the trench.

Footing excavations should be observed by the Geotechnical Consultant prior to placement of reinforcement and concrete to ensure that appropriate bearing materials have been encountered.

Total and differential settlement due to foundation loads is considered to be less than 1/2 and 1/4 inch, respectively, for foundations founded as recommended.

Slab-on-grade floors should have a minimum thickness of 5-inches and should be reinforced with #4 bars spaced at 18-inches, center to center, in two directions, and supported on chairs so that the reinforcement is at mid-height in the slab. In areas where moisture sensitive floor coverings are planned, slabs should be underlain by a 4-inch layer of clean sand with at least a 6-mil visqueen vapor barrier placed at mid-height in the sand. Prior to placing concrete, the slab subgrade soils should be thoroughly moistened.

7. Retaining Walls

Retaining wall foundations should be designed in accordance with the previous building foundation recommendations. Retaining walls free to rotate (cantilevered walls) should be designed for an active pressure of 35 pounds per cubic foot (equivalent fluid pressure) assuming level backfill consisting of onsite granular soils. Walls restrained from movement at the top should be designed for an additional uniform soils pressure of 8xH pounds per square foot where H is the height of the wall in feet. Any additional surcharge pressures behind the retaining walls should be added to these values. Retaining walls should be provided with adequate drainage to prevent buildup of hydrostatic pressure and should be adequately waterproofed. The subdrain system behind retaining walls should consist at a minimum of 4-inch diameter Schedule 40 (or equivalent) perforated (perforations “down”) PVC pipe embedded in at least 1-cubic-foot of 3/4-inch crushed rock per lineal foot of pipe all wrapped in approved filter fabric. Recommendations for wall waterproofing should be provided by the Project Architect and/or Structural Engineer.

8. Temporary Slopes

Temporary slopes necessary to facilitate site grading or the construction of retaining walls may be cut vertically up to 4-feet where the cuts are not influenced by existing

structures or property line constraints. Any portion of temporary slopes near existing improvements or higher than 4-feet should be sloped at a ratio no steeper than 1:1 (horizontal to vertical), slot cut, or shored. Shoring will most likely be necessary to construct the southeast retaining wall of the residence/lower level due to the height of the proposed cut and close proximity of the cut to the adjacent property. Consideration should be given to incorporating the shoring system for the southeast portion of the residence into the permanent retaining wall as a means of constructing the wall and facilitating the excavation process.

Field observations by the Engineering Geologist during grading of temporary slopes is recommended and considered necessary to confirm anticipated conditions and provide additional recommendations as warranted. Slot cut/shoring parameters can be provided upon request.

9. Retaining Wall and Utility Trench Backfill

All retaining wall and utility trench backfill should be compacted to at least 90 percent relative compaction (ASTM: D 1557-00). Backfill should be observed and tested as necessary by the Geotechnical Consultant.

10. Sulfate Content

Representative samples of the on-site soils were submitted for sulfate analyses. The results of the soluble sulfate tests per EPA 9038 methods are summarized on the Laboratory Test Results, Figure 4. These sulfate contents are consistent with a negligible to severe sulfate exposure classifications in Table 19-A-4 of the California Building Code. Concrete in contact with the on-site materials should be designed for severe sulfate exposure in accordance with the provisions for sulfate resistant concrete included in Table 19-A-4 of the California Building Code.

11. Site Drainage

Site drainage and choice of landscaping are important. The following recommendations are intended to minimize the potential adverse effects of water on the structure and appurtenances. Surface drainage issues should be addressed by the project Architect and/or Civil Engineer.

a. Consideration should be given to providing the structure with roof gutters and downspouts that discharge into appropriate and designed outlet structures.

b. All site drainage should be directed away from the structure and to designed outlet structures. This may be accomplished through area drains or through sheet drainage. Drainage should not be allowed to pond behind retaining walls or adjacent to the structure.

c. No concentrated runoff should be allowed over and down the seaward slope and seacliff.

d. No landscaping should be allowed against the structure. Moisture accumulation or watering adjacent to foundations can result in deterioration of wood/stucco and may effect footings

e. Irrigated areas should not be over-watered. Irrigation should be limited to that required for maintaining the vegetation. Additionally, automatic systems should be seasonally adjusted.

f. All yard and roof drains should be periodically checked to verify they are not blocked and flow properly. This may be accomplished either visually or, in the case of subsurface drains, by placing a hose at the inlet and checking the outlet for flow.

12. Recommended Observation and Testing During Construction

The following tests and/or observations by the Geotechnical Consultant are recommended:

a) Site grading.

b) Drilled pier excavations at the time of drilling.

c) Footing excavations prior to placement of forms and reinforcing steel.

d) Retaining wall backdrains and backfill.

e) Utility trench backfill.

f) Driveway subgrade.

13. Grading and Foundation Plan Review

Grading and foundation plans should be reviewed by the Geotechnical Consultant to confirm conformance with the recommendations presented herein and to provide additional recommendations, as necessary.

LIMITATIONS

The analyses, conclusions and recommendations contained in this report are based on site conditions as they existed at the time of our investigation and further assume the excavations to be representative of the subsurface conditions throughout the site. If different subsurface conditions from those encountered during our exploration are observed or appear to be present in our excavations, the Geotechnical Consultant should be promptly notified for review and reconsideration of recommendations.

Our investigation was performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable Geotechnical Engineers practicing in this or similar localities. No other warranty, express or implied, is made as to the conclusions and professional advice included in this report.

This opportunity to be of service is appreciated. If you have any questions, please contact our office at your convenience.

Sincerely,

COASTAL GEOTEHCNICAL

Brandon A. Boka
Registered Geologist 5913
Certified Engineering Geologist 1966
(expires 03/31/06)

Mark D. Hetherington
Registered Civil Engineer 30488
Geotechnical Engineer 397
(expires 03/31/06)

Jamie K. Fink
Senior Geologist

REFERENCES

1) Aerial Photograph, Flight 5925, Photos 182 and 183, dated October 15, 1939.

2) Aerial Photograph, Flight GS-CP, Photos 8-55 and 8-56, dated November 29, 1946.

3) Aerial Photograph, Flight GS Vask, Photos 3-17 and 3-18, dated February 28, 1963.

4) Aerial Photographs, Flight 41, Photos 19 and 20, dated July 30, 1970.

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18) Peterson, M., Beeby, W., Bryant, W., et al., Seismic Shaking Hazard Maps of California, California Division of Mines and Geology, Map Sheet 48, dated 1999.

19) Toal Engineering, Inc., "Topographic Survey, Portion of Lot 22, Tract 702, Laguna Beach, CA," dated May 20, 2003.

20) Toppozada, Tousson R., Bennett, John H., Borchardt, Glenn, Soul, Richard, and Davis, James F. 1988. Planning Scenario for a Major Earthquake on the Newport-Inglewood Fault Zone. California Division of Mines and Geology, Special Publication 99.

21) Vedder, J.R., Yerkes, R.V., and Schoelhamer, J.E., "Geologic Map of the San Joaquin Hills-San Juan Capistrano Area, Orange County, California:" United States Geological Survey, Open File Map 75-522, dated 1957.

DRILLING COMPANY: **Al-Roy Drilling** RIG: **Bucket Auger** DATE: **06/23/04**

BORING DIAMETER: **24"** DRIVE WEIGHT: **Varies** DROP: **12"** ELEVATION: **' ±**

BORING NO. **B-1**

DEPTH (FEET)	BULK SAMPLE	DRIVE SAMPLE BLOWS/FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
0.0					SM	**FILL:** Light gray silty fine to medium sand with abundant sub-angular gravel to cobble size metamorphic rock clasts and some scattered trash, damp, loose, caving
	X				SM SC	Brown to reddish brown slightly clayey and silty fine to medium sand with some scattered sub-angular gravel to cobble size metamorphic rock clasts, moist, loose to medium dense, variably porous
5.0	X	4				
10.0	X	7(rock in sample)				@11': Thin zone of vegetation (weeds) and abundant gravel to cobble, general trend of contact dips about 20-25/southwest
		2			SM SC	Olive brown to olive green slightly clayey and silty fine to medium sand with abundant sub-angular gravel to boulder size meatamorphic and sedimentary rock clasts, moist, loose, rock clasts are nested with voids between, slight to moderate caving
15.0	X	9				
	X					Reddish brown sandy clay and clayey fine to medium sand, moist, soft to firm
	X				SM SC	**COLLUVIUM:** Dark brown slightly clayey and silty fine to coarse sand with scattered gravel to cobble size metamorphic rock clasts, moist, loose to medium dense
20.0		7				
	X					@20.5': Abundant gravel to boulder size metamorphic rock clasts, difficult drilling, slight seepage, drilled with 18" diameter bucket below due to boulders
		5				@22': Olive green clayey fine to coarse sand with abundant gravel to cobble, moist to very moist, loose to medium dense, difficult drilling
	X					
25.0		30/6"				**BEDROCK (San Onofre Breccia):** Light olive green silty fine to coarse sandstone and breccia, damp to moist, dense to very dense, partially to moderately cemented
		40/6"				
						Total Depth 27 Feet Slight Seepage @ Approximately 20.5 Feet Caving @ Approximately 0 to2 and 11 to 17 Feet
30.0						

BORING LOG

HETHERINGTON ENGINEERING, INC.

GEOTECHNICAL CONSULTANTS

31451 South Coast Highway
Laguna Beach, CA

PROJECT NO. **474.1** FIGURE NO. **1**

DRILLING COMPANY: **Al-Roy Drilling** RIG: **Bucket Auger** DATE: **06/23/04**

BORING DIAMETER: **24"** DRIVE WEIGHT: **2150 lbs.** DROP: **12"** ELEVATION: **82' ±**

BORING NO. **B-2**

DEPTH (FEET)	BULK SAMPLE	DRIVE SAMPLE BLOWS/FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
0.0					SM	**FILL:** Light brown to brown silty fine to medium sand with scattered gravel size metamorphic rock clasts, damp, loose
					SM SC	Brown slightly clayey and silty fine to medium sand with scattered gravel to cobble size meatamorphic rock clasts, moist, loose to medium dense, variably porous
						@4': Increase in gravel and cobble
5.0		4				@5.5': Becomes loose, some scattered gravel size asphalt fragments
						@9.8': General trend of contact dips about 20/southeast
10.0		6				**TERRACE DEPOSITS:** Light orange brown silty fine to medium sand with scattered sub-rounded to sub-angular gravel, damp to moist, medium dense, friable
						@12': Grades to light brown to light orange brown slightly silty fine to coarse sand with occasional sub-rounded to sub-angular gravel size metamorphic rock clasts, damp to moist, medium dense, very friable, moderate to heavy caving, difficult drilling due to caving, hole belled-out significantly from about 11 to 22.5'
15.0		6				
20.0						
		12/3"				**BEDROCK (San Onofre Breccia):** Olive green slightly clayey and silty fine to coarse sandstone and gravelly sandstone, moist, dense to very dense
25.0						@23.3': General drilling refusal due to caving in the terrace depostits and dense bedrock
30.0						Total Depth 23.3 Feet No Groundwater Moderate to Heavy Caving @ Approximatey 11 to 22.5 Feet

BORING LOG

HETHERINGTON ENGINEERING, INC.

GEOTECHNICAL CONSULTANTS

31451 South Coast Highway
Laguna Beach, CA

PROJECT NO. **474.1** FIGURE NO. **2**

DRILLING COMPANY: **Al-Roy Drilling** RIG: **Bucket Auger** DATE: **06/24/04**

BORING DIAMETER: **24"** DRIVE WEIGHT: **Varies** DROP: **12"** ELEVATION: **108' ±**

BORING NO. **B-3**

DEPTH (FEET)	BULK SAMPLE	DRIVE SAMPLE BLOWS/FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
0.0						**FILL:** Brown to reddish brown slightly clayey and silty fine to medium sand with some scattered sub-angular gravel to cobble size metamorphic clasts. moist, loose to medium dense
	X	2				
					SM SC	Olive green to olive gray slightly clayey and silty fine to coarse sand with grqvel to cobble size metamorphic rock clasts, moist, loose to medium dense
5.0	X	2(no recovery)				
					SM SC	Olive green to olive gray to reddish brown slightly clayey and silty fine to medium sand with locally abundant gravel to cobble size metamorphic rock clasts, moist, loose to medium dense
10.0	X	4				@11 to 14': Abundant gravel to boulder size metamorphic and sedimentary rock clasts, difficult drilling
15.0	X	2				
20.0	X	1				@19': Becomes very moist to wet, loose
						@22': Slight seepage
					SC	Reddish brown clayey fine to coarse sand with scattered gravel size metamorphic rock clasts, very moist to wet, loose
25.0		2		▽		@25': Saturated, loose
					SM SC	**COLLUVIUM (?):** Gray to brown slightly clayey and silty fine to medium sand with some scattered sub-angular gravel to cobble size metamorphic rock clasts, saturated, loose, moderate to heavy caving
30.0						

BORING LOG

HETHERINGTON ENGINEERING, INC.

GEOTECHNICAL CONSULTANTS

31451 South Coast Highway
Laguna Beach, CA

PROJECT NO. **474.1** FIGURE NO. **3**

DRILLING COMPANY: **Al-Roy Drilling** RIG: **Bucket Auger** DATE: **06/24/04**

BORING DIAMETER: **24"** DRIVE WEIGHT: **Varies** DROP: **12"** ELEVATION: **108' ±**

BORING NO. **B-3**

DEPTH (FEET)	BULK SAMPLE	DRIVE SAMPLE BLOWS/FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
30.0	X					
	X	35/6"				
35.0					SM SC	Dark gray to blue gray to brown clayey to silty fine to coarse sand with scattered sub-angular gravel size metamorphic rock clasts, saturated, loose, heavy caving
						BEDROCK (San Onofre Breccia): Olive green slightly clayey and silty fine to coarse sandstone, moist, dense to very dense
40.0						Total Depth 38 Feet (Hole Caved in to Approximately 31 Feet @ Completion of Drilling) Slight Seepage @ Approximately 22 Feet Groundwater @ Approximately 25 Feet Moderate to Heavy Caving from Approximately 27 to 37.5 Feet
45.0						
50.0						
55.0						
60.0						

BORING LOG

HETHERINGTON ENGINEERING, INC.

GEOTECHNICAL CONSULTANTS

31451 South Coast Highway
Laguna Beach, CA

PROJECT NO. **474.1** FIGURE NO. **4**

DRILLING COMPANY: **Al-Roy Drilling** RIG: **Bucket Auger** DATE: **06/24/04**

BORING DIAMETER: **24"** DRIVE WEIGHT: **2150 lbs.** DROP: **12"** ELEVATION: **118' ±**

BORING NO. **B-4**

DEPTH (FEET)	BULK SAMPLE	DRIVE SAMPLE BLOWS/FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
0.0					SM	**COLLUVIUM:** Light brown silty fine to medium sand with abundant sub-angular gravel to boulder size metamorphic rock clasts, damp, loose, porous, roots, difficult drilling due to rocks
5.0	X					**TERRACE DEPOSITS:** Light orange brown to light brown slightly clayey and silty fine to medium sand with sub-angular gravel to cobble size metamorphic rock clasts, damp to moist, medium dense
	X					**BEDROCK (San Onofre Breccia):** Olive green to olive gray slightly clayey and silty fine to coarse sandstone and breccia, damp to moist, dense to very moist, partially to moderately cemented, difficult drilling
10.0						@7.5': General drilling refusal on breccia
						Total Depth 7.5 Feet
						No Groundwater
						Slight Caving from Approximately 0 to 3 Feet
15.0						
20.0						
25.0						
30.0						

BORING LOG

HETHERINGTON ENGINEERING, INC.

GEOTECHNICAL CONSULTANTS

31451 South Coast Highway
Laguna Beach, CA

PROJECT NO. **474.1** FIGURE NO. **5**

Nota Architect

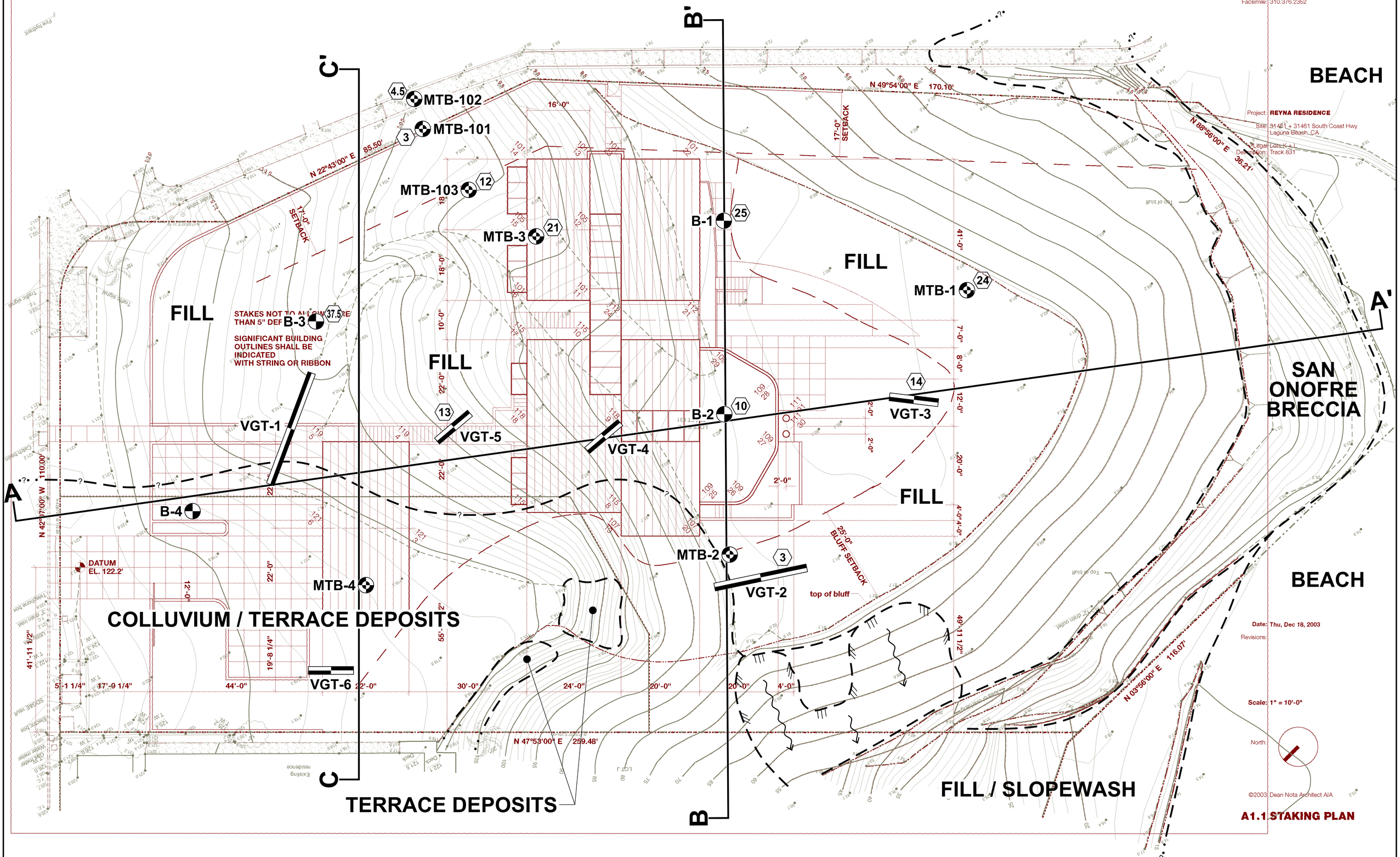
Mail: 2465 Myrtle Avenue
Hermosa Beach, CA 90254

Voice: 310.374.5535
Facsimile: 310.376.2352

Project: **REYNA RESIDENCE**

Site: 31451 + 31461 South Coast Hwy
Laguna Beach, CA

Legal: Lots K + L
Description: Track 831



Date: Thu, Dec 18, 2003

Revisions:

Scale: 1" = 10'-0"

North

©2003 Dean Nota Architect AIA

A1.1 STAKING PLAN

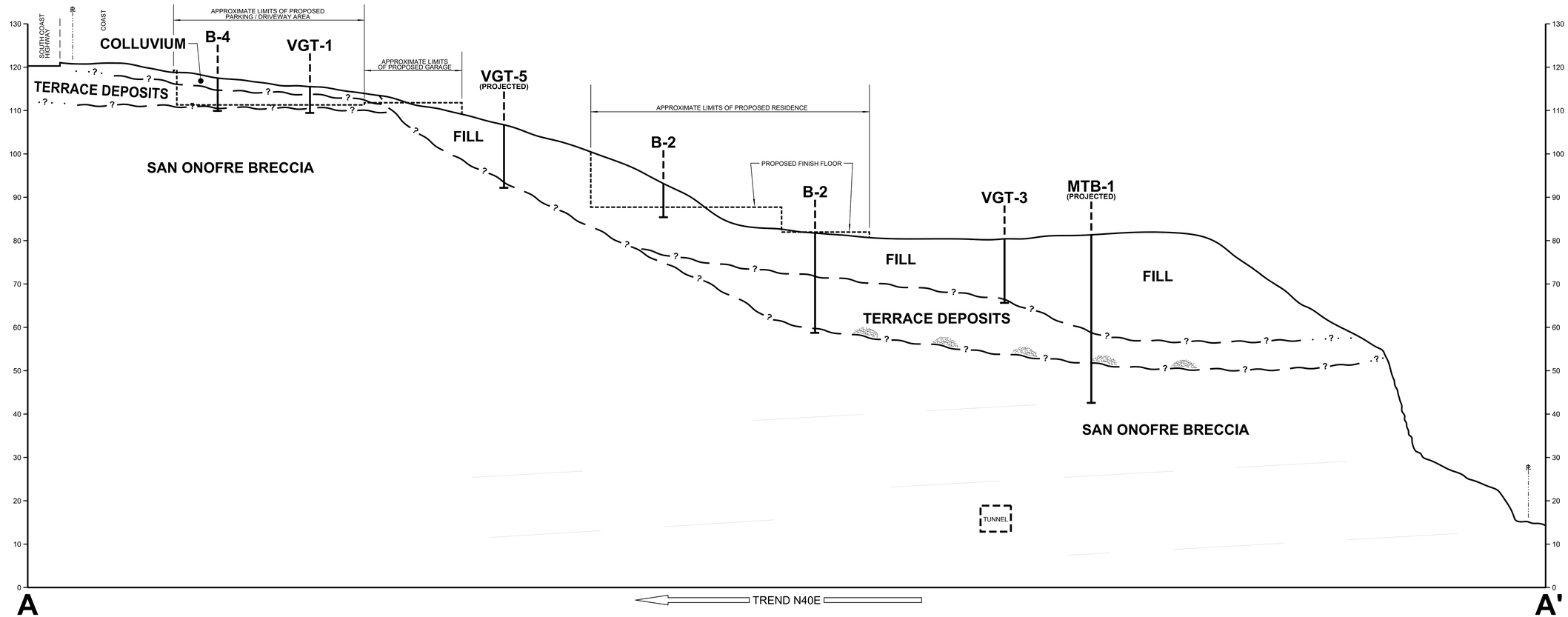
LEGEND

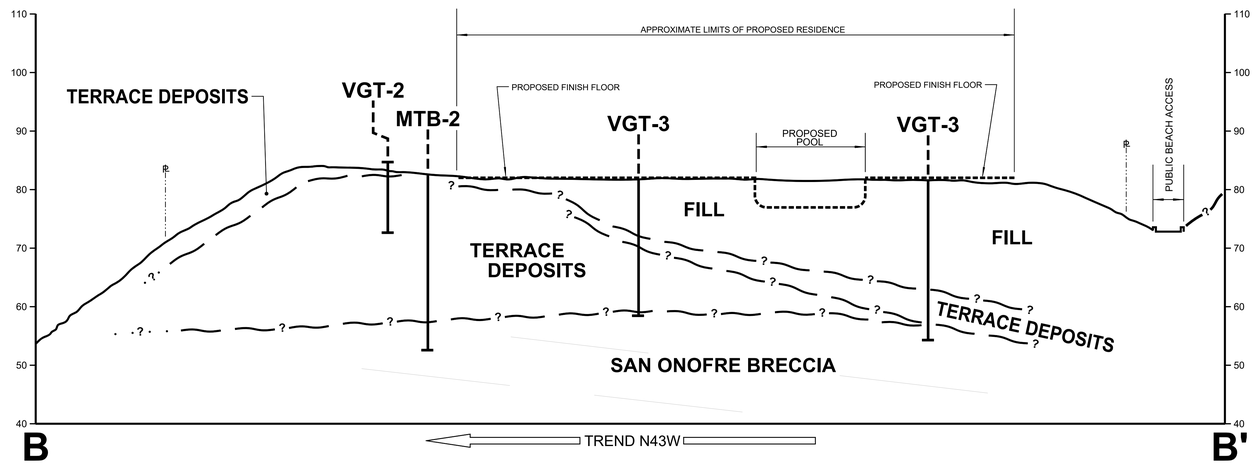
B-2 ○	APPROXIMATE LOCATION OF BORING BY...
MTB-2 ○	APPROXIMATE LOCATION OF BORING BY ...
VGT-6 ▭	APPROXIMATE LOCATION OF TEST PIT
25	APPROXIMATE DEPTH OF FILL / COLLUVIUM BELOW EXISTING GRADE (FEET)
C C'	GEOLOGIC CROSS-SECTION

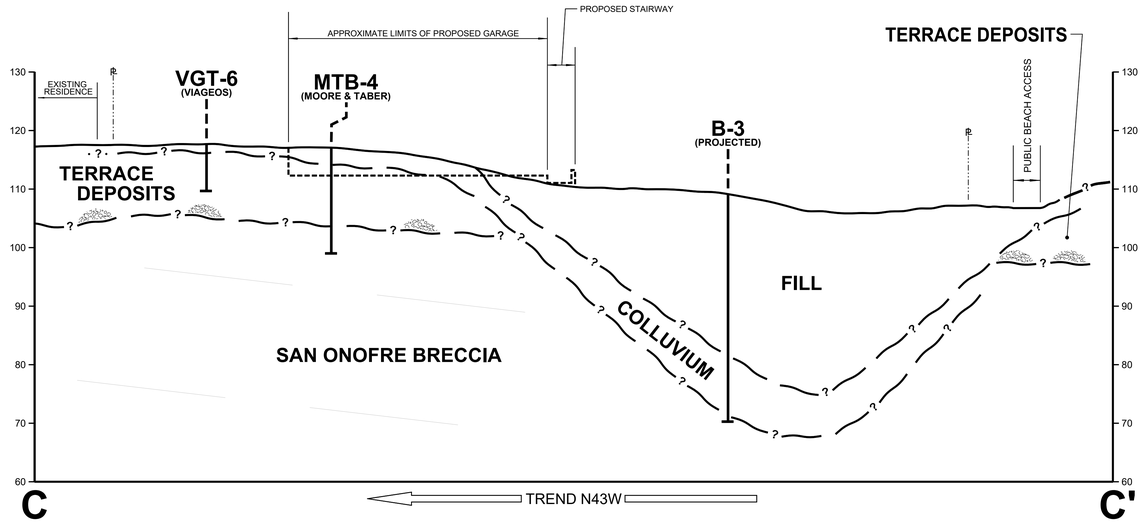
SCALE: 1" = 10'

0 5 10 15 20

PLOT PLAN		
COASTAL GEOTECHNICAL GEOTECHNICAL CONSULTANTS	PROJECT NO. 474.1	PLATE NO.







SCALE: 1" = 10'

0 1 2

0 5 10 15 20

GEOLOGIC CROSS-SECTIONS

COASTAL GEOTECHNICAL
GEOTECHNICAL CONSULTANTS

PROJECT NO. 474.1 | PLATE NO.

LABORATORY TEST RESULTS

SULFATE TEST RESULTS (EPA 9038)	
Sample Location	**Soluble Sulfate in Soil (%)**
B-1 @ 1-3’	0.2590
B-1 @ 5’	0.2460
B1 @ 20-23’	0.0270

DIRECT SHEAR (ASTM: D 3080)			
Sample Location	**Angle of Internal Friction (°)**	**Cohesion (psf)**	**Remarks**
B-1 @ 5’	33	150	Remolded to in-place design and moisture content, consolidated, saturated, drained.
B-1 @ 20-23’	40	250	Remolded to in-place design and moisture content, consolidated, saturated, drained.

EXPANSION INDEX (ASTM: D 4829)					
Sample Location	**Initial Moisture (%)**	**Compacted Dry Density (pcf)**	**Final Moisture (%)**	**Expansion Index**	**Expansion Potential**
B-1 @ 5’	8.1	117.9	16.1	18	Very low

Figure 7
Project 474.2
Log No. CG6399

APPENDIX D.2: Geotechnical Investigation Update

COASTAL GEOTECHNICAL
SOIL & FOUNDATION ENGINEERING
ENGINEERING GEOLOGY • HYDROGEOLOGY

April 20, 2021
Project No. 9285.1CG
Log No. 21383

Mr. Tony Reyna
16530 Ventura Blvd, Suite 305
Encino, California 91436

Attention: Mr. Tony Reyna

SUBJECT: GEOTECHNICAL UPDATE
Proposed Single-Family Residence
31451 S. Coast Highway
Laguna Beach, California

References: Attached

Dear Mr. Reyna:

In accordance with your request, we have performed a geotechnical update for the proposed single-family residence, swimming pool, and hardscape improvements at the subject site. Our work for the update was performed during March and April 2021. Previous geotechnical work relative to the subject site was performed by this office in 2004 and several other firms (References 14, 16, and 22). Coastal hazards analysis and bluff edge determination were performed by Geosoils (References 12 and 13). To assist with this update, we were provided with a topographic survey and grading plans by Toal Engineering, Inc. (References 20 and 21) and structural plans by TMM Engineering, Inc (Reference 19). Based on a review of the civil and structural plans, we understand that a custom multi-level residential structure, along with a swimming pool and hardscape improvements are proposed. The proposed construction will descend the existing hillside in a stairstep fashion.

The purpose of our work was to provide updated grading and foundation recommendations for the proposed construction. The location of the site is shown on the attached Location Map, Figure 1. A Geologic Map (using the "Preliminary Grading Plan…" as a base map) is attached as Figure 2 and Geologic Cross-Sections are attached as Plates 1 and 2.

With the above in mind, our scope of services included the following:

- Review of geotechnical reports and plans pertinent to the site (see References).

- Site reconnaissance.

- Subsurface exploration consisting of one hollow stem auger boring to a depth of 27-feet below existing site grade for the purpose of soil/bedrock sampling and geologic observation.

- Laboratory testing of samples obtained during the subsurface exploration.

- Engineering and geologic analysis.

- Preparation of a report providing our findings, and our updated conclusions and recommendations.

SITE DESCRIPTION

The subject property is located at 31451 South Coast Highway, Laguna Beach, California (see Location Map, Figure 1). The residential property consists generally of a vacant irregular-shaped ocean front lot. Topographically, the property consists generally of gently to moderately and locally steep west to southwest sloping ground that is bounded to the southwest, west, and northwest by an approximate 45 to 55-feet high, approximate 1:5:1 (horizontal to vertical) to near vertical fill slope and seacliff. A typically wide sandy beach and the Pacific Ocean extend along the seaward margin of the property.

The property is bounded to the north/northwest by the remnants of a partially infilled drainage and an existing single-family residence situated at a similar elevation as the inland portion of the subject site, to the south/southeast by a single-family residence that is currently under construction, to the southwest and northwest by the seacliff/shoreline and Pacific Ocean, and to the northeast by South Coast Highway.

Overall topographic relief within the boundaries of the property is approximately 107-feet, with elevations ranging from approximately 122-feet (msl) along the northeast property boundary near South Coast Highway to approximately 15-feet (msl) along the general western property boundary and toe of the seacliff.

PROPOSED DEVELOPMENT

Based on review of the provided structural plans by TMM Engineering, we understand that a custom, multi-level, single-family residence is proposed. Review of the grading plans indicate grading will consist primarily of cutting into the existing hillside to achieve planned grades. Cuts of 20-feet maximum are proposed. Retaining walls will be incorporated into the building walls to heights of approximately 11-feet, retaining both sloping and level backfill. Shoring walls up to 8-feet in height may be necessary along the property lines.

SUBSURFACE EXPLORATION

Subsurface exploration consisted of one hollow stem auger boring to a depth of 27-feet. The subsurface exploration was supervised by an engineer from this office, who visually classified the soil, and obtained bulk and relatively undisturbed soil/bedrock samples for laboratory testing. The soils were visually classified according to the Unified Soil Classification System. The approximate location of the boring are shown on the attached Geologic Map, Figure 1 and Geologic Cross-Sections, Plates 1 and 2. The Boring Log is attached as Figure 3. Logs of prior borings excavated by this office in 2004 are included in Appendix B.

LABORATORY TESTING

Laboratory testing was performed on samples obtained during the subsurface exploration. Tests performed consisted of the following:

- Dry Density/Moisture Content (ASTM: D 2216)
- Direct Shear (ASTM: D 3080)

Results of the dry density and moisture content determinations are presented on the Boring Log, Figure 3. The remaining laboratory test results are presented on the attached Laboratory Test Results, Figure 4. The results of laboratory testing performed on samples from borings excavated in 2004 are included in Appendix B.

SOIL AND GEOLOGIC CONDITIONS

1. Geologic Setting

   The subject site is located in the extreme southwest portion of the U.S.G.S. San Juan Capistrano 7.5-minute quadrangle and within the coastal plain region of the Peninsular Ranges geomorphic province. The site and vicinity are situated along an irregular trending stretch of coastline that is characterized by numerous coves and pocket beaches that are backed by a landward succession of steep to near vertical sea cliffs, typically gently to moderately seaward sloping terrace terrain, and ultimately by moderately to steeply sloping resistant hills that comprise the western flank of the San Joaquin Hills. The property lies within a promontory of the shoreline approximately 700-feet northwest of a prominent headland known as Table Rock and is fronted by a seasonally variable but typically wide sandy beach.

The geology of the subject lot is characterized by locally deep fills on the south side of the lot associated with a pre-existing drainage, regressive marine and continental terrace deposits that were laid down during glacio-eustatic changes in sea level in the Pleistocene, and ultimately marine sedimentary bedrock assigned to the middle Miocene San Onofre Breccia. Based on our subsurface exploration and review of the available geologic reports it appears that two wave-cut platforms, representing essentially two ancient high sea-level stands, exist within the property. The wave-cut platforms and associated geologic contacts between the terrace deposits and San Onofre Breccia lie approximately 5 to 48-feet below the existing lot grade and at approximate elevations of 55 and 110-feet (msl). Structurally, the terrace deposits are considered essentially massive, while bedding attitudes observed or reported in the underlying San Onofre Breccia within the site and vicinity indicate a general northeast strike with dips ranging from approximately 5 to 26-degrees to the southeast. Fracture sets have generally northerly strikes and dips between 36 to 80-degrees to the northeast, southeast, and southwest. Review of the referenced aerial photographs and the results of our subsurface exploration indicates the subject property appears to have been essentially bound by seaward trending drainages prior to the construction of South Coast Highway in the late 1920's. In particular, it appears that a relatively well-developed northeast/southwest trending drainage extended from east of South Coast Highway and through the general southern portion of the site to the beach (see Geologic Map, Figure 2). No evidence of sea caves within the property boundaries was observed during our site observations and mapping.

There are no active faults or landslides known to exist or mapped within the property, and the site is not located within the presently defined boundaries of an Alquist-Priolo Earthquake Fault Zone.

Topographic evidence of several apparent surficial failures was observed during our reconnaissance within the fill slope that bounds the general seaward portion of the property along with an apparent block fall within the northwest portion of the seacliff. These failures are shown on the attached Geologic Map, Figure 2.

Based on the results of our subsurface exploration, geologic mapping, and review of the referenced geologic and geotechnical documents, the subject property appears to be underlain by variable, but locally deep fill soils associated with the infilling of a drainage course and creation of the existing lower-level pad area, variably thick surficial soils consisting of colluvium, and ultimately by a succession of Pleistocene terrace deposits and middle Miocene San Onofre Breccia bedrock.

A brief description of the geologic units observed within the site follows. The distribution of the geologic units is indicated on the accompanying Geologic Map, Figure 2, and Geologic Cross-Sections Plates 1 and 2.

2. Geologic Units

a) Fill - The southern portion of the subject site is mantled by approximately 10 to 15-feet of fill that consists generally of porous, damp to moist, loose, dark brown silty fine sand with minor scattered roots. The fill is not considered suitable for support of the proposed improvements in its existing condition.

b) Colluvium - The site has an approximate 3 to 6-feet thick deposit of colluvium. The colluvium consists generally of damp, loose, light brown to orange brown silty fine to medium sand with locally abundant sub-angular gravel to cobble sized fragments of metamorphic rock clasts. The colluvium is not considered suitable for support of the proposed improvements in its existing condition.

c) Terrace Deposits - The fill and colluvium are underlain by continental and marine terrace deposits. The terrace deposits consist generally of damp to moist, medium dense to dense, reddish brown to orange brown slightly clayey and silty fine to medium sand with locally abundant sub-angular gravel to cobble metamorphic rock clasts that grade at depth to friable fine to coarse sand with a scattered basal gravel zone along the contact with the underlying bedrock. Moderate to heavy caving was observed within the lower section of the terrace deposits during the drilling operations for CGB-1 through CGB-4 (2004).

d) San Onofre Breccia - Sedimentary bedrock deposits assigned to the middle Miocene San Onofre Breccia were encountered beneath the terrace deposits in all exploratory borings and crop-out along the seacliff backing the site and vicinity. The section of bedrock observed consists generally of damp, dense to very dense, olive gray silty fine to coarse sandy breccia and sandstone. Gravel to boulder-size metamorphic rock clasts are typical in the breccia, and general drilling refusal was encountered in the 2004 and 2021 borings in the breccia.

3. Groundwater

Groundwater seepage was observed at several locations within the promontory headland and seacliff at the general southern and northern portion of the site from what is believed to be the terrace deposit/bedrock contact. Additionally, heavy water is evident from near the terrace deposit/bedrock contact where an apparent storm

drain pipe discharges at the face of the seacliff southwest of the site near the beach access stairs. Localized perched groundwater conditions have been known to exist within the south Laguna area and site vicinity along the terrace/bedrock contact, with the perched water believed to be the consequence of lateral migration of water from offsite areas through the relatively permeable terrace deposits and along the relatively impermeable bedrock. It should be noted that fluctuations in the amount and level of groundwater might occur due to variations in rainfall, irrigation, and other factors.

SEISMICITY

Localized and unnamed faults lie approximately 1000-feet and 1,900-feet west and east of the site, respectively (Reference 15). Recent activity on these faults have not been established within the last 11,700 years, consequently, they are not considered active. The closest surface trace of an active fault to the site is the Newport-Inglewood Fault Zone located approximately 2.1-miles to the southwest. Other nearby active faults are the Elsinore Fault Zone and the Palos Verdes Fault (Offshore Segment) located approximately 23.2-miles northeast and 17-miles southwest of the site, respectively. Strong ground motion could also be expected from earthquakes occurring along the San Jacinto and San Andreas fault zones which lie northeast of the site at distances of approximately 45-miles and 54-miles, respectively.

The San Clemente Fault, which lies approximately 58-miles southwest of the site, as well as numerous other offshore faults, could also provide strong ground motion.

Several buried thrust faults, commonly referred to as blind thrusts, underlie the Los Angeles Basin and the Orange County Coastal Plain at depth. These faults are not exposed at the ground surface and are typically identified at depths greater than 3.0-kilometers. The October 1, 1987, M_w 5.9 Whittier Narrows earthquake and the January 17, 1994, M_w 6.7 Northridge earthquake were a result of movement on the Puente Hills Blind Thrust and the Northridge Thrust, respectively. The San Joaquin Hills Blind Thrust underlies the site at depth. This thrust fault and others in the greater Los Angeles/Orange County are not exposed at the surface and do not present a potential surface fault rupture hazard at the site, however, these deep thrust faults are considered active features capable of generating future earthquakes that could result in moderate to significant ground shaking at the site.

The site is in a moderately active seismic region. Ground shaking due to earthquakes should be anticipated during the life of the proposed improvements. The following table lists the known active faults that would have the most significant impact on the site:

Fault	Maximum Probable Earthquake (Moment Magnitude)	Slip Rate (mm/year)
Newport-Inglewood (2.15-mile/3.46-kilometers northeast)	7.5	1.5
San Joaquin Hills (7.58-miles/12.20-kilometers southwest)	7.1	0.5
Elsinore (Julian Segment) (23.23-miles/37.39-kilometers northeast)	7.7	5.0

SEISMIC EFFECTS

1. Ground Accelerations

The most significant earthquake to affect the property is a 7.5 magnitude earthquake on the Newport Inglewood fault zone. Based on Section 1803.5.12 of the 2019 California Building Code and Section 11.8.3 of ASCE 7-16, peak ground accelerations (PGA_m) of about 0.646g are possible for the design earthquake. The site is considered a "near fault" site in accordance with Section 11.4.1 of ASCE 7-16.

2. Landsliding

The site is located on a bluff that overlooks the Pacific Ocean. Review of the referenced geologic literature indicates that the subject property has no previously mapped deep seated landslide deposits. The State of California Seismic Hazard Zone Map for the San Juan Capistrano Quadrangle (Reference 8) indicates that the bluff zone in this area has been identified as a zone of required investigation for earthquake-induced landslides. This zone, established by the State, takes into account the gradient of the slopes, but does not consider the local orientation of the geologic structure.

As previously described, the terrace deposits are considered essentially massive, while bedding attitudes observed or reported in the site vicinity have a northeast strike with dips ranging from 5 to 26-degrees to the southeast. These conditions are considered neutral or favorable with respect to the slope face. Additionally, historical aerials were reviewed for the site and vicinity and no significant slope failures were observed. While we do not opine the gross stability of the site to be an issue during or

after construction, the surficial stability of the bluff top may be impacted if site drainage (during or after construction) is not directed to the city streets and is allowed to flow over the top of the bluff.

3. Ground Cracks

The risk of fault surface rupture due to active faulting is considered low due to the absence of an active fault on site. Ground cracks due to shaking from seismic events in the region are possible, as with all southern California.

4. Liquefaction

Review of the Seismic Hazards Map for the San Juan Capistrano quadrangle indicates the beach west of the site is located in an area considered susceptible to seismically induced liquefaction (Reference 8). The risk of seismically induced liquefaction within the site is considered low due to the dense nature of the paralic deposits and bedrock and absence of shallow groundwater.

5. Tsunamis

The site is located on a coastal bluff at an elevation of approximately 80-feet above sea level (MSL). While the building area is not mapped within a tsunami inundation area (Reference 11), the bluff west of the building area may be impacted by a tsunami.

CONCLUSIONS AND RECOMMENDATIONS

1. General

Our site reconnaissance indicates that the subject property is in generally the same condition as during previous work by this office and others (see Appendix B).

The proposed construction is considered feasible from a geotechnical standpoint. Grading and foundation plans should consider the appropriate geotechnical features of the site. Provided that the recommendations presented in this report and good construction practices are utilized during design and construction, the proposed development of the site is not expected to adversely impact adjacent properties from a geotechnical standpoint.

2. Engineering Analysis of Slope Stability

Engineering analyses of slope stability were performed utilizing the geologic conditions depicted on Geologic Cross-Sections E-E' and F-F' using the computer program PCSTABL6 and based upon Spencer's Method. Strength parameters utilized for the analyses were based upon laboratory testing, literature review and experience. Printouts of selected slope stability analyses are included in Appendix A.

Our slope stability analyses indicate the coastal bluff possesses static and seismic factors of safety greater than 1.5 and 1.1, respectively.

3. Seismic Parameters for Structural Design

Seismic considerations that should be used for structural design at the site, based on Section 1613 of the 2019 California Building Code and ASCE 7-16, include the following:

a) Ground Motion - The proposed structure should be designed and constructed to resist the effects of seismic ground motions as provided in Section 1613 of the 2019 California Building Code.

Site Address: 31451 South Coast Highway, Laguna Beach, California

Latitude: 33.505317°N

Longitude: 117.747297°W

b) Spectral Response Accelerations - Using the location of the property and data obtained from the Structural Engineers Association Earthquake Hazard Program, risk targeted MCE_R short period Spectral Response Accelerations S_s (0.2 second period) and S_1 (1.0 second period) are:

$S_s = 1.335g$
$S_1 = 0.474g$

c) Site Class - In accordance with Chapter 20 of ASCE 7-16 and the underlying geologic conditions that consist of fill and colluvium over terrace deposits over bedrock, a Site Class D is considered appropriate for the subject property.

d) Site Coefficients F_a and F_v - In accordance with Table 1613.2.3 and considering the values of S_s and S_1, site amplification factors are:

$F_a = 1.0$
F_v = null

e) Spectral Response Acceleration Parameters Sm_s and Sm_1 - In accordance with Section 1613.2.3 and considering the values of S_s and S_1, and F_a and F_v, site modified Spectral Response Acceleration Parameters for Maximum Considered Earthquake are:

$Sm_s = 1.335$
Sm_1 = null

f) Design Spectral Response Acceleration Parameters Sd_s and Sd_1 - In accordance with Section 1613.2.4 and considering the values of Sm_s and Sm_1, Design Spectral Response Acceleration Parameters SD_S (0.2-second) and SD_1 (1.0-second) are:

$Sd_s = 0.890$
Sd_1 = null

g) Long Period Transition Period) - A Long Period Transitional Period of $T_L = 8$ seconds is provided for use in Orange County.

h) Seismic Design Category - In accordance with Tables 1604.5 and 1613.2.5, and ASCE 7-16, a Risk Category II and a Seismic Design Category D are considered appropriate for the subject property.

4. Site Grading

Prior to grading, the area of proposed construction should be cleared of any existing debris and vegetation. Materials generated during clearing should be properly disposed of at an approved location off-site. Holes resulting from the removal of buried obstructions, old septic tanks/seepage pits that may be encountered during construction, or other underground structures should be removed in accordance with local ordinances and replaced with compacted fill or lean concrete.

Most of the grading will consist of cutting to design grades with the residence supported on conventional continuous/spread footings with slab-on-grade floors founded in compacted fill and/or terrace deposits.

Where on-grade improvements are proposed (including flatwork, screen walls, etc.) and planned cuts do not remove all existing fill and colluvium either: 1) all existing fill and colluvium should be removed down to approved terrace deposits and recompacted to 90-percent relative compaction, or 2) proposed improvements should be constructed on foundations deepened to bedrock with an appropriate slope setback and structural slabs/raised floors supported by the foundations.

Following removals, the exposed terrace deposits should be scarified to about optimum moisture content and compacted to at least 90-percent relative compaction (ASTM: D 1557).

Fill should be moisture conditioned to about optimum moisture content and compacted by mechanical means in uniform horizontal lifts of 6 to 8-inches in thickness. All fill should be compacted to a minimum relative compaction of 90 percent based upon ASTM: D 1557. The on-site materials are considered suitable for use as compacted fill provided all vegetation and debris are removed. Rock fragments over 6-inches in maximum dimension and other perishable or unsuitable materials should be excluded from the fill.

5. Foundation and Slab Recommendations

The proposed improvements may be supported by conventional continuous/spread footings founded in compacted fill and/or terrace deposits. Conventional continuous/spread footings extending at least 24-inches into approved bearing materials and at least 12-inches wide may be designed for a dead plus live load bearing capacity of 2000-pounds-per-square-foot. This value may be increased by one-third for loads including wind and seismic forces. A lateral bearing value of 250-pounds-per-square-foot per foot of depth and a coefficient of friction between foundation soil and concrete of 0.35 may be assumed. Continuous footings should be reinforced with at least four No. 4 bars, two top and two bottom. Foundations located adjacent to utility trenches should extend below a 1:1 (horizontal to vertical) plane projected upward from the bottom of the trench.

Footing excavations should be observed by the Geotechnical Consultant prior to placement of reinforcement and concrete to ensure that appropriate bearing materials have been encountered.

Total and differential settlement due to foundation loads is considered to be less than 3/4 and 3/8-inch, respectively, for foundations founded as recommended.

Slab-on-grade floors should have a minimum thickness of 5-inches and should be reinforced with #4 bars spaced at 18-inches, center to center, in two directions, and supported on chairs so that the reinforcement is at mid-height in the slab. In areas where moisture sensitive floor coverings are planned, slabs should be underlain by a 4-inch layer of clean sand with at least 15-mil vapor barrier placed at mid-height in the sand. Prior to placing concrete, the slab subgrade soils should be thoroughly moistened.

6. Retaining Walls

Retaining wall foundations should be designed in accordance with the previous building foundation recommendations. Retaining walls free to rotate (cantilevered walls) should be designed for an active pressure of 45-pounds-per-cubic-foot (equivalent fluid pressure) for level backfill consisting of the onsite soils. Walls retaining backfill consisting of the on-site soils and restrained from movement at the top should be designed for an at-rest earth pressure of 60-pounds-per-square-foot (equivalent fluid pressure) for level backfill and 85-pounds-per-square-feet (equivalent fluid pressure) for 2:1 sloping backfill. Any surcharge pressures behind the walls should be added to these values.

Retaining walls should be provided with adequate drainage to prevent buildup of hydrostatic pressure and should be adequately waterproofed. The subdrain system behind retaining walls should consist of at least a 4-inch diameter Schedule 40 or SDR35 perforated (perforations "down") PVC pipe embedded in at least 1-cubic-foot of 3/4-inch crushed rock per lineal foot of pipe all wrapped in approved filter fabric. Other subdrain systems that may be contemplated for use behind retaining walls due to the ultimate wall designs and construction methodology will be addressed on a case-by-case basis. Recommendations for wall waterproofing should be provided by the Architect and/or Structural Engineer.

The lateral pressure on retaining walls due to earthquake motions (dynamic lateral force) should be calculated as $P_A = 3/8\ \gamma\ H^2 k_h$ where

P_A	=	dynamic lateral force (lbs/foot)
γ	=	unit weight = 125-pounds-per-cubic-foot
H	=	height of wall (feet)
k_h	=	seismic coefficient = 0.21

The dynamic lateral force may also be expressed as 20.0-pounds-per-cubic-foot (equivalent fluid pressure).

The dynamic lateral force is in addition to the static force and should be applied as a triangular distribution at 1/3H above the base of the wall. The dynamic lateral force need not be applied to retaining walls 6-feet or less in height.

7. Flatwork

Concrete flatwork supported by compacted fill, terrace deposits, or bedrock should be at least 5-inches thick (actual) and reinforced with No. 4 bars spaced at 18-inches on-center (two directions) and placed on chairs so that the reinforcement is in the center of the concrete. Contraction joints should be provided at 8-feet spacing (maximum). Joints should create square panels where possible. For rectangular panels (where necessary) the long dimension should be no more than 1.5 times the short dimension. Joint depth should be at least 0.25 times the flatwork thickness. Expansion joints should be thoroughly sealed to prevent the infiltration of water into the underlying soils.

8. Utility Trench and Retaining Wall Backfill

All utility trench and retaining wall backfill should be compacted to at least 90-percent relative compaction (ASTM: D 1557) and tested by the Geotechnical Consultant.

9. Temporary Slopes

Temporary slopes in existing fill should be inclined no steeper than 1:1 (horizontal to vertical). Temporary slopes in colluvium and terrace deposits may be excavated vertically to a maximum height of 4-feet and no steeper than 1:1 (horizontal to vertical) over 4-feet in height. Shoring may be necessary along some property boundaries. Shoring parameters can be provided upon request. Field observations by the Engineering Geologist during grading of temporary slopes are recommended and considered necessary to confirm anticipated conditions and to provide revised recommendations if warranted.

10. Corrosivity

A representative sample of the on-site soils was submitted for sulfate testing and the results are presented on the Laboratory Test Results, Appendix B. The sulfate content is consistent with a negligible sulfate (Class S0) sulfate exposure classification per

Table 4.2.1 of the American Concrete Institute Publication 318. Consequently, special provisions for sulfate resistant concrete are not considered necessary. Other corrosivity testing has not been performed, consequently, the on-site soils should be assumed to be severely corrosive to buried metals unless testing is performed to indicate otherwise.

11. Site Drainage

Site drainage and choice of landscaping are important. The following recommendations are intended to minimize the potential adverse effects of water on the structure and appurtenances. Recommendations for surface drainage should be provided by the Architect and/or Civil Engineer in general accordance with Section 1804.3 of the 2019 California Building Code.

a) Consideration should be given to providing the structure with roof gutters and downspouts that discharge water to an area drain system and ultimately to design outlets such as the street or storm drain.

b) All site drainage should be directed away from the structure and not be allowed to saturate or flow over slopes, pond along the structure/improvements, or pond behind retaining walls.

c) No landscaping should be allowed against foundations. Moisture accumulation or watering adjacent to foundations can result in deterioration of wood/stucco and may adversely affect the performance of the foundation system and residence/improvements.

d) Irrigated areas should not be over-watered. Irrigation should be limited to that required to maintain the vegetation. Additionally, automatic systems should be seasonally adjusted to minimize over-saturating potential particularly in the winter (rainy season).

e) All yard and roof drains should be periodically checked to verify they are not blocked and flow properly.

12. Recommended Observation and Testing During Construction

All grading and backfill should be tested/observed by the Geotechnical Consultant. The following tests and/or observations by the Geotechnical Consultant are recommended:

a) Observation and testing of grading.

b) Observation of footing excavations.

c) Retaining wall backdrain and backfill placement.

d) Utility trench backfill.

13. Grading and Foundation Plan Review

Grading and foundation plans should be reviewed by the Geotechnical Consultant to confirm conformance with the recommendations presented herein and to modify the recommendations, as necessary.

LIMITATIONS

The analyses, conclusions and recommendations contained in this report are based on site conditions, as they existed at the time of our investigation and further assume the excavations to be representative of the subsurface conditions throughout the site. If different subsurface conditions from those encountered during our exploration are observed or appear to be present during construction, the Geotechnical Consultant should be promptly notified for review and reconsideration of recommendations.

Our investigation was performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable Geotechnical Consultants practicing in this or similar localities. No other warranty, express or implied, is made as to the conclusions and professional advice included in this report.

This opportunity to be of service is sincerely appreciated. If you have any questions regarding this report, please contact our office at your convenience.

Sincerely,
COASTAL GEOTECHNICAL

Mark D. Hetherington
Civil Engineer 3048
Geotechnical Engin 397
(expires 3/31/22)

REGISTERED PROFESSIONAL ENGINEER
MARK D. HETHERINGTON
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Paul A. Bogseth
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CERTIFIED ENGINEERING GEOLOGIST
PAUL A.
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Attachments:	Location Map	Figure 1
	Geologic Map	Figure 2
	Geologic Cross-Sections	Plates 1 and 2
	Boring Log	Figure 3
	Laboratory Test Results	Figure 4
	Slope Stability Analysis	Appendix A
	2004 Coastal Geotechnical Boring Logs and Lab Results	Appendix B

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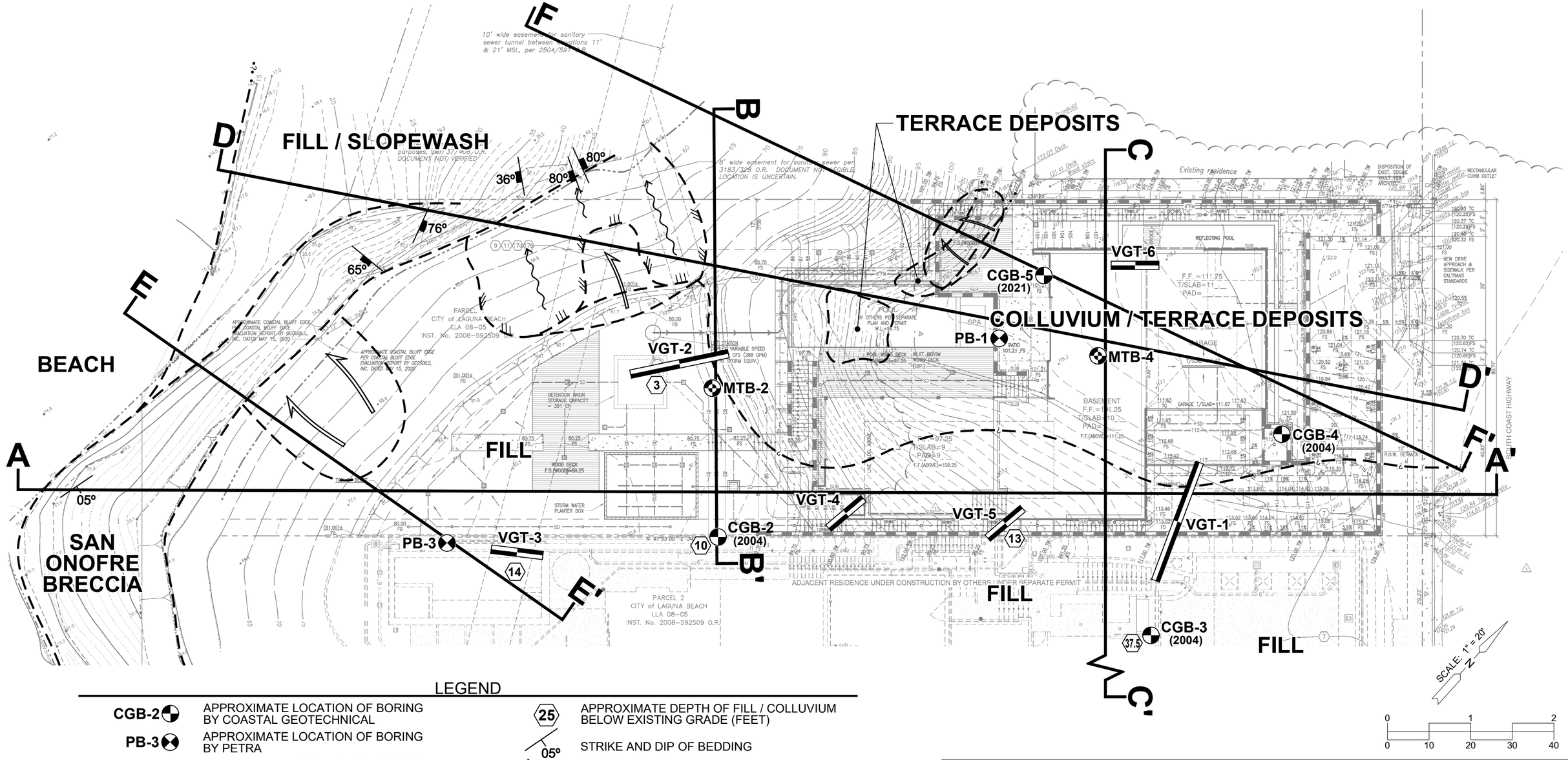
SCALE: 1" - 2000'
(1 Grid Equals: 0.5 x 0.5 miles)

LOCATION MAP

COASTAL GEOTECHNICAL
GEOTECHNICAL CONSULTANTS

31451 South Coast Highway
Laguna Beach, California

PROJECT NO. 9285.1CG | FIGURE NO. 1



LEGEND

CGB-2	APPROXIMATE LOCATION OF BORING BY COASTAL GEOTECHNICAL
PB-3	APPROXIMATE LOCATION OF BORING BY PETRA
MTB-2	APPROXIMATE LOCATION OF BORING BY MOORE & TABER
VGT-6	APPROXIMATE LOCATION OF TEST PIT BY VIAGEOS
C C'	GEOLOGIC CROSS-SECTION
25	APPROXIMATE DEPTH OF FILL / COLLUVIUM BELOW EXISTING GRADE (FEET)
05°	STRIKE AND DIP OF BEDDING
65°	STRIKE AND DIP OF FRACTURE
	DIRECTION OF GROUND MOVEMENT
	APPROXIMATE GEOLOGIC CONTACT

GEOLOGIC MAP

COASTAL GEOTECHNICAL
GEOTECHNICAL CONSULTANTS

31451 South Coast Highway
Laguna Beach, California

PROJECT NO. 9285.1CG | FIGURE NO. 2

DRILLING COMPANY: **Martini Drilling** RIG: **CME-75** DATE: **03/02/21**

BORING DIAMETER: **8"** DRIVE WEIGHT: **140 lbs.** DROP: **30"** ELEVATION: **' ±**

BORING NO. **CGB-5**

DEPTH (FEET)	BULK SAMPLE	DRIVE SAMPLE BLOWS/FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
0.0		50/4"	111	5.7		**FILL/COLLUVIUM:** Dark brown silty and clayey sand, dry, loose to dense, contains concrete fragments, seashells and gravel and cobbles
5.0		76	114	4.5		**TERRACE DEPOSITS:** Red brown clayey sand with abundant fragments of rock, moist, very dense
		50	121	3.4		@ 7': Yellow brown silty sand moist, very dense, contains abundant rounded gravel and cobbles
10.0		50/6" (disturbed)				@ 10': Red brown silty and clayey sand, moist, very dense, contains rounded gravel
15.0		94/10"	127	10.8		**BEDROCK (San Onofre Breccia):** Yellow brown to red brown Breccia consisting of angular coarse sand, gravel, and cobbles in a clayey sand to sandy clay matrix, moist, very dense
20.0		50/4"	113	5.6		@ 20': Gray brown to yellow brown breccia, moist, very dense, contains abundant angular, gravel and cobbles in a silty sandy matrix
25.0		50/0"				@ 25': Gray sandy breccia, moist, very dense
30.0						Drilling Refusal at 27-feet No Groundwater No Caving

BORING LOG

COASTAL GEOTECHNICAL

GEOTECHNICAL CONSULTANTS

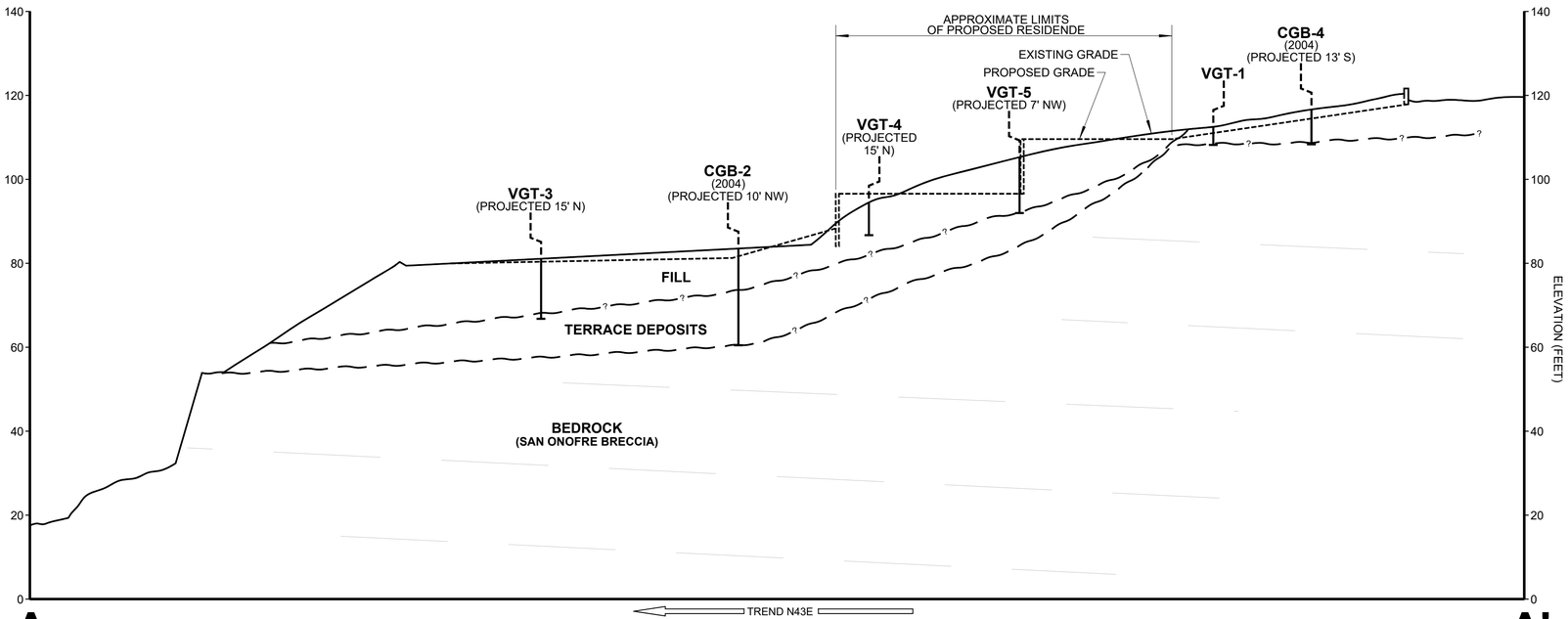
31451 South Coast Highway
Laguna Beach, California

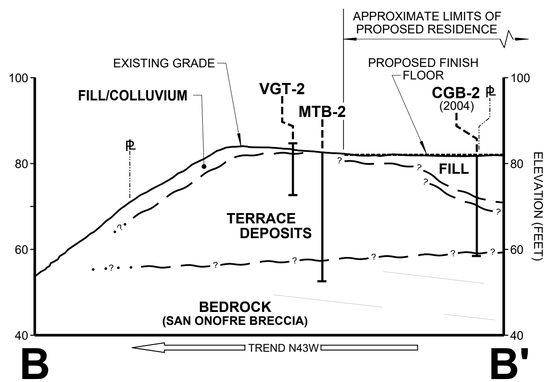
PROJECT NO. **9285.1CG** FIGURE NO. **3**

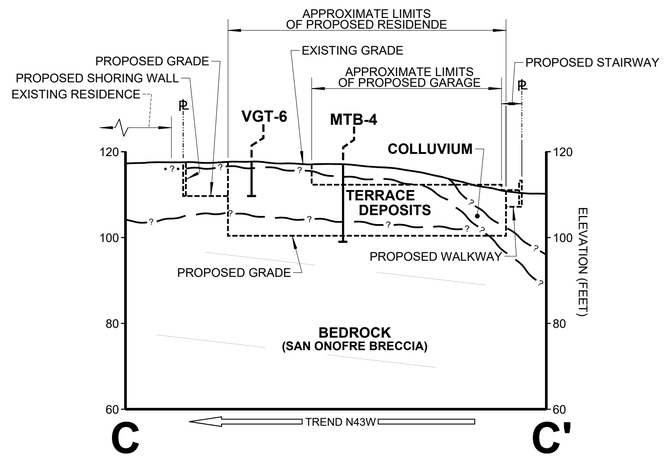
LABORATORY TEST RESULTS

DIRECT SHEAR (ASTM: D 3080)			
Sample Location	**Angle of Internal Friction (°)**	**Cohesion (psf)**	**Remarks**
B-1 @ 5’	36	325	Undisturbed ring sample, saturated, consolidated, drained
B-1 @ 20’	42	125	Undisturbed ring sample, saturated, consolidated, drained

Figure 4
Project No. 9285.1CG
Log No. 21383







SCALE: 1" = 20'

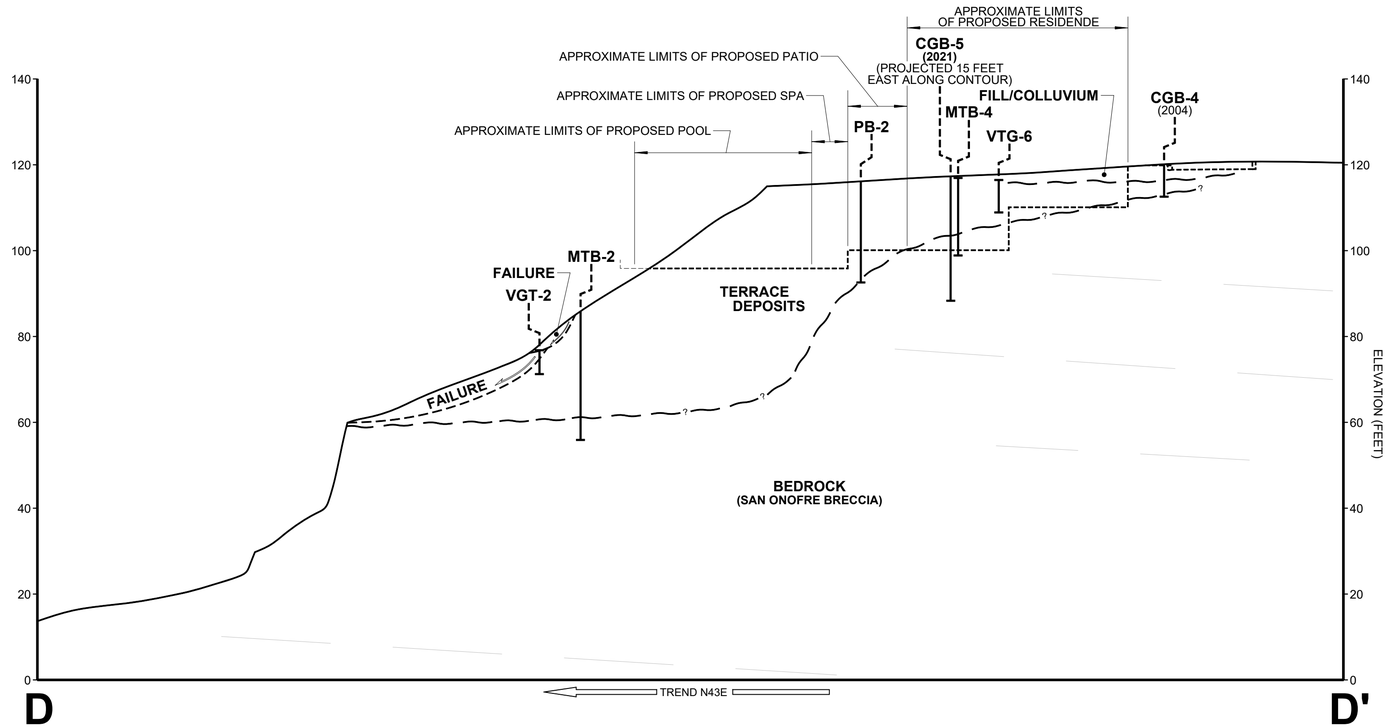
0 1 2
0 10 20 30 40

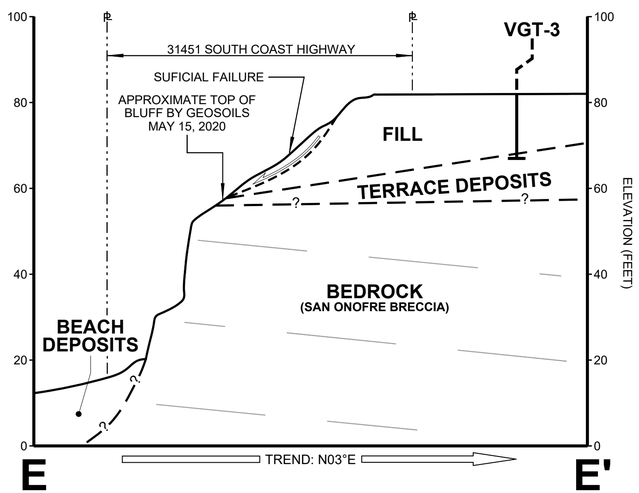
GEOLOGIC CROSS-SECTIONS

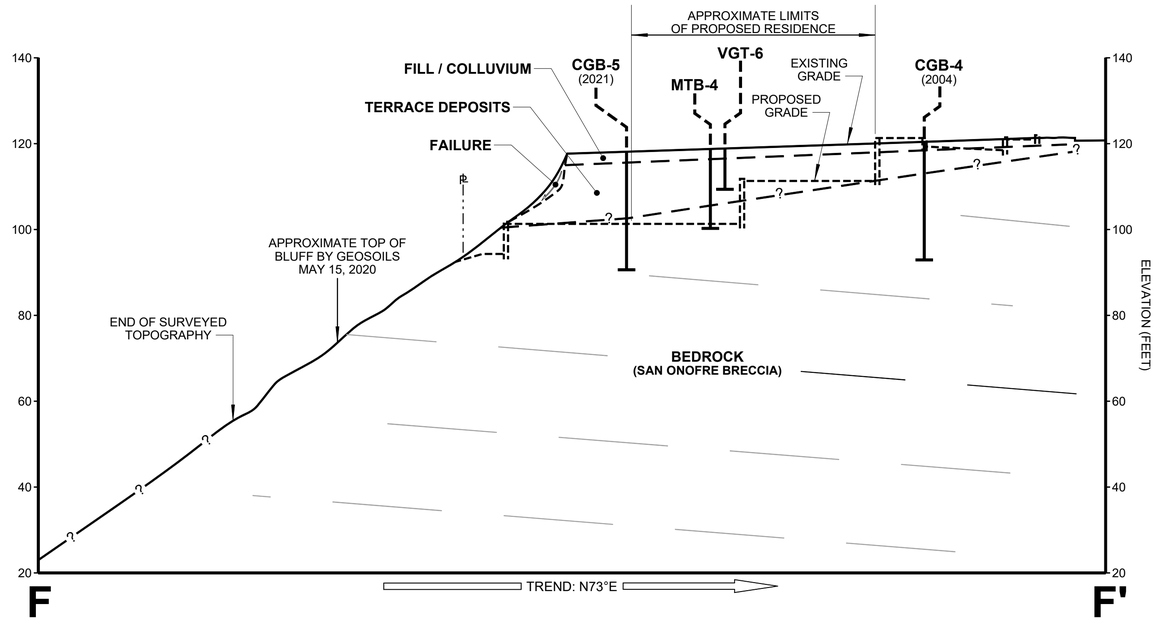
COASTAL GEOTECHNICAL
GEOTECHNICAL CONSULTANTS

31451 South Coast Highway
Laguna Beach, California

PROJECT NO. 9285.1CG | PLATE NO. 1







SCALE: 1" = 20'

0 1 2

0 10 20 30 40

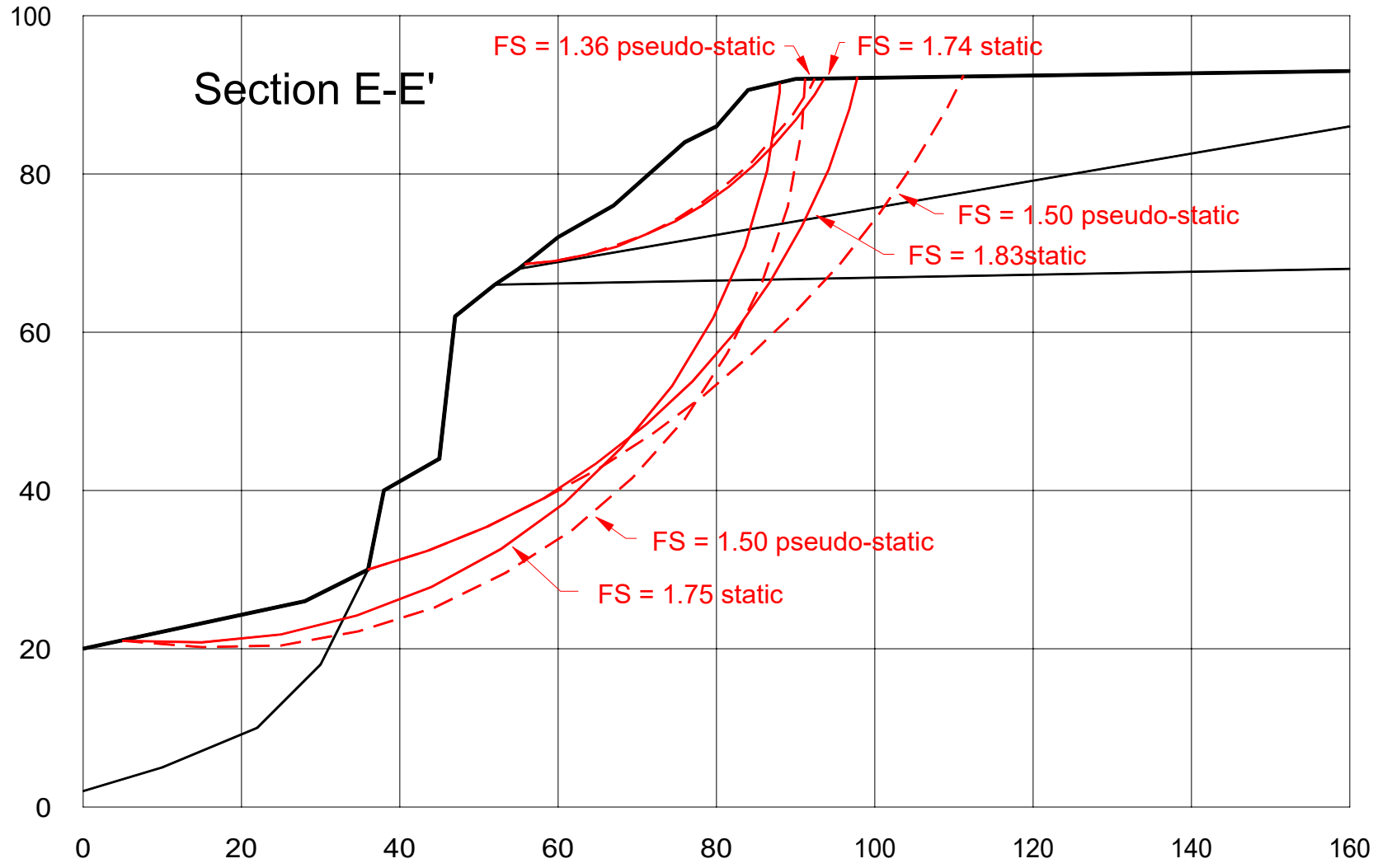
GEOLOGIC CROSS-SECTIONS

COASTAL GEOTECHNICAL
GEOTECHNICAL CONSULTANTS

31451 South Coast Highway
Laguna Beach, California

PROJECT NO. 9285.1CG | PLATE NO. 2

APPENDIX A
(Slope Stability Analyses)


Section E-E'
FS = 1.36 pseudo-static
FS = 1.74 static
FS = 1.50 pseudo-static
FS = 1.83static
FS = 1.50 pseudo-static
FS = 1.75 static
100
80
60
40
20
0
0
20
40
60
80
100
120
140
160

** PCSTABL6 **

by
Purdue University

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--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4-14-21
Time of Run:
Run By: CH
Input Data Filename: eex2.in
Output Filename: eex2.o1
Unit: ENGLISH
Plotted Output Filename: eex2.p1

PROBLEM DESCRIPTION 31451 S. Coast Hwy. Section E-E'
Global failure

BOUNDARY COORDINATES

14 Top Boundaries
20 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	20.00	28.00	26.00	3
2	28.00	26.00	36.00	30.00	3
3	36.00	30.00	38.00	40.00	1
4	38.00	40.00	45.00	44.00	1
5	45.00	44.00	47.00	62.00	1
6	47.00	62.00	52.00	66.00	1
7	52.00	66.00	55.00	68.00	2
8	55.00	68.00	60.00	72.00	4
9	60.00	72.00	67.00	76.00	4
10	67.00	76.00	76.00	84.00	4
11	76.00	84.00	80.00	86.00	4
12	80.00	86.00	84.00	90.50	4
13	84.00	90.50	90.00	92.00	4
14	90.00	92.00	160.00	93.00	4
15	55.00	68.00	160.00	86.00	2
16	52.00	66.00	160.00	68.00	1
17	0.00	2.00	10.00	5.00	1
18	10.00	5.00	22.00	10.00	1
19	22.00	10.00	30.00	18.00	1
20	30.00	18.00	36.00	30.00	1

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ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	130.0	180.0	1000.0	42.0	0.00	0.0	1
2	122.0	136.0	200.0	36.0	0.00	0.0	1
3	100.0	110.0	0.0	30.0	0.00	0.0	1
4	117.0	130.0	200.0	32.0	0.00	0.0	1

1

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.

Janbus Empirical Coef. is being used for the case of c & phi both > 0
800 Trial Surfaces Have Been Generated.

25 Surfaces Initiate From Each Of 32 Points Equally Spaced Along The Ground Surface Between X = 5.00 ft.
and X = 36.00 ft.

Each Surface Terminates Between X = 80.00 ft.
and X = 125.00 ft.

Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is Y = 0.00 ft.

10.00 ft. Line Segments Define Each Trial Failure Surface.

Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -25.0
And 0.0 deg.

1

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By Spencer`s Method * *

Number of convergent trials 709
Number of non convergent trials 91

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	5.00	21.07
2	15.00	20.82
3	24.94	21.87
4	34.66	24.22
5	43.99	27.82
6	52.77	32.60
7	60.85	38.50
8	68.09	45.40
9	74.36	53.18
10	79.57	61.72
11	83.61	70.87
12	86.42	80.47
13	87.95	90.35
14	87.97	91.49

*** Factor of Safety = 1.750 ***

Individual data on the 28 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Force Norm (lbs)	Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	10.0	1197.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	9.9	2917.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	3.1	1049.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	4.9	1969.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	1.8	944.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	1.3	862.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	2.0	2568.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	6.0	11725.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	1.0	2045.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	2.0	6263.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	5.0	21567.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.8	3400.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	2.2	9777.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	5.0	21871.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.9	3713.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	6.1	25691.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	1.1	4354.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	6.3	23896.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0

19	1.6	5796.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	3.6	11340.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	0.4	1239.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	1.7	4527.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	1.9	4565.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	0.4	865.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.2	489.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	2.2	3599.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	1.5	1054.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	8.00	21.71
2	18.00	21.40
3	27.95	22.33
4	37.71	24.51
5	47.13	27.88
6	56.04	32.41
7	64.33	38.01
8	71.84	44.61
9	78.48	52.09
10	84.12	60.34
11	88.70	69.23
12	92.12	78.63
13	94.34	88.38
14	94.71	92.07

*** Factor of Safety = 1.789 ***

1

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	10.00	22.14
2	20.00	22.04
3	29.93	23.21
4	39.63	25.64
5	48.94	29.29
6	57.71	34.09
7	65.80	39.98
8	73.06	46.85
9	79.39	54.59
10	84.68	63.08
11	88.85	72.17
12	91.82	81.72

13	93.54	91.57
14	93.56	92.05

*** Factor of Safety = 1.790 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	10.00	22.14
2	19.97	21.35
3	29.94	22.04
4	39.71	24.20
5	49.04	27.79
6	57.74	32.72
7	65.62	38.89
8	72.49	46.15
9	78.21	54.35
10	82.64	63.32
11	85.71	72.84
12	87.32	82.70
13	87.44	91.36

*** Factor of Safety = 1.843 ***

1

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	8.00	21.71
2	17.97	20.90
3	27.96	21.35
4	37.81	23.09
5	47.35	26.06
6	56.44	30.23
7	64.92	35.53
8	72.66	41.86
9	79.53	49.13
10	85.41	57.22
11	90.21	65.99
12	93.85	75.31
13	96.27	85.01
14	97.10	92.10

*** Factor of Safety = 1.847 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	5.00	21.07
2	14.91	19.76
3	24.91	19.80
4	34.82	21.19
5	44.44	23.90
6	53.62	27.88
7	62.17	33.06
8	69.94	39.35
9	76.80	46.63
10	82.61	54.77
11	87.27	63.62
12	90.70	73.01
13	92.83	82.78
14	93.56	92.05

*** Factor of Safety = 1.850 ***

1

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	7.00	21.50
2	16.99	20.95
3	26.97	21.54
4	36.82	23.25
5	46.41	26.07
6	55.62	29.97
7	64.33	34.88
8	72.43	40.75
9	79.81	47.50
10	86.37	55.04
11	92.04	63.28
12	96.73	72.11
13	100.39	81.42
14	102.97	91.08
15	103.14	92.19

*** Factor of Safety = 1.850 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	15.00	23.21
2	25.00	23.18
3	34.92	24.43
4	44.60	26.94
5	53.89	30.66
6	62.62	35.53
7	70.65	41.48
8	77.86	48.41
9	84.13	56.21
10	89.35	64.73
11	93.44	73.86
12	96.33	83.44
13	97.77	92.11

*** Factor of Safety = 1.851 ***

1

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	15.00	23.21
2	25.00	22.95
3	34.94	24.05
4	44.63	26.49
5	53.91	30.22
6	62.59	35.19
7	70.52	41.28
8	77.54	48.40
9	83.53	56.41
10	88.37	65.16
11	91.98	74.49
12	94.29	84.22
13	95.05	92.07

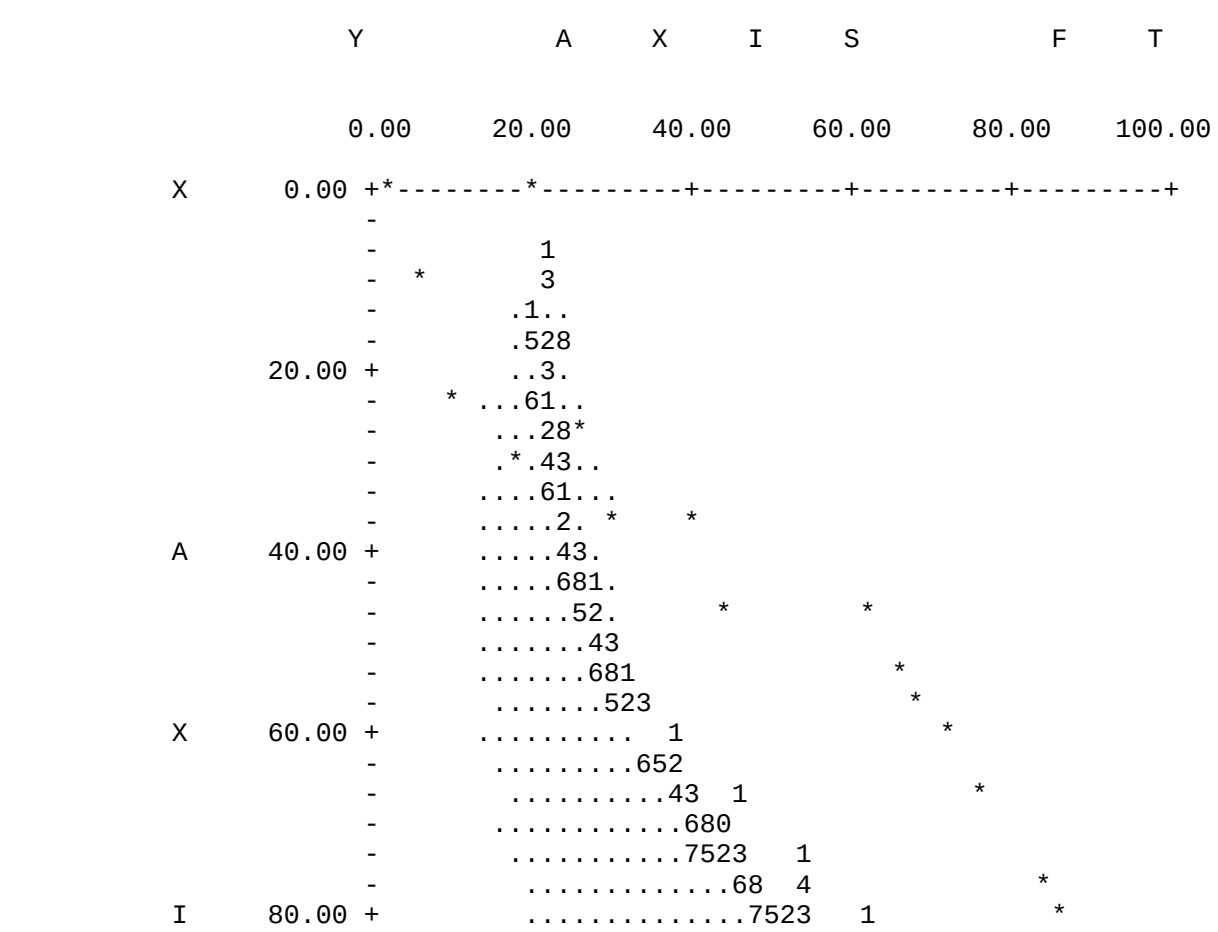
*** Factor of Safety = 1.863 ***

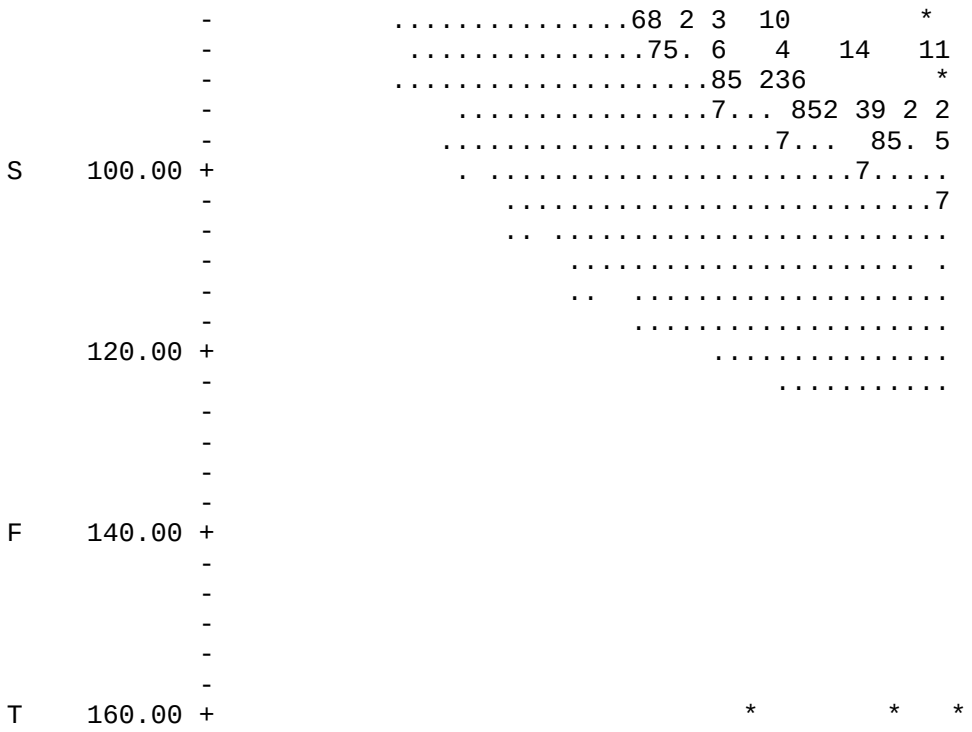
Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	17.00	23.64
2	27.00	23.48
3	36.90	24.89
4	46.45	27.84
5	55.43	32.25
6	63.60	38.02
7	70.76	44.99
8	76.74	53.01
9	81.39	61.87
10	84.58	71.34
11	86.25	81.20
12	86.35	91.09

*** Factor of Safety = 1.864 ***

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S
F
T
100.00
120.00
140.00
160.00

** PCSTABL6 **

by
Purdue University

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--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4-14-21
Time of Run:
Run By: CH
Input Data Filename: eex2.in
Output Filename: eex2.o1s
Unit: ENGLISH
Plotted Output Filename: eex2.p1s

PROBLEM DESCRIPTION 31451 S. Coast Hwy. Section E-E'
Global failure
Horiz. seismic coeff. 0.15 added

BOUNDARY COORDINATES

14 Top Boundaries
20 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	20.00	28.00	26.00	3
2	28.00	26.00	36.00	30.00	3
3	36.00	30.00	38.00	40.00	1
4	38.00	40.00	45.00	44.00	1
5	45.00	44.00	47.00	62.00	1
6	47.00	62.00	52.00	66.00	1
7	52.00	66.00	55.00	68.00	2
8	55.00	68.00	60.00	72.00	4
9	60.00	72.00	67.00	76.00	4
10	67.00	76.00	76.00	84.00	4
11	76.00	84.00	80.00	86.00	4
12	80.00	86.00	84.00	90.50	4
13	84.00	90.50	90.00	92.00	4
14	90.00	92.00	160.00	93.00	4
15	55.00	68.00	160.00	86.00	2
16	52.00	66.00	160.00	68.00	1
17	0.00	2.00	10.00	5.00	1
18	10.00	5.00	22.00	10.00	1
19	22.00	10.00	30.00	18.00	1
20	30.00	18.00	36.00	30.00	1

1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	130.0	180.0	1000.0	42.0	0.00	0.0	1
2	122.0	136.0	200.0	36.0	0.00	0.0	1
3	100.0	110.0	0.0	30.0	0.00	0.0	1
4	117.0	130.0	200.0	32.0	0.00	0.0	1

A Horizontal Earthquake Loading Coefficient
Of0.150 Has Been Assigned

A Vertical Earthquake Loading Coefficient
Of0.000 Has Been Assigned

Cavitation Pressure = 0.0 (psf)

1

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.

Janbus Empirical Coef. is being used for the case of c & phi both > 0
800 Trial Surfaces Have Been Generated.

25 Surfaces Initiate From Each Of 32 Points Equally Spaced
Along The Ground Surface Between X = 5.00 ft.
and X = 36.00 ft.

Each Surface Terminates Between X = 80.00 ft.
and X = 125.00 ft.

Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00 ft.

10.00 ft. Line Segments Define Each Trial Failure Surface.

Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -25.0
And 0.0 deg.

1

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By Spencer`s Method * *

Number of convergent trials 533
Number of non convergent trials 267

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	5.00	21.07
2	14.95	20.11
3	24.95	20.49
4	34.80	22.22
5	44.33	25.25
6	53.36	29.53
7	61.74	34.99
8	69.31	41.53
9	75.93	49.02
10	81.49	57.33
11	85.88	66.32
12	89.02	75.81
13	90.86	85.64
14	91.18	92.02

*** Factor of Safety = 1.503 ***

Individual data on the 29 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Force Norm (lbs)	Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	10.0	1540.1	0.0	0.0	0.0	0.0	231.0	0.0	0.0
2	10.0	3970.1	0.0	0.0	0.0	0.0	595.5	0.0	0.0
3	3.1	1499.6	0.0	0.0	0.0	0.0	224.9	0.0	0.0
4	3.9	2155.6	0.0	0.0	0.0	0.0	323.3	0.0	0.0
5	2.9	2212.3	0.0	0.0	0.0	0.0	331.8	0.0	0.0
6	1.2	1107.5	0.0	0.0	0.0	0.0	166.1	0.0	0.0
7	2.0	3141.3	0.0	0.0	0.0	0.0	471.2	0.0	0.0
8	6.3	14447.5	0.0	0.0	0.0	0.0	2167.1	0.0	0.0

9	0.7	1610.2	0.0	0.0	0.0	0.0	241.5	0.0	0.0
10	2.0	7009.2	0.0	0.0	0.0	0.0	1051.4	0.0	0.0
11	5.0	23594.7	0.0	0.0	0.0	0.0	3539.2	0.0	0.0
12	1.4	6594.4	0.0	0.0	0.0	0.0	989.2	0.0	0.0
13	1.6	7938.7	0.0	0.0	0.0	0.0	1190.8	0.0	0.0
14	5.0	24357.2	0.0	0.0	0.0	0.0	3653.6	0.0	0.0
15	1.7	8502.1	0.0	0.0	0.0	0.0	1275.3	0.0	0.0
16	5.3	24978.5	0.0	0.0	0.0	0.0	3746.8	0.0	0.0
17	2.3	10689.8	0.0	0.0	0.0	0.0	1603.5	0.0	0.0
18	6.6	29655.5	0.0	0.0	0.0	0.0	4448.3	0.0	0.0
19	0.1	285.4	0.0	0.0	0.0	0.0	42.8	0.0	0.0
20	4.0	16249.8	0.0	0.0	0.0	0.0	2437.5	0.0	0.0
21	1.5	5584.4	0.0	0.0	0.0	0.0	837.7	0.0	0.0
22	2.5	8864.7	0.0	0.0	0.0	0.0	1329.7	0.0	0.0
23	1.9	5909.2	0.0	0.0	0.0	0.0	886.4	0.0	0.0
24	0.1	300.2	0.0	0.0	0.0	0.0	45.0	0.0	0.0
25	2.3	5832.7	0.0	0.0	0.0	0.0	874.9	0.0	0.0
26	0.7	1373.0	0.0	0.0	0.0	0.0	206.0	0.0	0.0
27	1.0	1539.1	0.0	0.0	0.0	0.0	230.9	0.0	0.0
28	0.9	872.8	0.0	0.0	0.0	0.0	130.9	0.0	0.0
29	0.3	119.3	0.0	0.0	0.0	0.0	17.9	0.0	0.0

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	9.00	21.93
2	19.00	21.84
3	28.95	22.85
4	38.73	24.94
5	48.22	28.09
6	57.31	32.26
7	65.89	37.40
8	73.85	43.45
9	81.10	50.33
10	87.56	57.97
11	93.13	66.27
12	97.77	75.13
13	101.41	84.45
14	103.49	92.19

*** Factor of Safety = 1.503 ***

1

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	10.00	22.14

2	19.99	21.77
3	29.94	22.76
4	39.67	25.10
5	48.98	28.75
6	57.70	33.64
7	65.68	39.67
8	72.75	46.74
9	78.80	54.70
10	83.69	63.42
11	87.36	72.73
12	89.71	82.44
13	90.68	92.01

*** Factor of Safety = 1.507 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	6.00	21.29
2	15.96	20.38
3	25.95	20.72
4	35.83	22.32
5	45.42	25.13
6	54.59	29.12
7	63.19	34.22
8	71.08	40.36
9	78.15	47.44
10	84.27	55.35
11	89.36	63.96
12	93.33	73.14
13	96.12	82.74
14	97.61	92.11

*** Factor of Safety = 1.518 ***

1

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	8.00	21.71
2	17.96	20.83
3	27.94	21.45
4	37.72	23.54

5	47.08	27.06
6	55.81	31.94
7	63.71	38.07
8	70.62	45.30
9	76.37	53.48
10	80.84	62.43
11	83.93	71.94
12	85.56	81.80
13	85.70	90.92

*** Factor of Safety = 1.529 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	5.00	21.07
2	14.96	20.15
3	24.95	20.39
4	34.86	21.79
5	44.53	24.34
6	53.83	28.00
7	62.65	32.72
8	70.85	38.43
9	78.34	45.07
10	85.00	52.53
11	90.74	60.71
12	95.49	69.51
13	99.19	78.80
14	101.77	88.46
15	102.31	92.18

*** Factor of Safety = 1.529 ***

1

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	16.00	23.43
2	26.00	23.38
3	35.92	24.64
4	45.59	27.20
5	54.83	31.01
6	63.50	36.01

7	71.42	42.10
8	78.48	49.18
9	84.55	57.14
10	89.51	65.82
11	93.28	75.08
12	95.81	84.75
13	96.72	92.10

*** Factor of Safety = 1.547 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	6.00	21.29
2	16.00	21.11
3	25.97	21.85
4	35.83	23.50
5	45.50	26.06
6	54.89	29.49
7	63.93	33.77
8	72.54	38.86
9	80.64	44.73
10	88.17	51.31
11	95.06	58.56
12	101.26	66.40
13	106.70	74.79
14	111.36	83.64
15	114.96	92.36

*** Factor of Safety = 1.547 ***

1

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	7.00	21.50
2	17.00	21.45
3	26.96	22.32
4	36.81	24.08
5	46.45	26.72
6	55.82	30.23
7	64.82	34.57
8	73.40	39.71

9	81.48	45.61
10	88.99	52.21
11	95.87	59.47
12	102.06	67.32
13	107.52	75.70
14	112.19	84.54
15	115.46	92.36

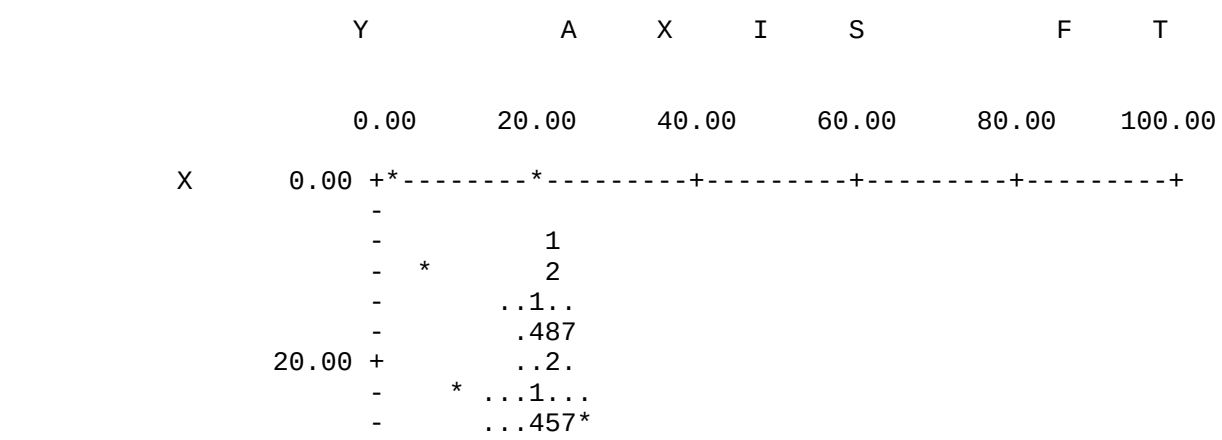
*** Factor of Safety = 1.548 ***

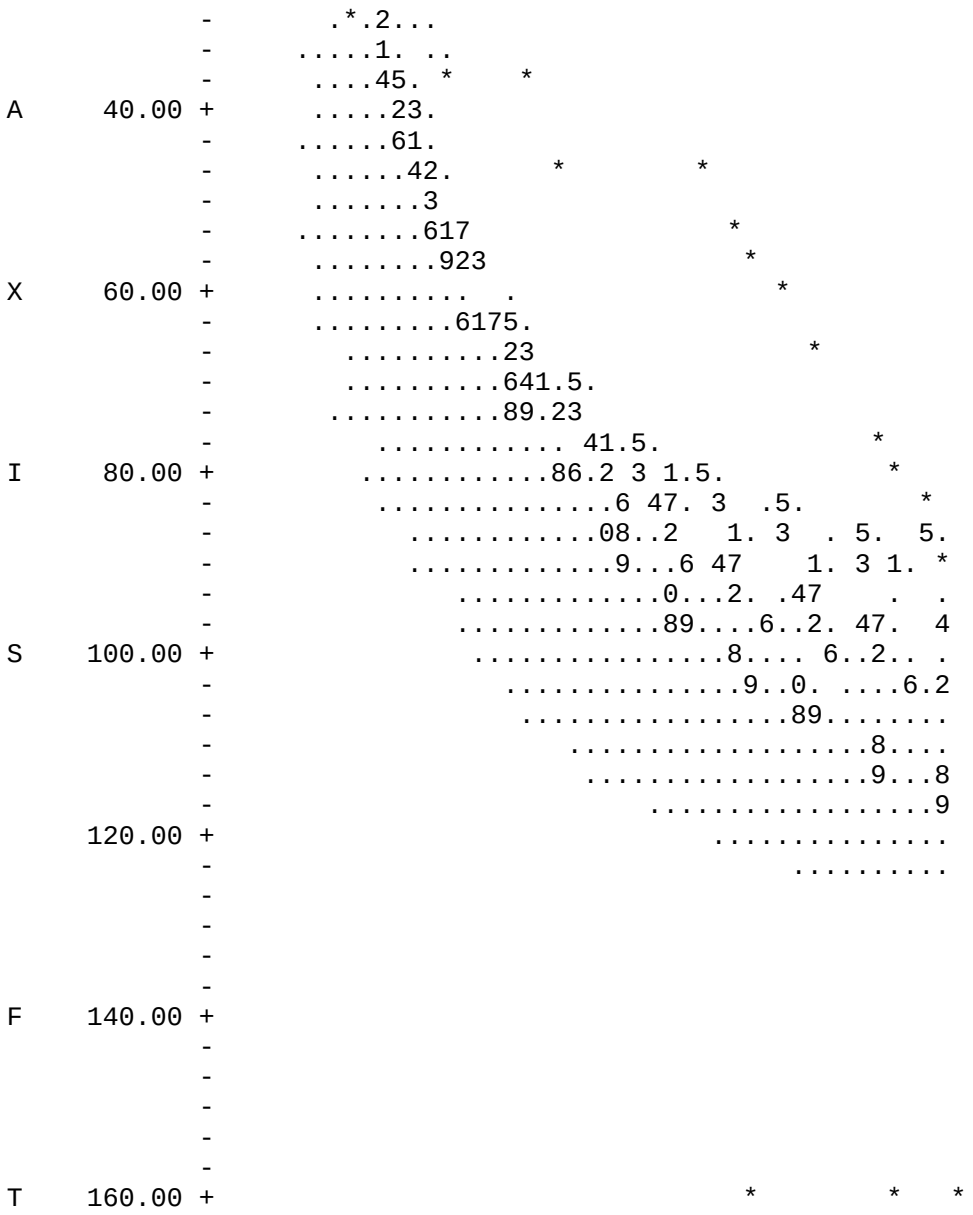
Failure Surface Specified By 15 Coordinate Points

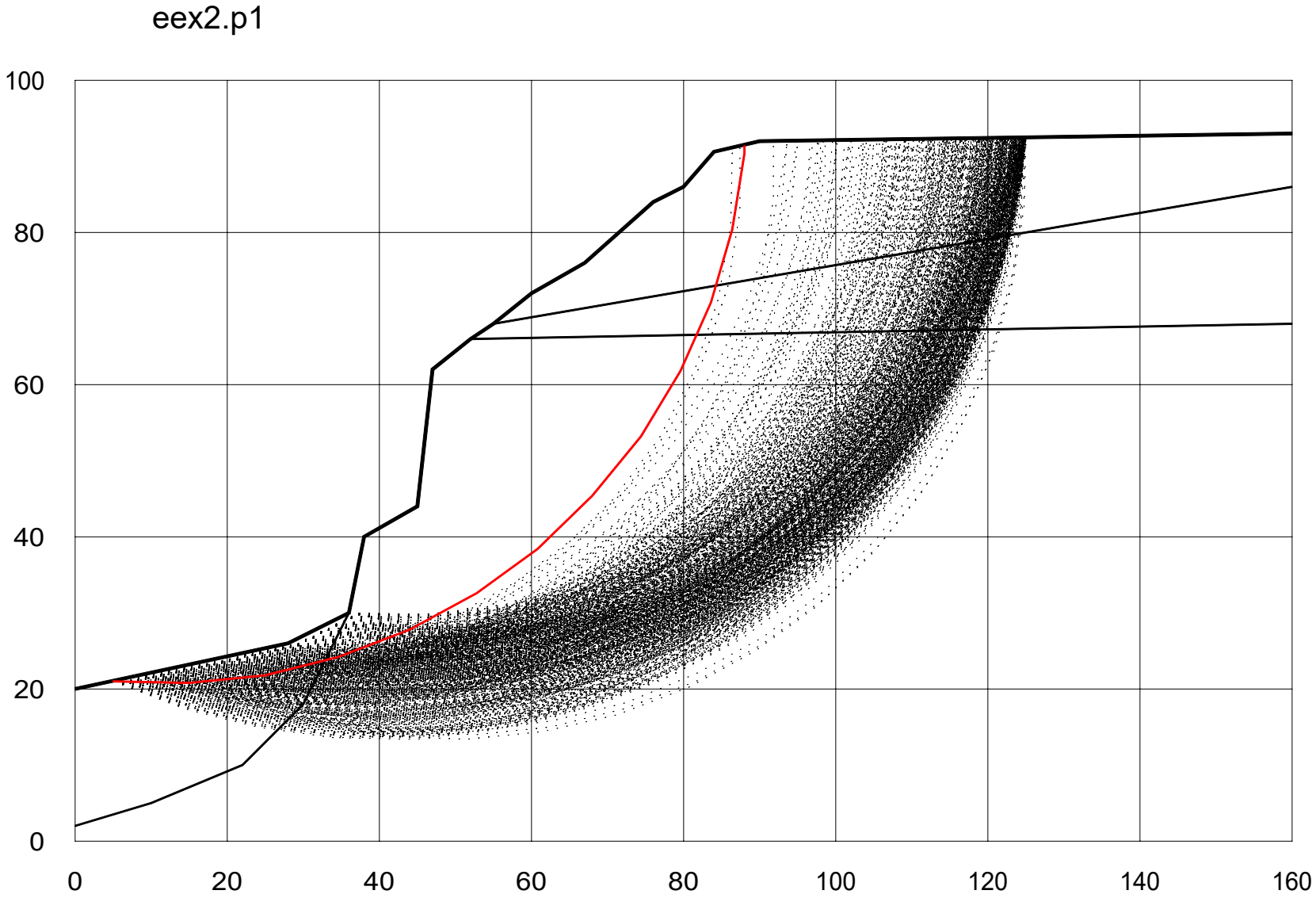
Point No.	X-Surf (ft)	Y-Surf (ft)
1	5.00	21.07
2	14.98	20.44
3	24.97	20.81
4	34.88	22.17
5	44.60	24.52
6	54.04	27.83
7	63.09	32.07
8	71.68	37.19
9	79.72	43.14
10	87.12	49.87
11	93.80	57.31
12	99.72	65.37
13	104.79	73.99
14	108.98	83.07
15	112.17	92.32

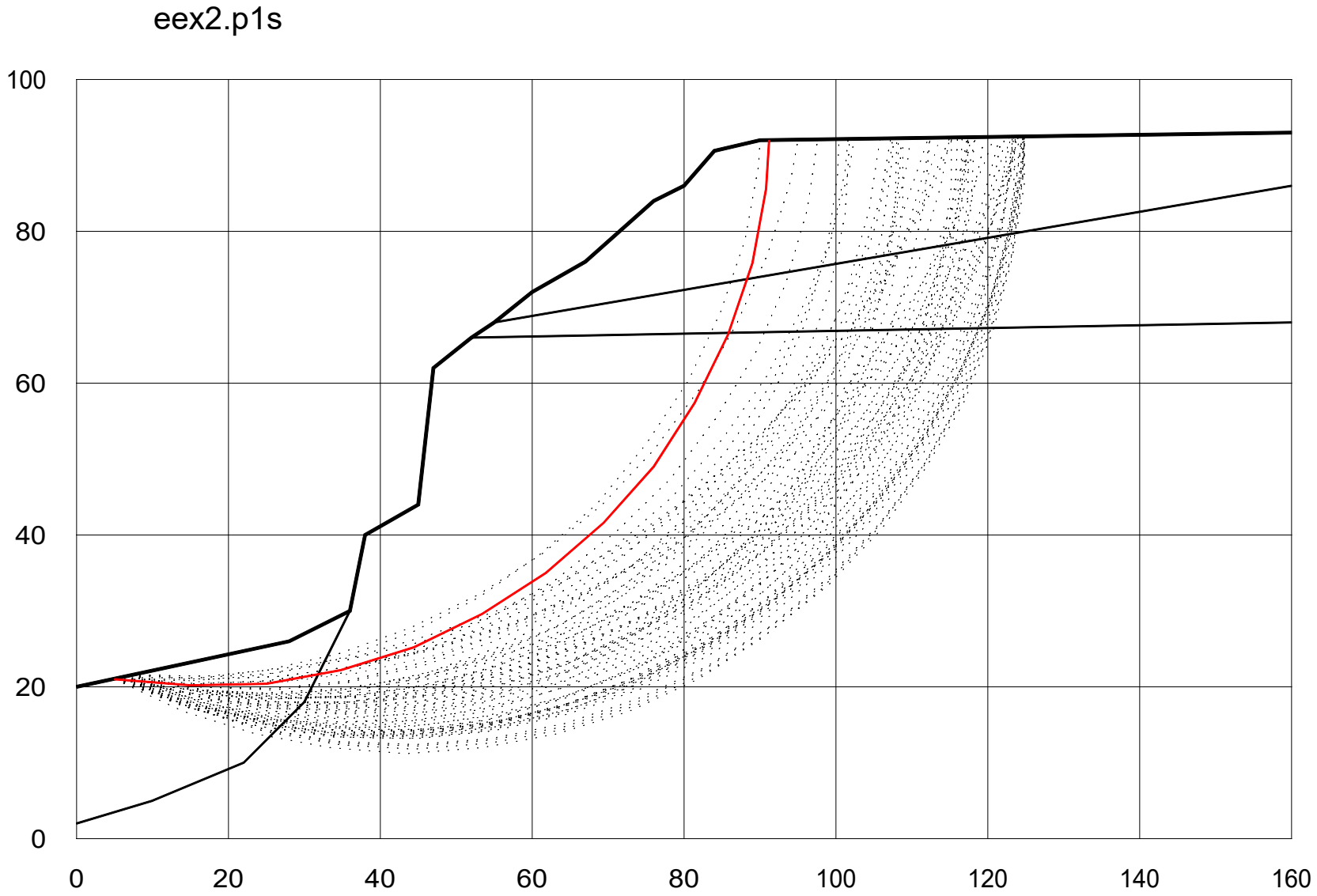
*** Factor of Safety = 1.557 ***

1




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40.00
60.00
80.00
100.00
120.00
140.00
160.00


eex2.p1
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40
60
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160


eex2.p1s
100
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60
40
20
0
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60
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100
120
140
160

** PCSTABL6 **

by
Purdue University

1

--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4-14-21
Time of Run:
Run By: CH
Input Data Filename: eey2.in
Output Filename: eey2.o1
Unit: ENGLISH
Plotted Output Filename: eey2.p1

PROBLEM DESCRIPTION 31451 S. Coast Hwy. Section E-E'
Mid-bluff failure

BOUNDARY COORDINATES

14 Top Boundaries
20 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	20.00	28.00	26.00	3
2	28.00	26.00	36.00	30.00	3
3	36.00	30.00	38.00	40.00	1
4	38.00	40.00	45.00	44.00	1
5	45.00	44.00	47.00	62.00	1
6	47.00	62.00	52.00	66.00	1
7	52.00	66.00	55.00	68.00	2
8	55.00	68.00	60.00	72.00	4
9	60.00	72.00	67.00	76.00	4
10	67.00	76.00	76.00	84.00	4
11	76.00	84.00	80.00	86.00	4
12	80.00	86.00	84.00	90.50	4
13	84.00	90.50	90.00	92.00	4
14	90.00	92.00	160.00	93.00	4
15	55.00	68.00	160.00	86.00	2
16	52.00	66.00	160.00	68.00	1
17	0.00	2.00	10.00	5.00	1
18	10.00	5.00	22.00	10.00	1
19	22.00	10.00	30.00	18.00	1
20	30.00	18.00	36.00	30.00	1

1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	130.0	180.0	1000.0	42.0	0.00	0.0	1
2	122.0	136.0	200.0	36.0	0.00	0.0	1
3	100.0	110.0	0.0	30.0	0.00	0.0	1
4	117.0	130.0	200.0	32.0	0.00	0.0	1

1

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.

Janbus Empirical Coef. is being used for the case of c & phi both > 0
525 Trial Surfaces Have Been Generated.

35 Surfaces Initiate From Each Of 15 Points Equally Spaced Along The Ground Surface Between X = 36.00 ft.
and X = 45.00 ft.

Each Surface Terminates Between X = 85.00 ft.
and X = 125.00 ft.

Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is Y = 0.00 ft.

8.00 ft. Line Segments Define Each Trial Failure Surface.

Restrictions Have Been Imposed Upon The Angle Of Initiation. The Angle Has Been Restricted Between The Angles Of -5.0 And 20.0 deg.

1

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By Spencer`s Method * *

Number of convergent trials 519
Number of non convergent trials 6

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	36.00	30.00
2	43.66	32.30
3	51.08	35.31
4	58.17	39.00
5	64.89	43.35
6	71.17	48.31
7	76.95	53.83
8	82.19	59.88
9	86.84	66.39
10	90.85	73.31
11	94.19	80.58
12	96.84	88.13
13	97.82	92.11

*** Factor of Safety = 1.826 ***

Individual data on the 25 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Force Norm (lbs)	Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	2.0	1221.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	5.7	7485.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	1.3	1919.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	2.0	5135.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	4.1	15444.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.9	3613.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	3.0	11843.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	3.2	12725.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	1.8	7427.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	4.9	19724.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	2.1	8351.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	4.2	16363.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	4.8	18766.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	1.0	3626.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	3.0	11086.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	2.2	7627.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	1.8	6181.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	2.8	8956.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	0.1	436.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0

20	3.0	7957.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	0.8	1937.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	0.4	890.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	2.9	5013.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	2.6	2390.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	1.0	228.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	36.64	33.22
2	44.27	35.63
3	51.62	38.78
4	58.63	42.65
5	65.21	47.20
6	71.31	52.37
7	76.87	58.13
8	81.82	64.41
9	86.13	71.14
10	89.75	78.28
11	92.65	85.74
12	94.41	92.06

*** Factor of Safety = 1.857 ***

1

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	36.00	30.00
2	43.62	32.45
3	51.07	35.35
4	58.34	38.70
5	65.39	42.49
6	72.19	46.69
7	78.73	51.30
8	84.98	56.30
9	90.91	61.66
10	96.51	67.38
11	101.75	73.42
12	106.61	79.78
13	111.08	86.41
14	114.58	92.35

*** Factor of Safety = 1.909 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	43.07	42.90
2	50.60	45.62
3	57.83	49.03
4	64.71	53.12
5	71.17	57.84
6	77.15	63.15
7	82.60	69.01
8	87.48	75.35
9	91.73	82.13
10	95.32	89.27
11	96.42	92.09

*** Factor of Safety = 1.955 ***

1

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	39.21	40.69
2	46.75	43.37
3	54.05	46.65
4	61.07	50.50
5	67.75	54.89
6	74.06	59.81
7	79.95	65.22
8	85.40	71.08
9	90.35	77.36
10	94.79	84.02
11	98.68	91.01
12	99.19	92.13

*** Factor of Safety = 1.964 ***

Failure Surface Specified By 11 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	40.50	41.43
2	48.05	44.06
3	55.31	47.43
4	62.20	51.50
5	68.65	56.24
6	74.60	61.58
7	79.99	67.49
8	84.77	73.90
9	88.90	80.76
10	92.33	87.99
11	93.78	92.05

*** Factor of Safety = 1.967 ***

1

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	36.00	30.00
2	43.70	32.18
3	51.25	34.83
4	58.62	37.93
5	65.79	41.47
6	72.73	45.45
7	79.42	49.85
8	85.82	54.64
9	91.92	59.82
10	97.69	65.36
11	103.11	71.25
12	108.16	77.45
13	112.82	83.95
14	117.08	90.73
15	117.99	92.40

*** Factor of Safety = 1.977 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	37.29	36.43
2	44.93	38.81

3	52.38	41.70
4	59.62	45.10
5	66.61	48.99
6	73.32	53.36
7	79.71	58.17
8	85.76	63.41
9	91.43	69.05
10	96.70	75.07
11	101.54	81.44
12	105.93	88.12
13	108.26	92.26

*** Factor of Safety = 1.982 ***

1

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	43.71	43.27
2	51.27	45.91
3	58.58	49.14
4	65.61	52.96
5	72.31	57.33
6	78.64	62.23
7	84.55	67.62
8	90.00	73.47
9	94.97	79.74
10	99.42	86.40
11	102.64	92.18

*** Factor of Safety = 1.989 ***

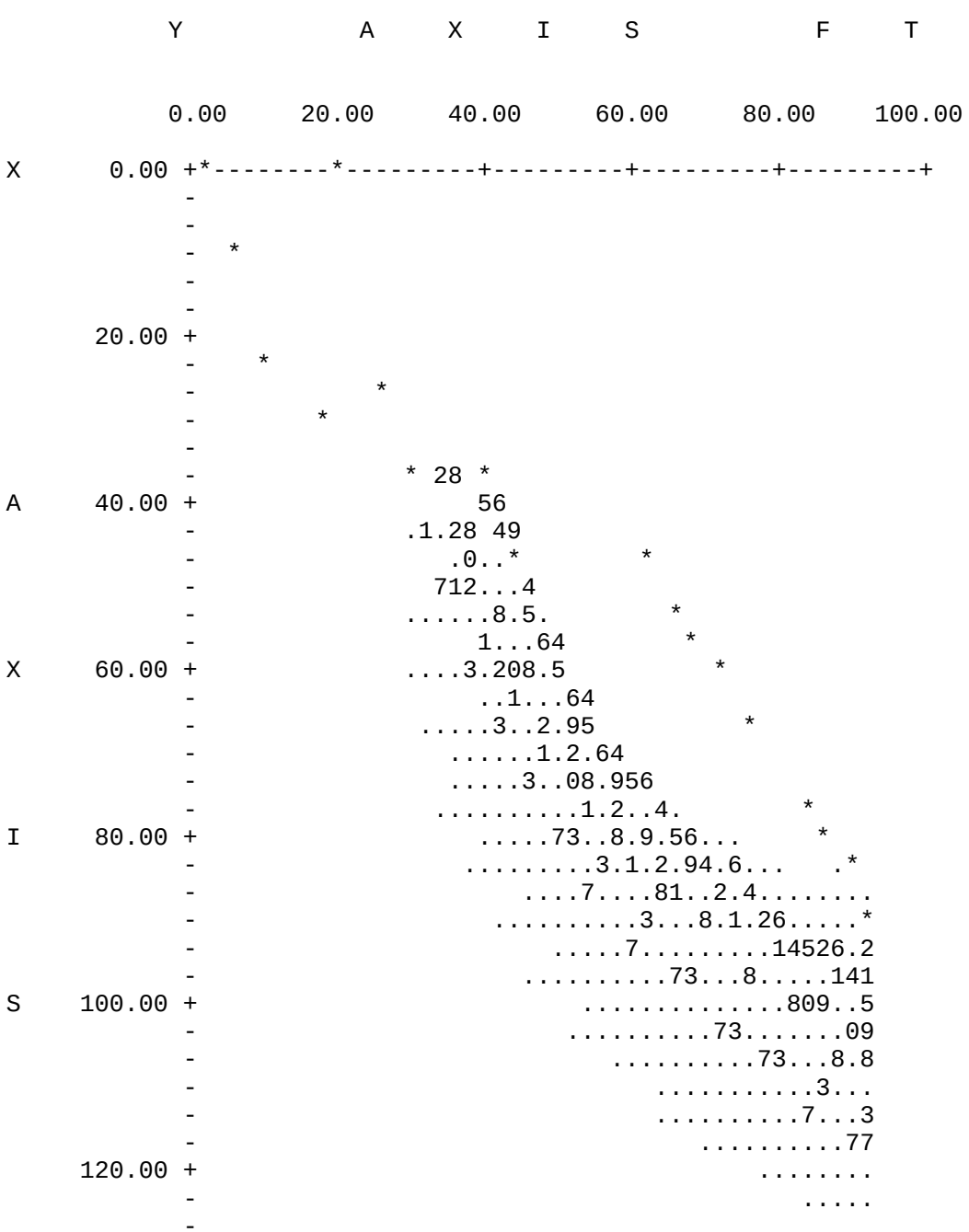
Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	37.29	36.43
2	45.04	38.41
3	52.58	41.06
4	59.87	44.38
5	66.83	48.32
6	73.41	52.86
7	79.57	57.96
8	85.26	63.59

9	90.42	69.70
10	95.03	76.25
11	99.04	83.17
12	102.42	90.42
13	103.06	92.19

*** Factor of Safety = 1.991 ***

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140.00
T
160.00

** PCSTABL6 **

by
Purdue University

1

--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4-14-21
Time of Run:
Run By: CH
Input Data Filename: eey2.in
Output Filename: eey2.o1s
Unit: ENGLISH
Plotted Output Filename: eey2.p1s

PROBLEM DESCRIPTION 31451 S. Coast Hwy. Section E-E'
Mid-bluff failure
Horiz. seismic coeff. 0.15 added

BOUNDARY COORDINATES

14 Top Boundaries
20 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	20.00	28.00	26.00	3
2	28.00	26.00	36.00	30.00	3
3	36.00	30.00	38.00	40.00	1
4	38.00	40.00	45.00	44.00	1
5	45.00	44.00	47.00	62.00	1
6	47.00	62.00	52.00	66.00	1
7	52.00	66.00	55.00	68.00	2
8	55.00	68.00	60.00	72.00	4
9	60.00	72.00	67.00	76.00	4
10	67.00	76.00	76.00	84.00	4
11	76.00	84.00	80.00	86.00	4
12	80.00	86.00	84.00	90.50	4
13	84.00	90.50	90.00	92.00	4
14	90.00	92.00	160.00	93.00	4
15	55.00	68.00	160.00	86.00	2
16	52.00	66.00	160.00	68.00	1
17	0.00	2.00	10.00	5.00	1
18	10.00	5.00	22.00	10.00	1
19	22.00	10.00	30.00	18.00	1
20	30.00	18.00	36.00	30.00	1

1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	130.0	180.0	1000.0	42.0	0.00	0.0	1
2	122.0	136.0	200.0	36.0	0.00	0.0	1
3	100.0	110.0	0.0	30.0	0.00	0.0	1
4	117.0	130.0	200.0	32.0	0.00	0.0	1

A Horizontal Earthquake Loading Coefficient
Of0.150 Has Been Assigned

A Vertical Earthquake Loading Coefficient
Of0.000 Has Been Assigned

Cavitation Pressure = 0.0 (psf)

1

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.

Janbus Empirical Coef. is being used for the case of c & phi both > 0
525 Trial Surfaces Have Been Generated.

35 Surfaces Initiate From Each Of 15 Points Equally Spaced
Along The Ground Surface Between X = 36.00 ft.
and X = 45.00 ft.

Each Surface Terminates Between X = 85.00 ft.
and X = 125.00 ft.

Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00 ft.

8.00 ft. Line Segments Define Each Trial Failure Surface.

Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -5.0
And 20.0 deg.

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Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By Spencer`s Method * *

Number of convergent trials 505
Number of non convergent trials 20

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	36.00	30.00
2	43.60	32.50
3	51.03	35.48
4	58.24	38.93
5	65.22	42.84
6	71.93	47.20
7	78.34	51.98
8	84.44	57.17
9	90.18	62.73
10	95.56	68.66
11	100.53	74.92
12	105.10	81.49
13	109.23	88.34
14	111.28	92.30

*** Factor of Safety = 1.500 ***

Individual data on the 26 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Force Norm (lbs)	Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	2.0	1214.1	0.0	0.0	0.0	0.0	182.1	0.0	0.0
2	5.6	7298.5	0.0	0.0	0.0	0.0	1094.8	0.0	0.0
3	1.4	1967.5	0.0	0.0	0.0	0.0	295.1	0.0	0.0
4	2.0	5080.4	0.0	0.0	0.0	0.0	762.1	0.0	0.0
5	4.0	15145.5	0.0	0.0	0.0	0.0	2271.8	0.0	0.0
6	1.0	3787.3	0.0	0.0	0.0	0.0	568.1	0.0	0.0
7	3.0	11808.4	0.0	0.0	0.0	0.0	1771.3	0.0	0.0
8	3.2	13023.0	0.0	0.0	0.0	0.0	1953.5	0.0	0.0

9	1.8	7190.3	0.0	0.0	0.0	0.0	1078.6	0.0	0.0
10	5.2	21372.9	0.0	0.0	0.0	0.0	3205.9	0.0	0.0
11	1.8	7242.5	0.0	0.0	0.0	0.0	1086.4	0.0	0.0
12	4.9	20227.4	0.0	0.0	0.0	0.0	3034.1	0.0	0.0
13	4.1	16976.2	0.0	0.0	0.0	0.0	2546.4	0.0	0.0
14	2.3	9714.0	0.0	0.0	0.0	0.0	1457.1	0.0	0.0
15	1.7	6717.0	0.0	0.0	0.0	0.0	1007.6	0.0	0.0
16	4.0	16235.9	0.0	0.0	0.0	0.0	2435.4	0.0	0.0
17	0.4	1785.7	0.0	0.0	0.0	0.0	267.9	0.0	0.0
18	5.6	21148.0	0.0	0.0	0.0	0.0	3172.2	0.0	0.0
19	0.2	641.4	0.0	0.0	0.0	0.0	96.2	0.0	0.0
20	3.7	11929.2	0.0	0.0	0.0	0.0	1789.4	0.0	0.0
21	1.7	4927.7	0.0	0.0	0.0	0.0	739.2	0.0	0.0
22	5.0	11929.5	0.0	0.0	0.0	0.0	1789.4	0.0	0.0
23	0.7	1367.4	0.0	0.0	0.0	0.0	205.1	0.0	0.0
24	3.9	6097.7	0.0	0.0	0.0	0.0	914.7	0.0	0.0
25	4.1	3541.0	0.0	0.0	0.0	0.0	531.2	0.0	0.0
26	2.1	471.8	0.0	0.0	0.0	0.0	70.8	0.0	0.0

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	36.64	33.22
2	44.25	35.69
3	51.58	38.89
4	58.56	42.80
5	65.12	47.38
6	71.20	52.59
7	76.73	58.36
8	81.67	64.65
9	85.97	71.40
10	89.58	78.54
11	92.47	86.00
12	94.16	92.06

*** Factor of Safety = 1.526 ***

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Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	36.64	33.22
2	44.26	35.68
3	51.70	38.60
4	58.96	41.96
5	66.00	45.76
6	72.80	49.97

7	79.33	54.59
8	85.57	59.60
9	91.50	64.98
10	97.08	70.70
11	102.32	76.75
12	107.17	83.11
13	111.63	89.76
14	113.14	92.33

*** Factor of Safety = 1.551 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	36.00	30.00
2	43.71	32.15
3	51.26	34.78
4	58.63	37.90
5	65.78	41.49
6	72.68	45.53
7	79.31	50.01
8	85.64	54.91
9	91.63	60.20
10	97.27	65.87
11	102.54	71.90
12	107.40	78.25
13	111.85	84.90
14	115.85	91.83
15	116.12	92.37

*** Factor of Safety = 1.560 ***

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Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	39.21	40.69
2	46.74	43.42
3	54.04	46.69
4	61.07	50.50
5	67.81	54.82
6	74.20	59.62
7	80.22	64.89

8	85.84	70.59
9	91.01	76.69
10	95.72	83.16
11	99.93	89.96
12	101.08	92.16

*** Factor of Safety = 1.588 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	37.93	39.65
2	45.47	42.33
3	52.76	45.62
4	59.75	49.51
5	66.40	53.96
6	72.65	58.95
7	78.48	64.43
8	83.83	70.38
9	88.67	76.75
10	92.97	83.49
11	96.70	90.57
12	97.35	92.11

*** Factor of Safety = 1.591 ***

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Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	41.14	41.80
2	48.69	44.46
3	55.99	47.73
4	63.00	51.58
5	69.67	56.00
6	75.95	60.95
7	81.81	66.40
8	87.20	72.31
9	92.09	78.65
10	96.44	85.36
11	100.09	92.14

*** Factor of Safety = 1.593 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	36.00	30.00
2	43.82	31.67
3	51.48	34.01
4	58.90	36.99
5	66.04	40.60
6	72.84	44.82
7	79.25	49.60
8	85.22	54.92
9	90.72	60.73
10	95.70	67.00
11	100.12	73.67
12	103.94	80.69
13	107.15	88.02
14	108.59	92.27

*** Factor of Safety = 1.596 ***

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Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	36.64	33.22
2	44.44	35.02
3	52.00	37.61
4	59.27	40.97
5	66.14	45.06
6	72.56	49.84
7	78.45	55.25
8	83.76	61.24
9	88.42	67.74
10	92.39	74.68
11	95.62	82.00
12	98.08	89.61
13	98.62	92.12

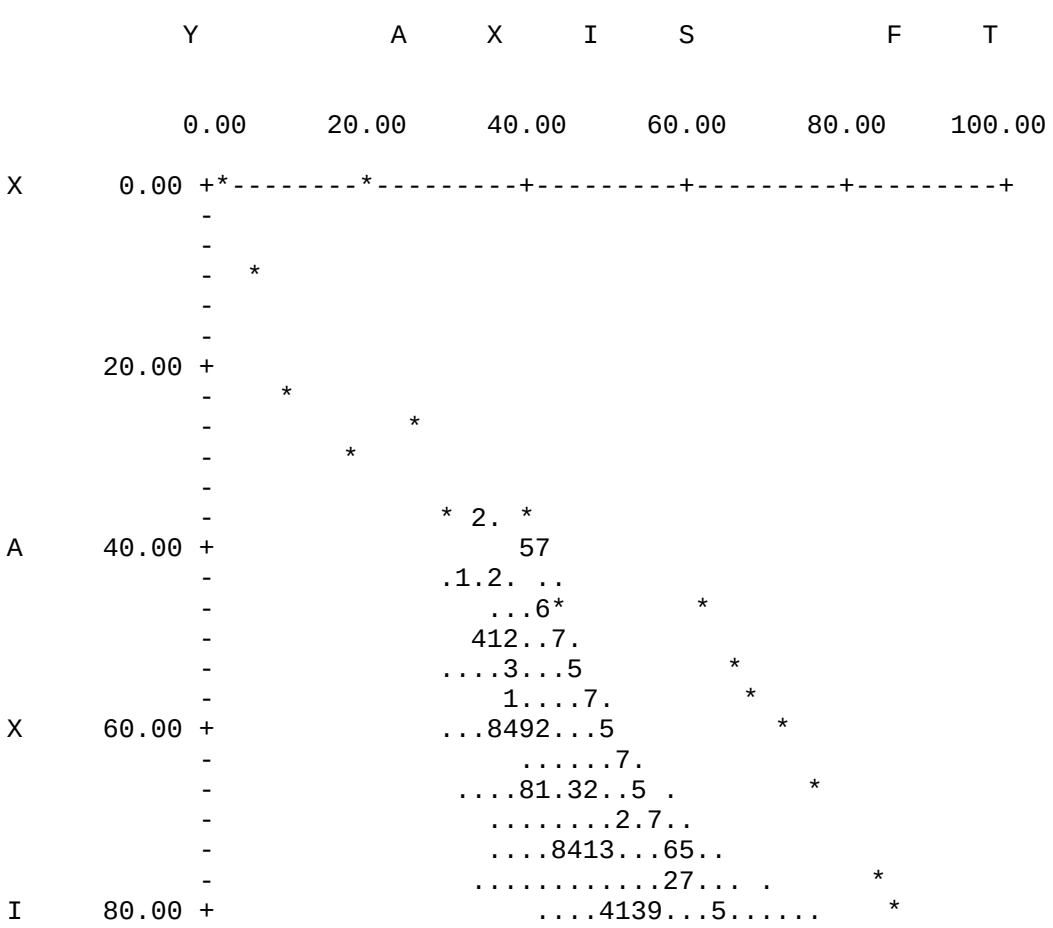
*** Factor of Safety = 1.598 ***

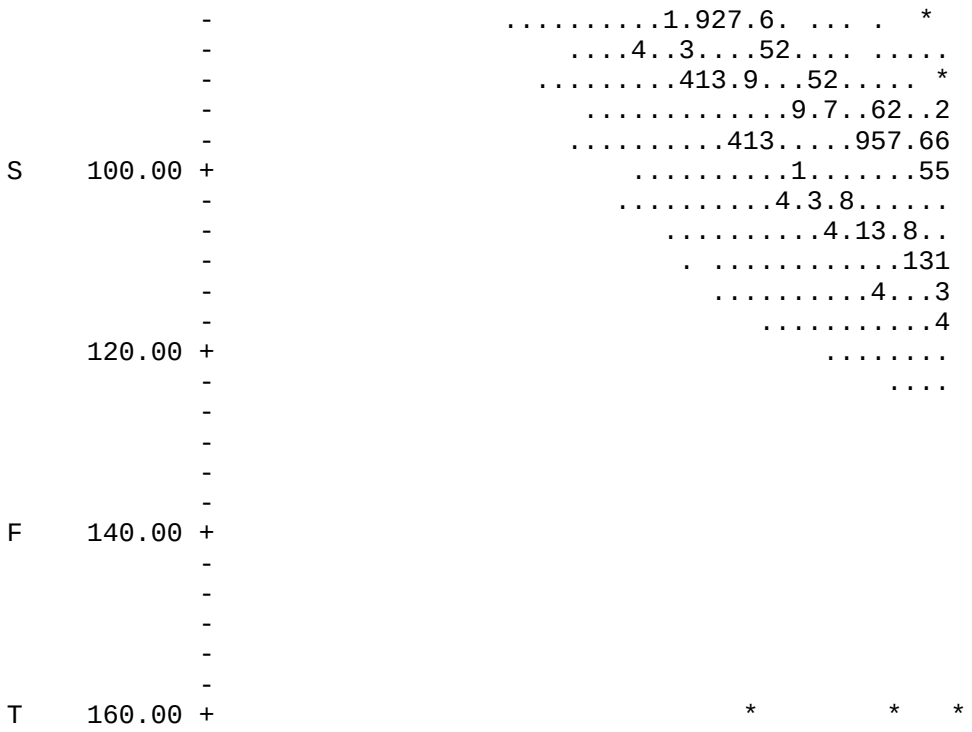
Failure Surface Specified By 11 Coordinate Points

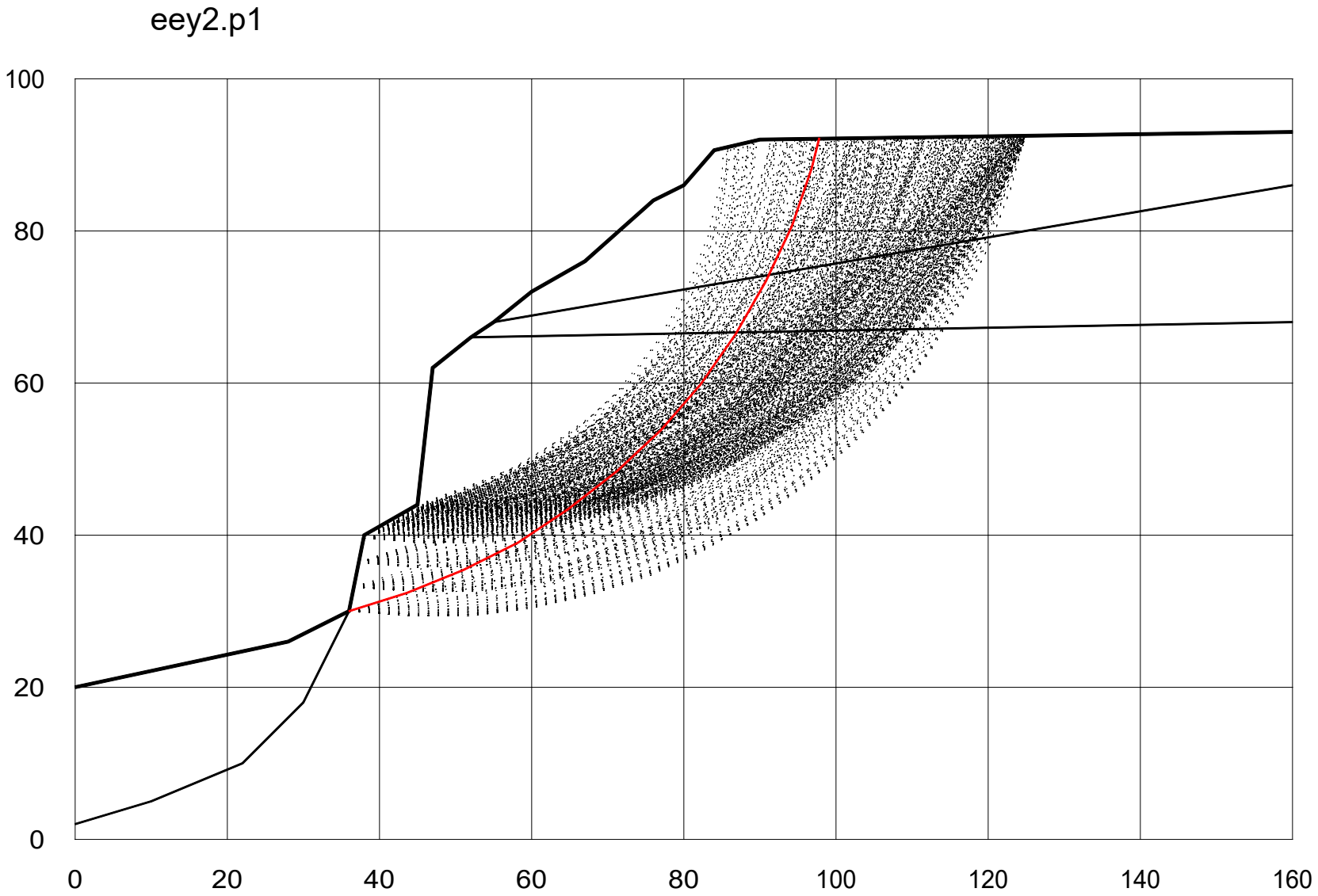
Point No.	X-Surf (ft)	Y-Surf (ft)
1	41.14	41.80
2	48.72	44.37
3	56.04	47.60
4	63.06	51.43
5	69.72	55.86
6	75.98	60.84
7	81.79	66.35
8	87.10	72.33
9	91.87	78.75
10	96.08	85.55
11	99.41	92.13

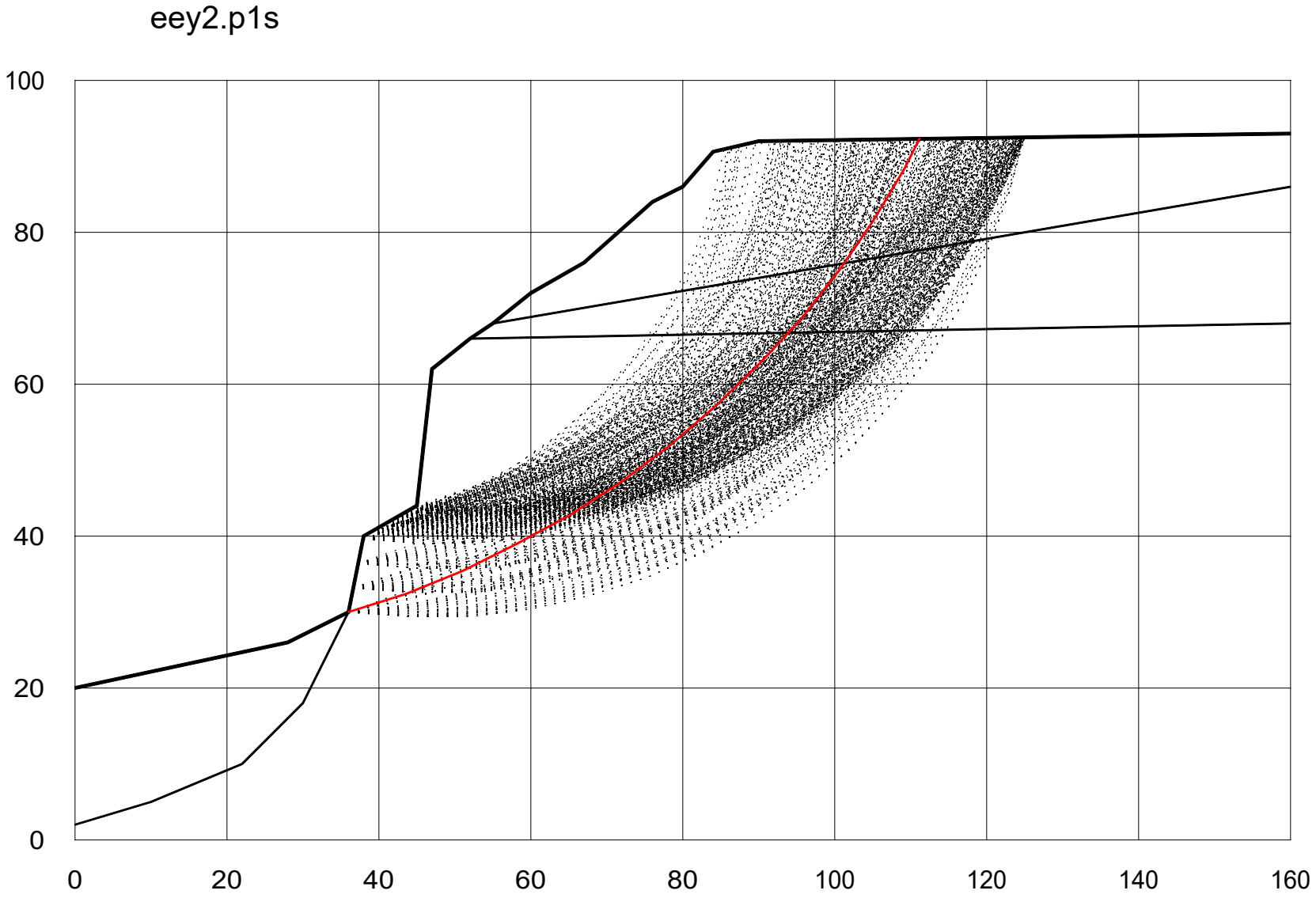
*** Factor of Safety = 1.602 ***

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** PCSTABL6 **

by
Purdue University

1

--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4-14-21
Time of Run:
Run By: CH
Input Data Filename: eez2.in
Output Filename: eez2.o1
Unit: ENGLISH
Plotted Output Filename: eez2.p1

PROBLEM DESCRIPTION 31451 S. Coast Hwy. Section E-E'
Upper bluff failure

BOUNDARY COORDINATES

14 Top Boundaries
20 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	20.00	28.00	26.00	3
2	28.00	26.00	36.00	30.00	3
3	36.00	30.00	38.00	40.00	1
4	38.00	40.00	45.00	44.00	1
5	45.00	44.00	47.00	62.00	1
6	47.00	62.00	52.00	66.00	1
7	52.00	66.00	55.00	68.00	2
8	55.00	68.00	60.00	72.00	4
9	60.00	72.00	67.00	76.00	4
10	67.00	76.00	76.00	84.00	4
11	76.00	84.00	80.00	86.00	4
12	80.00	86.00	84.00	90.50	4
13	84.00	90.50	90.00	92.00	4
14	90.00	92.00	160.00	93.00	4
15	55.00	68.00	160.00	86.00	2
16	52.00	66.00	160.00	68.00	1
17	0.00	2.00	10.00	5.00	1
18	10.00	5.00	22.00	10.00	1
19	22.00	10.00	30.00	18.00	1
20	30.00	18.00	36.00	30.00	1

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ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	130.0	180.0	1000.0	42.0	0.00	0.0	1
2	122.0	136.0	200.0	36.0	0.00	0.0	1
3	100.0	110.0	0.0	30.0	0.00	0.0	1
4	117.0	130.0	200.0	32.0	0.00	0.0	1

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A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.

Janbus Empirical Coef. is being used for the case of c & phi both > 0
525 Trial Surfaces Have Been Generated.

35 Surfaces Initiate From Each Of 15 Points Equally Spaced Along The Ground Surface Between X = 52.00 ft.
and X = 65.00 ft.

Each Surface Terminates Between X = 85.00 ft.
and X = 125.00 ft.

Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is Y = 0.00 ft.

4.00 ft. Line Segments Define Each Trial Failure Surface.

Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of 5.0
And 15.0 deg.

1

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By Spencer`s Method * *

Number of convergent trials 525
Number of non convergent trials 0

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	55.71	68.57
2	59.69	69.02
3	63.61	69.79
4	67.46	70.89
5	71.20	72.31
6	74.81	74.04
7	78.26	76.06
8	81.54	78.35
9	84.60	80.92
10	87.45	83.73
11	90.05	86.77
12	92.39	90.02
13	93.61	92.05

*** Factor of Safety = 1.737 ***

Individual data on the 18 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Force Norm (lbs)	Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	4.0	635.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.3	102.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	3.6	1520.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	3.4	1883.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.5	288.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	3.7	2830.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	3.6	3447.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	1.2	1265.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	2.3	2427.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	1.7	1809.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	1.5	1625.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	2.5	2805.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.6	700.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	2.8	2889.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	2.6	1927.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.1	31.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	2.3	991.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	1.2	144.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	55.71	68.57
2	59.70	68.93
3	63.64	69.61
4	67.51	70.61
5	71.29	71.93
6	74.94	73.55
7	78.45	75.47
8	81.79	77.67
9	84.94	80.14
10	87.87	82.86
11	90.57	85.81
12	93.02	88.98
13	95.03	92.07

*** Factor of Safety = 1.741 ***

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Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	55.71	68.57
2	59.69	69.00
3	63.61	69.80
4	67.44	70.97
5	71.14	72.48
6	74.68	74.34
7	78.04	76.52
8	81.17	79.00
9	84.06	81.77
10	86.68	84.79
11	89.00	88.05
12	91.01	91.51
13	91.24	92.02

*** Factor of Safety = 1.744 ***

Failure Surface Specified By 13 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	54.79	67.86
2	58.75	68.43
3	62.65	69.32
4	66.46	70.52
5	70.17	72.02
6	73.75	73.81
7	77.17	75.88
8	80.41	78.22
9	83.45	80.82
10	86.28	83.65
11	88.87	86.69
12	91.21	89.94
13	92.48	92.04

*** Factor of Safety = 1.749 ***

1

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	55.71	68.57
2	59.67	69.19
3	63.56	70.10
4	67.38	71.30
5	71.09	72.79
6	74.69	74.54
7	78.14	76.56
8	81.43	78.83
9	84.55	81.34
10	87.47	84.07
11	90.18	87.02
12	92.65	90.16
13	93.94	92.06

*** Factor of Safety = 1.751 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	55.71	68.57
2	59.70	68.94

3	63.62	69.70
4	67.45	70.86
5	71.15	72.39
6	74.67	74.29
7	77.98	76.53
8	81.05	79.10
9	83.85	81.96
10	86.34	85.08
11	88.51	88.44
12	90.33	92.00

*** Factor of Safety = 1.753 ***

1

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	52.00	66.00
2	55.97	66.46
3	59.91	67.20
4	63.78	68.21
5	67.57	69.48
6	71.26	71.02
7	74.84	72.81
8	78.28	74.84
9	81.58	77.11
10	84.70	79.61
11	87.65	82.31
12	90.40	85.21
13	92.94	88.30
14	95.26	91.56
15	95.58	92.08

*** Factor of Safety = 1.753 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	52.93	66.62
2	56.90	67.11
3	60.82	67.88
4	64.68	68.93
5	68.46	70.25

6	72.13	71.83
7	75.68	73.67
8	79.10	75.76
9	82.35	78.09
10	85.43	80.64
11	88.32	83.41
12	91.01	86.37
13	93.48	89.52
14	95.20	92.07

*** Factor of Safety = 1.753 ***

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Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.86	67.24
2	57.84	67.62
3	61.78	68.33
4	65.64	69.38
5	69.40	70.74
6	73.03	72.42
7	76.51	74.40
8	79.80	76.66
9	82.90	79.19
10	85.77	81.98
11	88.40	84.99
12	90.76	88.22
13	92.85	91.63
14	93.05	92.04

*** Factor of Safety = 1.754 ***

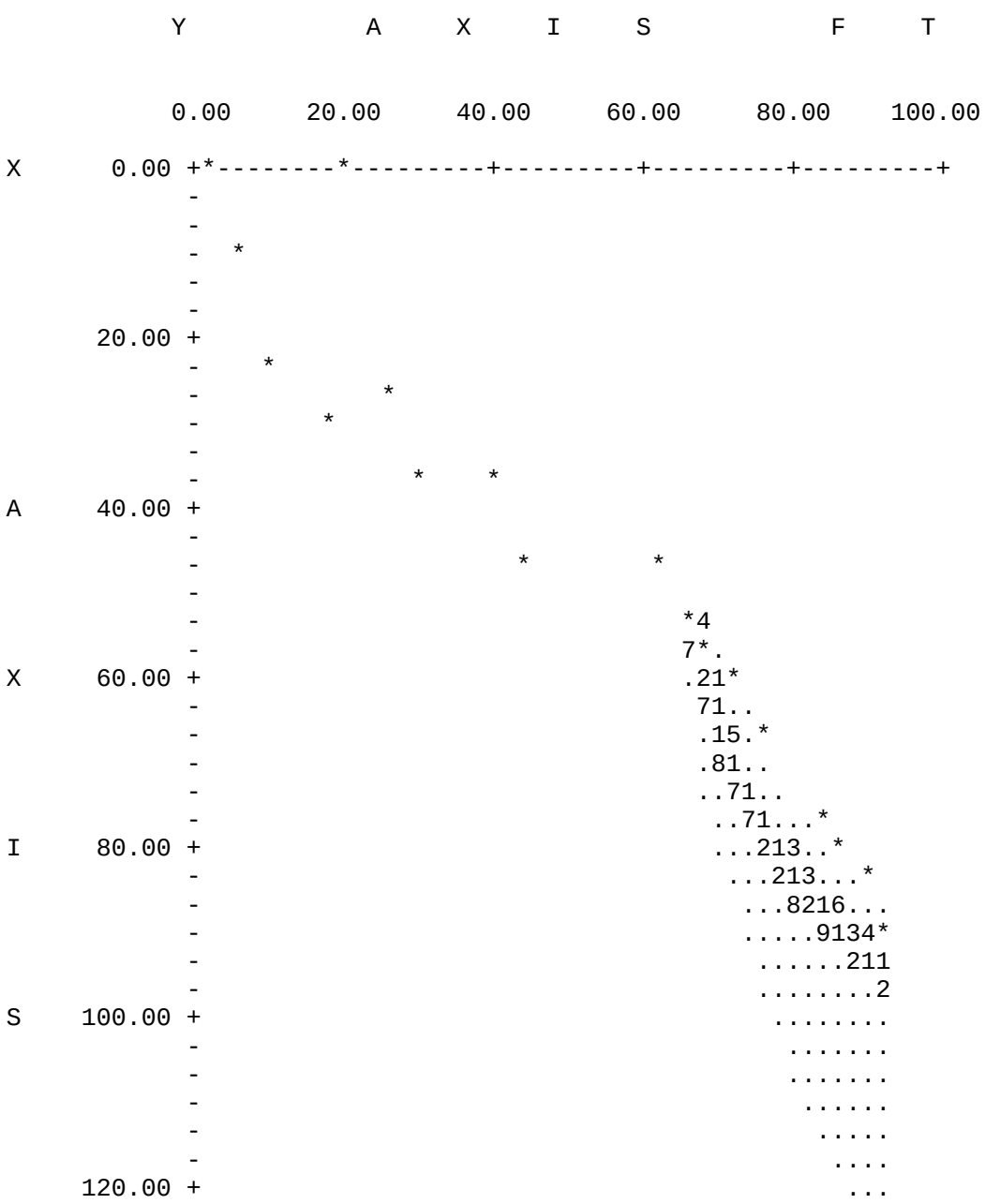
Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	55.71	68.57
2	59.70	68.93
3	63.64	69.60
4	67.52	70.57
5	71.32	71.83
6	75.00	73.39
7	78.55	75.23

8	81.95	77.34
9	85.17	79.71
10	88.20	82.32
11	91.02	85.16
12	93.61	88.21
13	95.96	91.45
14	96.35	92.09

*** Factor of Safety = 1.754 ***

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** PCSTABL6 **

by
Purdue University

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--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4-14-21
Time of Run:
Run By: CH
Input Data Filename: eez2.in
Output Filename: eez2.o1s
Unit: ENGLISH
Plotted Output Filename: eez2.p1s

PROBLEM DESCRIPTION 31451 S. Coast Hwy. Section E-E'
Upper bluff failure
Horiz. seismic coeff. 0.15 added

BOUNDARY COORDINATES

14 Top Boundaries
20 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	20.00	28.00	26.00	3
2	28.00	26.00	36.00	30.00	3
3	36.00	30.00	38.00	40.00	1
4	38.00	40.00	45.00	44.00	1
5	45.00	44.00	47.00	62.00	1
6	47.00	62.00	52.00	66.00	1
7	52.00	66.00	55.00	68.00	2
8	55.00	68.00	60.00	72.00	4
9	60.00	72.00	67.00	76.00	4
10	67.00	76.00	76.00	84.00	4
11	76.00	84.00	80.00	86.00	4
12	80.00	86.00	84.00	90.50	4
13	84.00	90.50	90.00	92.00	4
14	90.00	92.00	160.00	93.00	4
15	55.00	68.00	160.00	86.00	2
16	52.00	66.00	160.00	68.00	1
17	0.00	2.00	10.00	5.00	1
18	10.00	5.00	22.00	10.00	1
19	22.00	10.00	30.00	18.00	1
20	30.00	18.00	36.00	30.00	1

1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	130.0	180.0	1000.0	42.0	0.00	0.0	1
2	122.0	136.0	200.0	36.0	0.00	0.0	1
3	100.0	110.0	0.0	30.0	0.00	0.0	1
4	117.0	130.0	200.0	32.0	0.00	0.0	1

A Horizontal Earthquake Loading Coefficient
Of0.150 Has Been Assigned

A Vertical Earthquake Loading Coefficient
Of0.000 Has Been Assigned

Cavitation Pressure = 0.0 (psf)

1

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.

Janbus Empirical Coef. is being used for the case of c & phi both > 0
525 Trial Surfaces Have Been Generated.

35 Surfaces Initiate From Each Of 15 Points Equally Spaced
Along The Ground Surface Between X = 52.00 ft.
and X = 65.00 ft.

Each Surface Terminates Between X = 85.00 ft.
and X = 125.00 ft.

Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00 ft.

4.00 ft. Line Segments Define Each Trial Failure Surface.

Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of 5.0
And 15.0 deg.

1

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By Spencer`s Method * *

Number of convergent trials 515
Number of non convergent trials 10

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	55.71	68.57
2	59.69	69.03
3	63.61	69.83
4	67.44	70.98
5	71.16	72.45
6	74.73	74.25
7	78.13	76.35
8	81.34	78.75
9	84.32	81.41
10	87.06	84.33
11	89.52	87.48
12	91.71	90.83
13	92.35	92.03

*** Factor of Safety = 1.362 ***

Individual data on the 18 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Force Norm (lbs)	Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	4.0	633.0	0.0	0.0	0.0	0.0	94.9	0.0	0.0
2	0.3	102.6	0.0	0.0	0.0	0.0	15.4	0.0	0.0
3	3.6	1506.2	0.0	0.0	0.0	0.0	225.9	0.0	0.0
4	3.4	1862.8	0.0	0.0	0.0	0.0	279.4	0.0	0.0
5	0.4	272.1	0.0	0.0	0.0	0.0	40.8	0.0	0.0
6	3.7	2753.0	0.0	0.0	0.0	0.0	413.0	0.0	0.0
7	3.6	3317.0	0.0	0.0	0.0	0.0	497.5	0.0	0.0
8	1.3	1305.6	0.0	0.0	0.0	0.0	195.8	0.0	0.0
9	2.1	2206.4	0.0	0.0	0.0	0.0	331.0	0.0	0.0

10	1.9	1852.7	0.0	0.0	0.0	0.0	277.9	0.0	0.0
11	1.3	1330.9	0.0	0.0	0.0	0.0	199.6	0.0	0.0
12	2.7	2823.7	0.0	0.0	0.0	0.0	423.6	0.0	0.0
13	0.3	346.2	0.0	0.0	0.0	0.0	51.9	0.0	0.0
14	2.7	2576.8	0.0	0.0	0.0	0.0	386.5	0.0	0.0
15	2.5	1637.5	0.0	0.0	0.0	0.0	245.6	0.0	0.0
16	0.5	227.8	0.0	0.0	0.0	0.0	34.2	0.0	0.0
17	1.7	498.4	0.0	0.0	0.0	0.0	74.8	0.0	0.0
18	0.6	44.8	0.0	0.0	0.0	0.0	6.7	0.0	0.0

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	52.00	66.00
2	55.93	66.74
3	59.81	67.73
4	63.62	68.95
5	67.34	70.41
6	70.97	72.10
7	74.48	74.01
8	77.87	76.13
9	81.12	78.46
10	84.22	80.99
11	87.16	83.70
12	89.92	86.60
13	92.50	89.65
14	94.29	92.06

*** Factor of Safety = 1.365 ***

1

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	55.71	68.57
2	59.68	69.11
3	63.60	69.90
4	67.46	70.95
5	71.25	72.24
6	74.94	73.77
7	78.53	75.54
8	81.99	77.54
9	85.32	79.75
10	88.50	82.18
11	91.52	84.81
12	94.36	87.62
13	97.01	90.62

14	98.18	92.12

*** Factor of Safety = 1.366 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	52.93	66.62
2	56.89	67.15
3	60.82	67.93
4	64.68	68.98
5	68.46	70.27
6	72.15	71.82
7	75.73	73.60
8	79.19	75.62
9	82.50	77.86
10	85.66	80.32
11	88.64	82.97
12	91.45	85.82
13	94.06	88.85
14	96.47	92.05
15	96.50	92.09

*** Factor of Safety = 1.366 ***

1

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	55.71	68.57
2	59.68	69.12
3	63.60	69.92
4	67.46	70.97
5	71.24	72.25
6	74.94	73.78
7	78.54	75.53
8	82.01	77.51
9	85.36	79.71
10	88.55	82.11
11	91.59	84.71
12	94.46	87.50
13	97.15	90.46
14	98.47	92.12

*** Factor of Safety = 1.368 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.86	67.24
2	57.82	67.75
3	61.75	68.53
4	65.61	69.57
5	69.39	70.87
6	73.08	72.41
7	76.66	74.20
8	80.11	76.23
9	83.42	78.48
10	86.56	80.95
11	89.54	83.62
12	92.33	86.49
13	94.92	89.54
14	96.82	92.10

*** Factor of Safety = 1.368 ***

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Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.86	67.24
2	57.83	67.71
3	61.76	68.46
4	65.62	69.49
5	69.41	70.79
6	73.09	72.36
7	76.64	74.19
8	80.06	76.26
9	83.33	78.58
10	86.41	81.12
11	89.32	83.87
12	92.01	86.83
13	94.49	89.97
14	95.93	92.08

*** Factor of Safety = 1.368 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	55.71	68.57
2	59.70	68.94
3	63.65	69.58
4	67.54	70.50
5	71.36	71.67
6	75.10	73.11
7	78.72	74.80
8	82.22	76.74
9	85.58	78.91
10	88.78	81.31
11	91.81	83.92
12	94.66	86.73
13	97.30	89.73
14	99.13	92.13

*** Factor of Safety = 1.369 ***

1

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	52.00	66.00
2	55.98	66.39
3	59.92	67.07
4	63.80	68.04
5	67.60	69.30
6	71.30	70.83
7	74.87	72.63
8	78.30	74.69
9	81.57	77.00
10	84.65	79.54
11	87.55	82.30
12	90.23	85.27
13	92.68	88.43
14	94.90	91.76
15	95.08	92.07

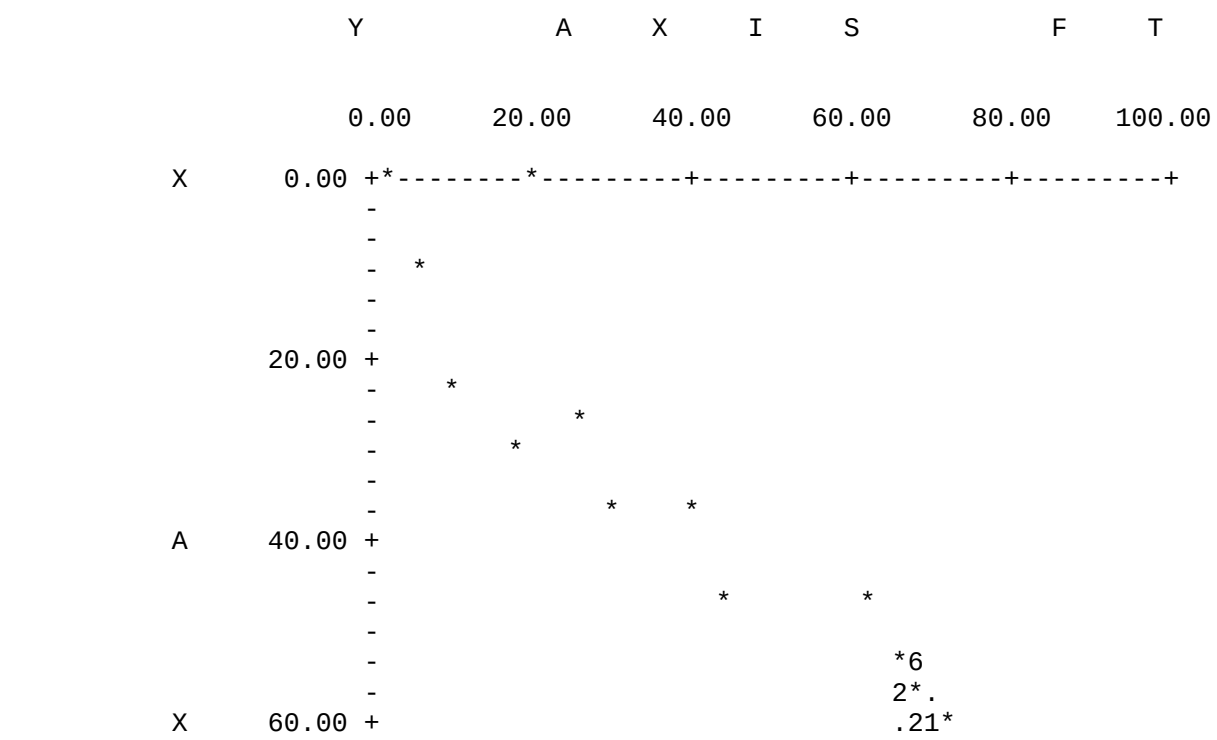
*** Factor of Safety = 1.369 ***

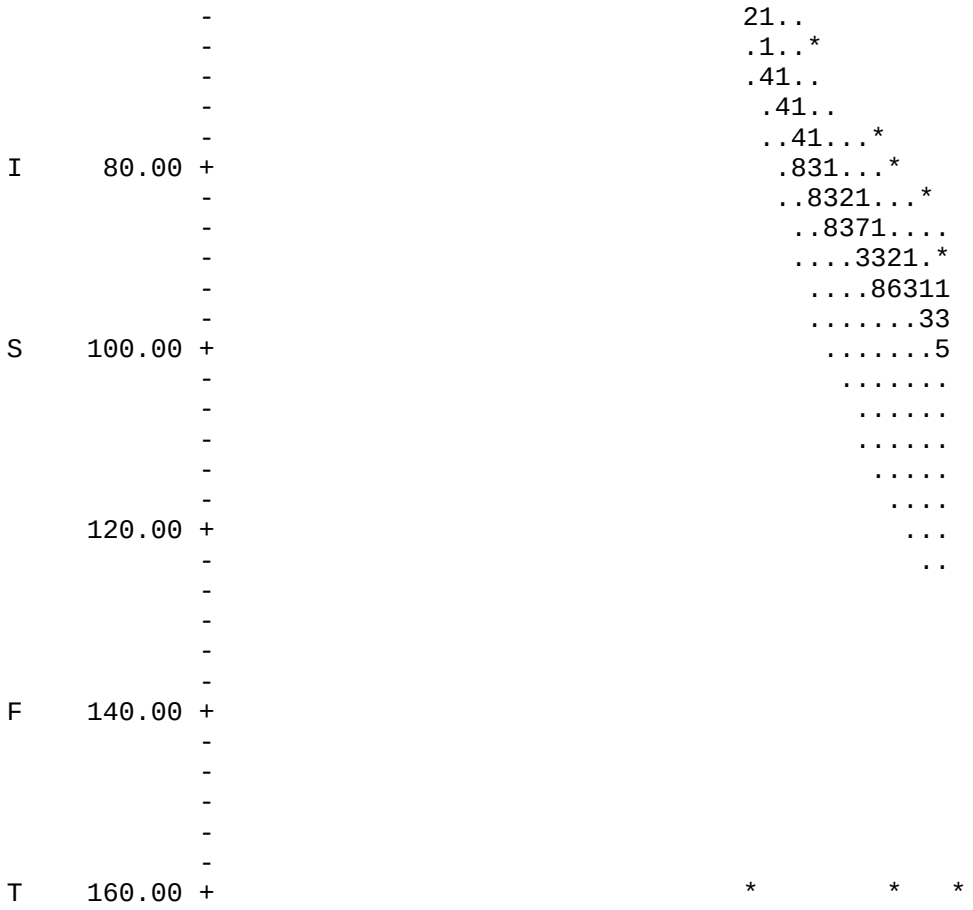
Failure Surface Specified By 15 Coordinate Points

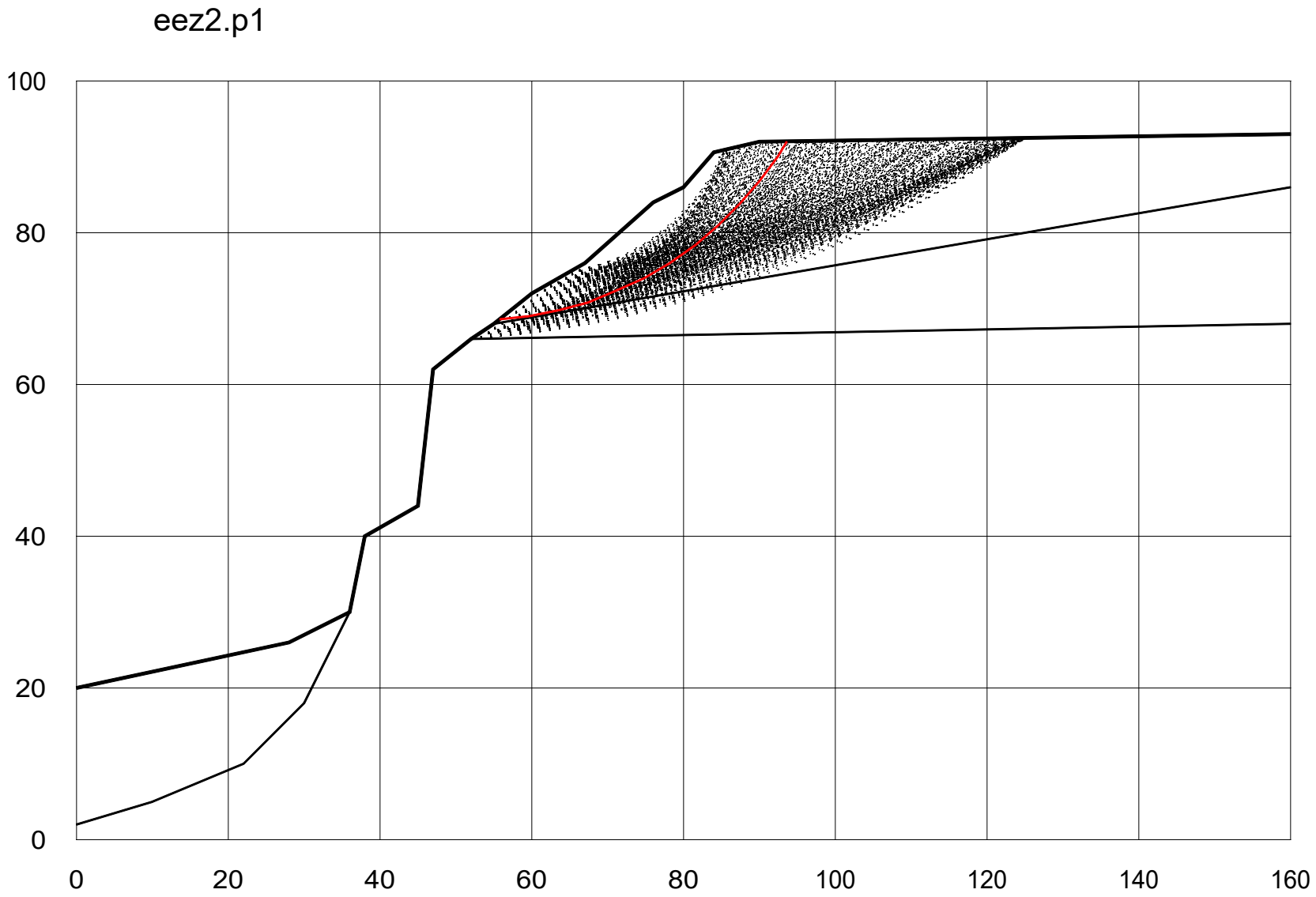
Point No.	X-Surf (ft)	Y-Surf (ft)
1	52.00	66.00
2	55.90	66.88
3	59.76	67.94
4	63.56	69.20
5	67.29	70.64
6	70.95	72.25
7	74.52	74.05
8	78.00	76.02
9	81.38	78.16
10	84.66	80.46
11	87.81	82.92
12	90.84	85.53
13	93.74	88.28
14	96.50	91.18
15	97.31	92.10

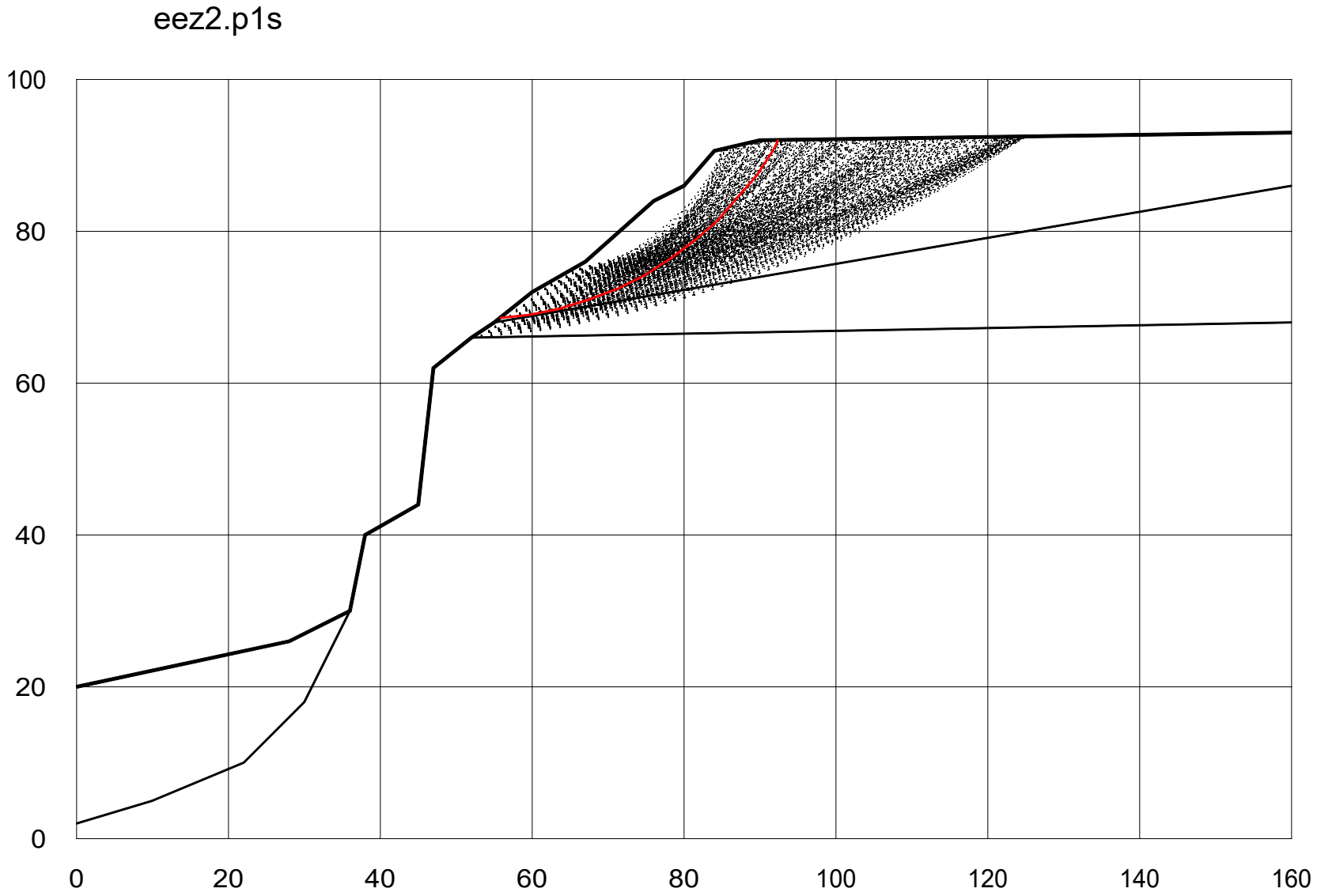
*** Factor of Safety = 1.369 ***

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160

** PCSTABL6 **

by
Purdue University

1

--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4-14-21
Time of Run:
Run By: CH
Input Data Filename: ff2.in
Output Filename: ff2.o1
Unit: ENGLISH
Plotted Output Filename: ff2.p1

PROBLEM DESCRIPTION 31451 S. Coast Hwy. Section F-F'
Global faiure

BOUNDARY COORDINATES

22 Top Boundaries
23 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	28.00	8.00	21.00	1
2	8.00	21.00	50.00	52.00	1
3	50.00	52.00	56.00	56.00	1
4	56.00	56.00	60.00	58.00	1
5	60.00	58.00	66.00	64.50	1
6	66.00	64.50	75.00	70.00	1
7	75.00	70.00	80.00	74.00	1
8	80.00	74.00	86.00	79.00	1
9	86.00	79.00	90.00	81.00	1
10	90.00	81.00	94.00	84.00	1
11	94.00	84.00	108.00	93.00	1
12	108.00	93.00	114.00	94.00	1
13	114.00	94.00	118.00	94.00	1
14	118.00	94.00	118.10	100.50	1
15	118.10	100.50	174.00	100.50	1
16	174.00	100.50	174.05	107.00	1
17	174.05	107.00	174.10	111.50	2
18	174.10	111.50	205.00	111.50	2
19	205.00	111.50	205.10	121.50	2
20	205.10	121.50	216.00	121.50	2

21	216.00	121.50	216.10	120.00	2
22	216.10	120.00	240.00	120.00	2
23	174.05	107.00	240.00	116.00	1

1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	130.0	180.0	1000.0	42.0	0.00	0.0	1
2	122.0	136.0	200.0	36.0	0.00	0.0	1
3	100.0	110.0	0.0	30.0	0.00	0.0	1
4	117.0	130.0	200.0	32.0	0.00	0.0	1

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BOUNDARY LOAD(S)

2 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	148.00	174.00	250.0	0.0
2	174.10	205.00	250.0	0.0

NOTE - Intensity Is Specified As A Uniformly Distributed
Force Acting On A Horizontally Projected Surface.

1

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.

Janbus Empirical Coef. is being used for the case of c & phi both > 0
875 Trial Surfaces Have Been Generated.

25 Surfaces Initiate From Each Of 35 Points Equally Spaced
Along The Ground Surface Between X = 8.00 ft.
and X = 45.00 ft.

Each Surface Terminates Between X = 120.00 ft.
and X = 180.00 ft.

Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is Y = 0.00 ft.

10.00 ft. Line Segments Define Each Trial Failure Surface.

Restrictions Have Been Imposed Upon The Angle Of Initiation. The Angle Has Been Restricted Between The Angles Of -5.0 And 15.0 deg.

1

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By Spencer`s Method * *

Number of convergent trials 549
Number of non convergent trials 326

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	8.00	21.00
2	17.94	22.10
3	27.81	23.73
4	37.57	25.90
5	47.20	28.58
6	56.67	31.79
7	65.96	35.50
8	75.03	39.71
9	83.86	44.40
10	92.43	49.56
11	100.70	55.18
12	108.66	61.23
13	116.28	67.71
14	123.54	74.59
15	130.42	81.85
16	136.89	89.47
17	142.94	97.43
18	145.03	100.50

*** Factor of Safety = 2.500 ***

Individual data on the 30 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Force Norm (lbs)	Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	9.9	4030.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	9.9	11622.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	9.8	18285.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	9.6	23964.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	2.8	7973.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	6.0	18293.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.7	2143.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	3.3	10688.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	6.0	20853.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	154.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	9.0	34683.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	121.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	5.0	20015.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	3.9	16185.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	2.1	9189.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	4.0	17216.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	2.4	10439.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	1.6	6811.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	6.7	28968.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	7.3	31027.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	0.7	2751.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	5.3	20864.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	2.3	8079.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	1.7	5697.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.1	362.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	5.4	20144.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	6.9	19922.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	6.5	12495.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	6.1	5551.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	2.1	417.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	9.09	21.80
2	19.09	21.65
3	29.07	22.26
4	38.97	23.63
5	48.74	25.76
6	58.32	28.64
7	67.65	32.24
8	76.67	36.55
9	85.34	41.54
10	93.60	47.18
11	101.40	53.44
12	108.70	60.27
13	115.45	67.65

14	121.61	75.52
15	127.15	83.85
16	132.04	92.57
17	135.71	100.50

*** Factor of Safety = 2.502 ***

1

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	9.09	21.80
2	19.09	21.60
3	29.07	22.14
4	38.99	23.44
5	48.78	25.49
6	58.38	28.27
7	67.75	31.77
8	76.83	35.96
9	85.56	40.83
10	93.90	46.34
11	101.81	52.47
12	109.22	59.18
13	116.11	66.43
14	122.43	74.18
15	128.15	82.38
16	133.23	90.99
17	137.65	99.96
18	137.86	100.50

*** Factor of Safety = 2.507 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	11.27	23.41
2	21.26	23.74
3	31.20	24.79
4	41.05	26.54
5	50.75	28.98
6	60.25	32.11
7	69.50	35.91
8	78.45	40.35

9	87.07	45.42
10	95.31	51.09
11	103.12	57.34
12	110.47	64.12
13	117.32	71.41
14	123.63	79.16
15	129.38	87.35
16	134.52	95.92
17	136.85	100.50

*** Factor of Safety = 2.507 ***

1

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	9.09	21.80
2	19.08	21.51
3	29.07	22.02
4	38.99	23.32
5	48.77	25.40
6	58.35	28.26
7	67.67	31.87
8	76.68	36.22
9	85.31	41.27
10	93.52	46.99
11	101.24	53.34
12	108.43	60.29
13	115.04	67.79
14	121.04	75.80
15	126.37	84.25
16	131.02	93.11
17	134.18	100.50

*** Factor of Safety = 2.508 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	12.35	24.21
2	22.35	24.42
3	32.31	25.38
4	42.16	27.08

5	51.86	29.51
6	61.35	32.65
7	70.58	36.50
8	79.50	41.02
9	88.06	46.20
10	96.20	52.01
11	103.89	58.40
12	111.07	65.35
13	117.72	72.82
14	123.80	80.77
15	129.26	89.15
16	134.08	97.91
17	135.26	100.50

*** Factor of Safety = 2.519 ***

1

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	10.18	22.61
2	20.06	24.10
3	29.86	26.13
4	39.53	28.67
5	49.05	31.74
6	58.39	35.30
7	67.53	39.37
8	76.43	43.92
9	85.08	48.94
10	93.45	54.42
11	101.51	60.33
12	109.24	66.68
13	116.62	73.42
14	123.63	80.56
15	130.24	88.06
16	136.44	95.90
17	139.69	100.50

*** Factor of Safety = 2.521 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)

1	10.18	22.61
2	20.17	22.24
3	30.16	22.66
4	40.09	23.86
5	49.89	25.83
6	59.51	28.56
7	68.89	32.04
8	77.96	36.24
9	86.68	41.14
10	94.99	46.70
11	102.84	52.90
12	110.18	59.69
13	116.97	67.04
14	123.16	74.89
15	128.71	83.21
16	133.60	91.93
17	137.56	100.50

*** Factor of Safety = 2.524 ***

1

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	10.18	22.61
2	20.09	23.94
3	29.89	25.91
4	39.55	28.49
5	49.03	31.68
6	58.28	35.47
7	67.28	39.84
8	75.98	44.78
9	84.34	50.25
10	92.34	56.25
11	99.95	62.75
12	107.12	69.72
13	113.84	77.12
14	120.07	84.95
15	125.79	93.15
16	130.25	100.50

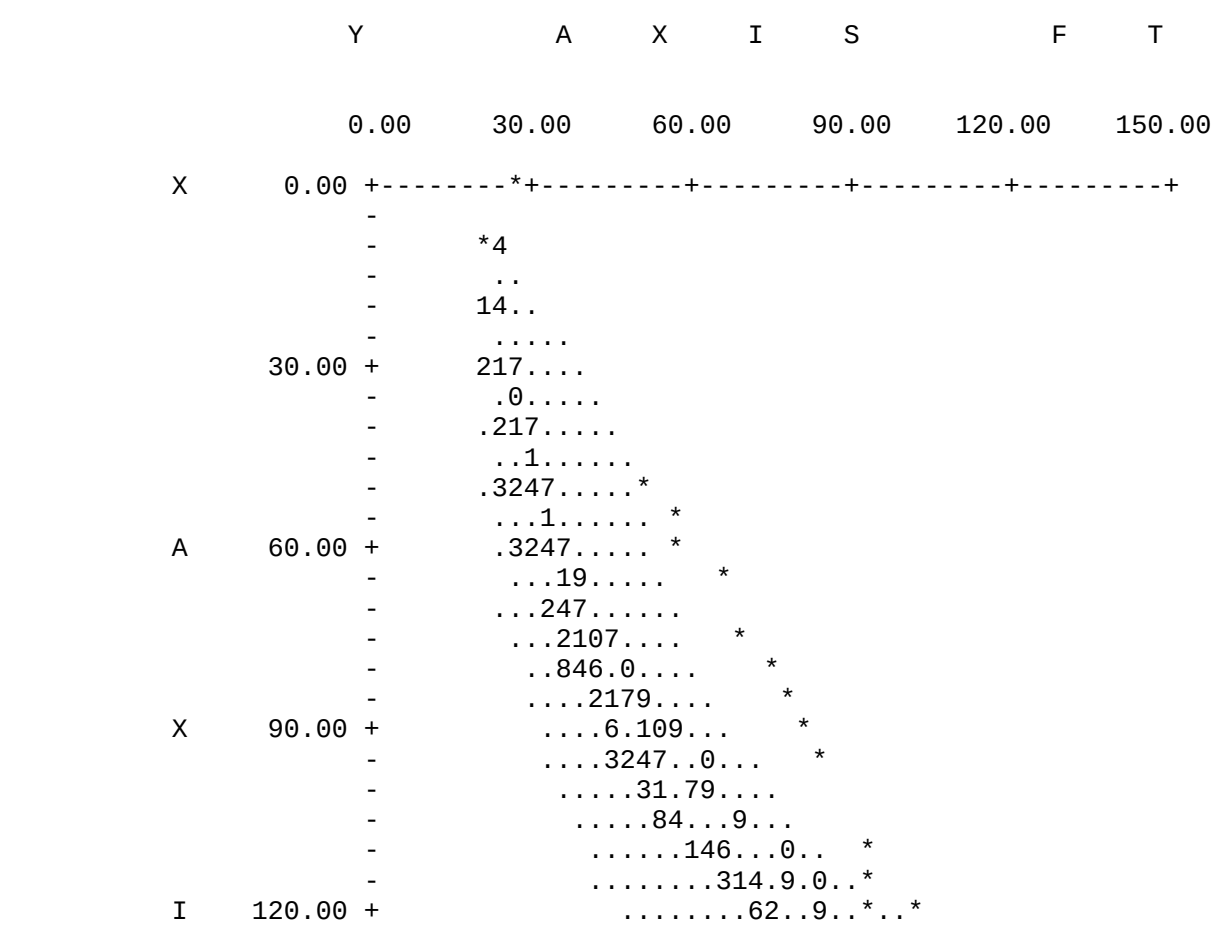
*** Factor of Safety = 2.527 ***

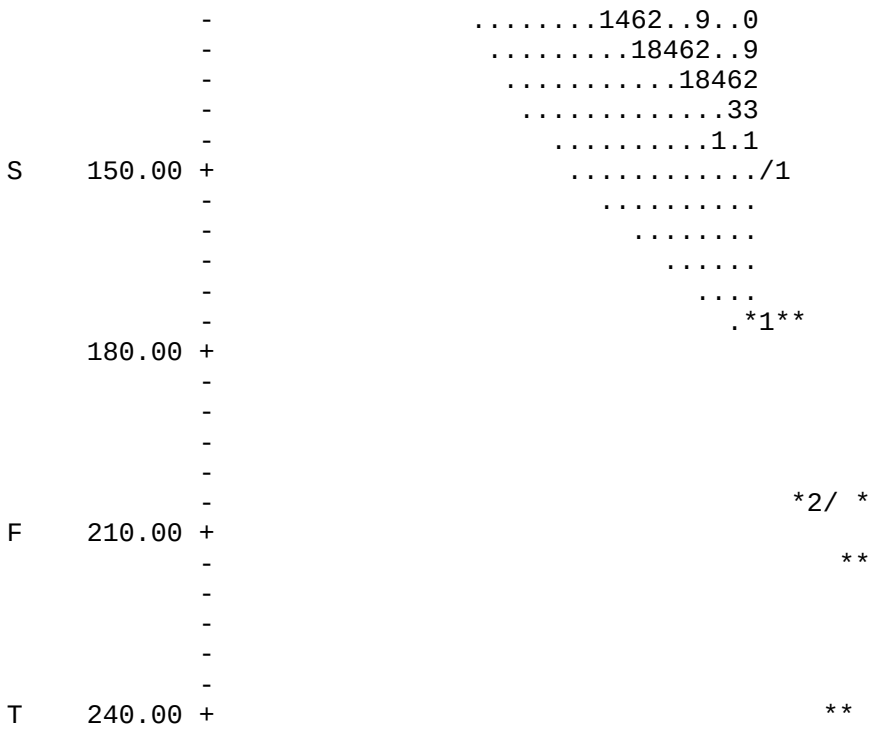
Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	8.00	21.00
2	17.93	22.22
3	27.74	24.12
4	37.41	26.69
5	46.88	29.90
6	56.11	33.76
7	65.05	38.23
8	73.67	43.31
9	81.92	48.95
10	89.76	55.15
11	97.17	61.87
12	104.10	69.08
13	110.52	76.75
14	116.41	84.83
15	121.73	93.30
16	125.60	100.50

*** Factor of Safety = 2.534 ***

1




S
150.00
F
210.00
T
240.00

** PCSTABL6 **

by
Purdue University

1

--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4-14-21
Time of Run:
Run By: CH
Input Data Filename: ff2.in
Output Filename: ff2.o1s
Unit: ENGLISH
Plotted Output Filename: ff2.p1s

PROBLEM DESCRIPTION 31451 S. Coast Hwy. Section F-F'
Global failure
Horiz. seismic coeff 0.15 added

BOUNDARY COORDINATES

22 Top Boundaries
23 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	28.00	8.00	21.00	1
2	8.00	21.00	50.00	52.00	1
3	50.00	52.00	56.00	56.00	1
4	56.00	56.00	60.00	58.00	1
5	60.00	58.00	66.00	64.50	1
6	66.00	64.50	75.00	70.00	1
7	75.00	70.00	80.00	74.00	1
8	80.00	74.00	86.00	79.00	1
9	86.00	79.00	90.00	81.00	1
10	90.00	81.00	94.00	84.00	1
11	94.00	84.00	108.00	93.00	1
12	108.00	93.00	114.00	94.00	1
13	114.00	94.00	118.00	94.00	1
14	118.00	94.00	118.10	100.50	1
15	118.10	100.50	174.00	100.50	1
16	174.00	100.50	174.05	107.00	1
17	174.05	107.00	174.10	111.50	2
18	174.10	111.50	205.00	111.50	2
19	205.00	111.50	205.10	121.50	2
20	205.10	121.50	216.00	121.50	2

21	216.00	121.50	216.10	120.00	2
22	216.10	120.00	240.00	120.00	2
23	174.05	107.00	240.00	116.00	1

1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	130.0	180.0	1000.0	42.0	0.00	0.0	1
2	122.0	136.0	200.0	36.0	0.00	0.0	1
3	100.0	110.0	0.0	30.0	0.00	0.0	1
4	117.0	130.0	200.0	32.0	0.00	0.0	1

1

BOUNDARY LOAD(S)

2 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	148.00	174.00	250.0	0.0
2	174.10	205.00	250.0	0.0

NOTE - Intensity Is Specified As A Uniformly Distributed
Force Acting On A Horizontally Projected Surface.

A Horizontal Earthquake Loading Coefficient
Of0.150 Has Been Assigned

A Vertical Earthquake Loading Coefficient
Of0.000 Has Been Assigned

Cavitation Pressure = 0.0 (psf)

1

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.

Janbus Empirical Coef. is being used for the case of c & phi both > 0
875 Trial Surfaces Have Been Generated.

25 Surfaces Initiate From Each Of 35 Points Equally Spaced
Along The Ground Surface Between X = 8.00 ft.
and X = 45.00 ft.

Each Surface Terminates Between X = 120.00 ft.
and X = 180.00 ft.

Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00 ft.

10.00 ft. Line Segments Define Each Trial Failure Surface.

Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -5.0
And 15.0 deg.

1

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.

* * Safety Factors Are Calculated By Spencer`s Method * *

Number of convergent trials 283
Number of non convergent trials 592

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	8.00	21.00
2	17.98	21.59
3	27.92	22.75
4	37.77	24.47
5	47.50	26.76
6	57.09	29.60
7	66.50	32.98
8	75.70	36.89
9	84.67	41.32
10	93.36	46.26
11	101.76	51.69
12	109.84	57.59
13	117.56	63.94
14	124.91	70.72
15	131.86	77.92

16	138.38	85.49
17	144.46	93.43
18	149.27	100.50

*** Factor of Safety = 1.927 ***

Individual data on the 31 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Force Norm (lbs)	Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	10.0	4398.9	0.0	0.0	0.0	0.0	659.8	0.0	0.0
2	9.9	12739.0	0.0	0.0	0.0	0.0	1910.9	0.0	0.0
3	9.9	20136.1	0.0	0.0	0.0	0.0	3020.4	0.0	0.0
4	9.7	26512.2	0.0	0.0	0.0	0.0	3976.8	0.0	0.0
5	2.5	7779.6	0.0	0.0	0.0	0.0	1166.9	0.0	0.0
6	6.0	19980.1	0.0	0.0	0.0	0.0	2997.0	0.0	0.0
7	1.1	3804.2	0.0	0.0	0.0	0.0	570.6	0.0	0.0
8	2.9	10271.5	0.0	0.0	0.0	0.0	1540.7	0.0	0.0
9	6.0	23034.7	0.0	0.0	0.0	0.0	3455.2	0.0	0.0
10	0.5	2070.2	0.0	0.0	0.0	0.0	310.5	0.0	0.0
11	8.5	36039.0	0.0	0.0	0.0	0.0	5405.8	0.0	0.0
12	0.7	3067.7	0.0	0.0	0.0	0.0	460.2	0.0	0.0
13	4.3	19173.8	0.0	0.0	0.0	0.0	2876.1	0.0	0.0
14	4.7	21704.9	0.0	0.0	0.0	0.0	3255.7	0.0	0.0
15	1.3	6367.1	0.0	0.0	0.0	0.0	955.1	0.0	0.0
16	4.0	19127.1	0.0	0.0	0.0	0.0	2869.1	0.0	0.0
17	3.4	16151.9	0.0	0.0	0.0	0.0	2422.8	0.0	0.0
18	0.6	3091.8	0.0	0.0	0.0	0.0	463.8	0.0	0.0
19	7.8	37644.7	0.0	0.0	0.0	0.0	5646.7	0.0	0.0
20	6.2	30030.0	0.0	0.0	0.0	0.0	4504.5	0.0	0.0
21	1.8	8646.1	0.0	0.0	0.0	0.0	1296.9	0.0	0.0
22	4.2	18596.9	0.0	0.0	0.0	0.0	2789.5	0.0	0.0
23	3.6	14587.2	0.0	0.0	0.0	0.0	2188.1	0.0	0.0
24	0.4	1709.0	0.0	0.0	0.0	0.0	256.3	0.0	0.0
25	0.1	427.1	0.0	0.0	0.0	0.0	64.1	0.0	0.0
26	6.8	29134.3	0.0	0.0	0.0	0.0	4370.1	0.0	0.0
27	6.9	23649.5	0.0	0.0	0.0	0.0	3547.4	0.0	0.0
28	6.5	15946.7	0.0	0.0	0.0	0.0	2392.0	0.0	0.0
29	6.1	8728.5	0.0	0.0	0.0	0.0	1309.3	0.0	0.0
30	3.5	2053.2	0.0	0.0	0.0	0.0	308.0	0.0	0.0
31	1.3	153.6	0.0	0.0	0.0	0.0	23.0	0.0	316.7

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	9.09	21.80
2	19.00	23.11

3	28.83	24.98
4	38.53	27.40
5	48.07	30.38
6	57.43	33.91
7	66.57	37.96
8	75.47	42.53
9	84.09	47.60
10	92.40	53.16
11	100.38	59.18
12	108.01	65.65
13	115.25	72.55
14	122.08	79.85
15	128.48	87.53
16	134.44	95.57
17	137.67	100.50

*** Factor of Safety = 1.936 ***

1

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	9.09	21.80
2	19.09	22.02
3	29.04	22.94
4	38.91	24.57
5	48.63	26.91
6	58.17	29.92
7	67.46	33.61
8	76.47	37.96
9	85.15	42.93
10	93.45	48.51
11	101.33	54.66
12	108.75	61.36
13	115.67	68.58
14	122.07	76.26
15	127.90	84.39
16	133.14	92.91
17	137.09	100.50

*** Factor of Safety = 1.938 ***

Failure Surface Specified By 19 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	8.00	21.00
2	17.99	21.51
3	27.93	22.54
4	37.81	24.09
5	47.60	26.16
6	57.26	28.74
7	66.77	31.82
8	76.11	35.40
9	85.25	39.46
10	94.16	44.00
11	102.82	49.00
12	111.21	54.45
13	119.30	60.32
14	127.07	66.62
15	134.49	73.31
16	141.56	80.39
17	148.25	87.82
18	154.54	95.60
19	158.09	100.50

*** Factor of Safety = 1.948 ***

1

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	9.09	21.80
2	19.09	21.84
3	29.07	22.49
4	38.99	23.76
5	48.81	25.65
6	58.49	28.14
7	68.00	31.24
8	77.30	34.91
9	86.35	39.16
10	95.12	43.97
11	103.58	49.31
12	111.68	55.16
13	119.41	61.51
14	126.73	68.33
15	133.61	75.59
16	140.02	83.26
17	145.94	91.31
18	151.36	99.72
19	151.79	100.50

*** Factor of Safety = 1.955 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	8.00	21.00
2	17.97	21.74
3	27.87	23.20
4	37.62	25.38
5	47.20	28.27
6	56.54	31.85
7	65.59	36.10
8	74.31	40.99
9	82.65	46.51
10	90.56	52.63
11	98.01	59.30
12	104.95	66.50
13	111.34	74.19
14	117.16	82.32
15	122.37	90.86
16	126.95	99.75
17	127.27	100.50

*** Factor of Safety = 1.960 ***

1

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	13.44	25.02
2	23.40	25.96
3	33.28	27.45
4	43.07	29.50
5	52.73	32.09
6	62.23	35.22
7	71.54	38.87
8	80.63	43.04
9	89.47	47.71
10	98.04	52.86
11	106.31	58.49
12	114.25	64.57
13	121.83	71.09
14	129.04	78.01
15	135.85	85.34
16	142.25	93.03

17	147.78	100.50

*** Factor of Safety = 1.964 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	9.09	21.80
2	18.96	23.39
3	28.73	25.54
4	38.35	28.25
5	47.81	31.51
6	57.06	35.31
7	66.07	39.64
8	74.82	44.49
9	83.27	49.83
10	91.40	55.65
11	99.18	61.93
12	106.59	68.65
13	113.59	75.79
14	120.17	83.32
15	126.30	91.22
16	131.97	99.46
17	132.60	100.50

*** Factor of Safety = 1.964 ***

1

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	13.44	25.02
2	23.39	26.01
3	33.28	27.53
4	43.06	29.58
5	52.73	32.15
6	62.24	35.23
7	71.58	38.81
8	80.71	42.89
9	89.61	47.45
10	98.25	52.48
11	106.61	57.97
12	114.67	63.89

13	122.40	70.23
14	129.78	76.98
15	136.79	84.12
16	143.40	91.62
17	149.61	99.46
18	150.35	100.50

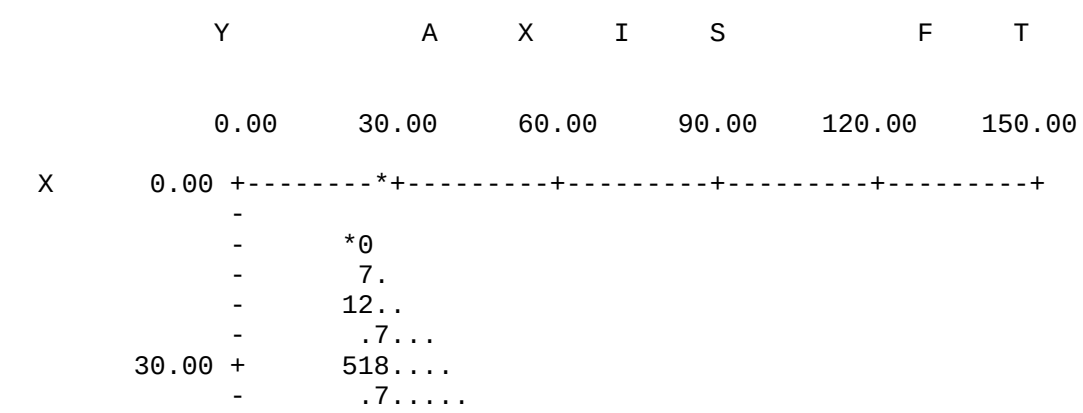
*** Factor of Safety = 1.967 ***

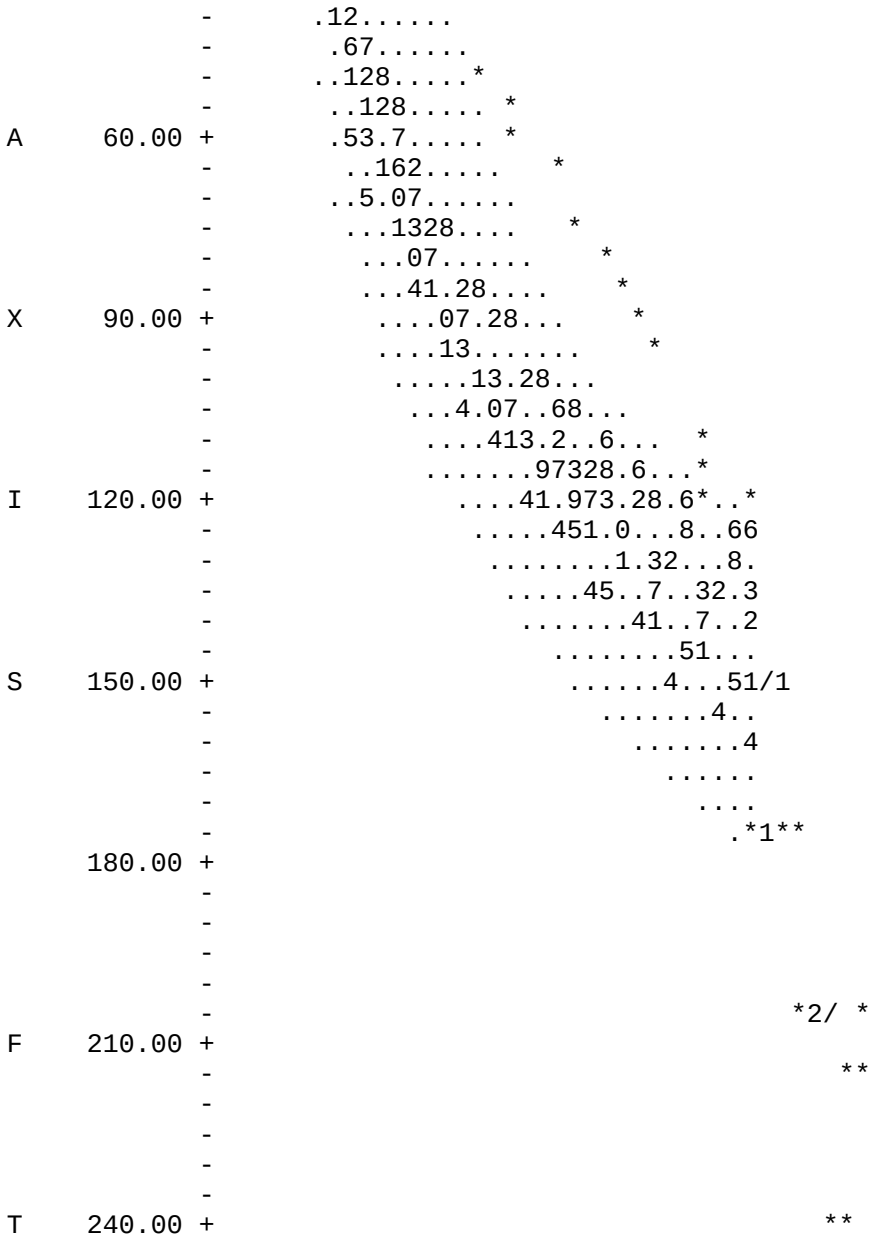
Failure Surface Specified By 17 Coordinate Points

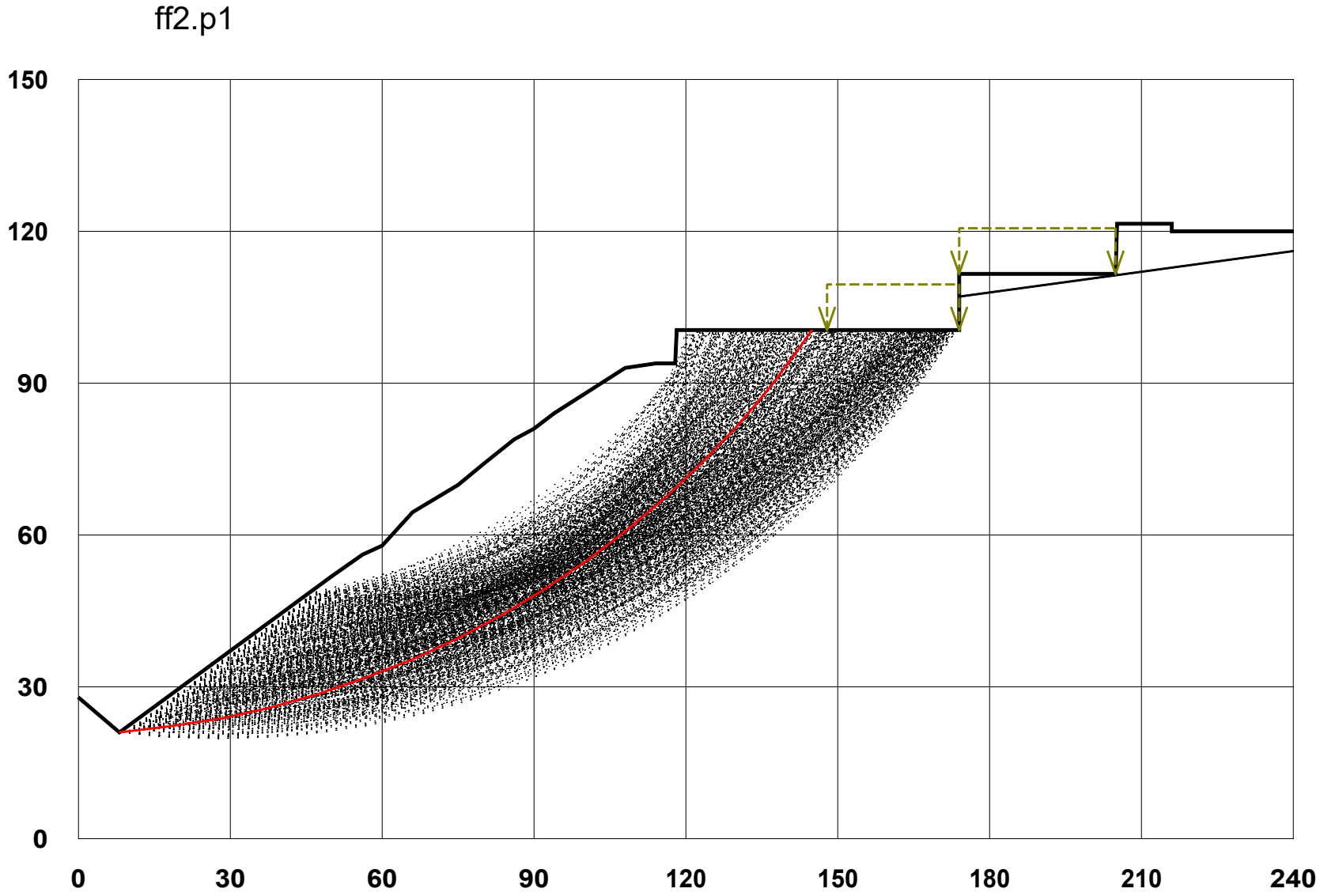
Point No.	X-Surf (ft)	Y-Surf (ft)
1	12.35	24.21
2	22.35	24.15
3	32.33	24.81
4	42.23	26.21
5	52.01	28.33
6	61.60	31.17
7	70.95	34.70
8	80.02	38.90
9	88.76	43.77
10	97.12	49.26
11	105.05	55.35
12	112.52	62.00
13	119.47	69.19
14	125.88	76.86
15	131.71	84.99
16	136.92	93.52
17	140.51	100.50

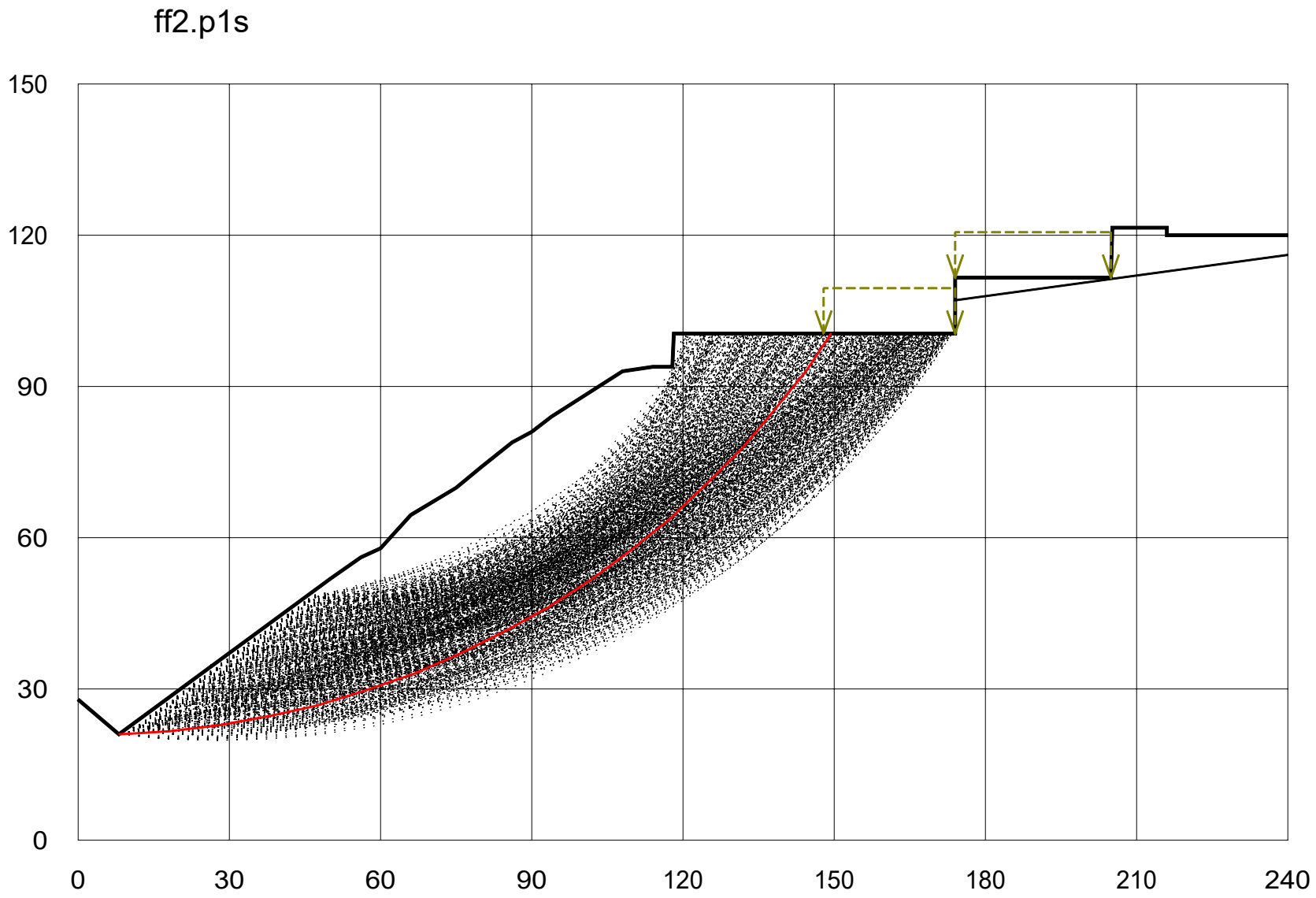
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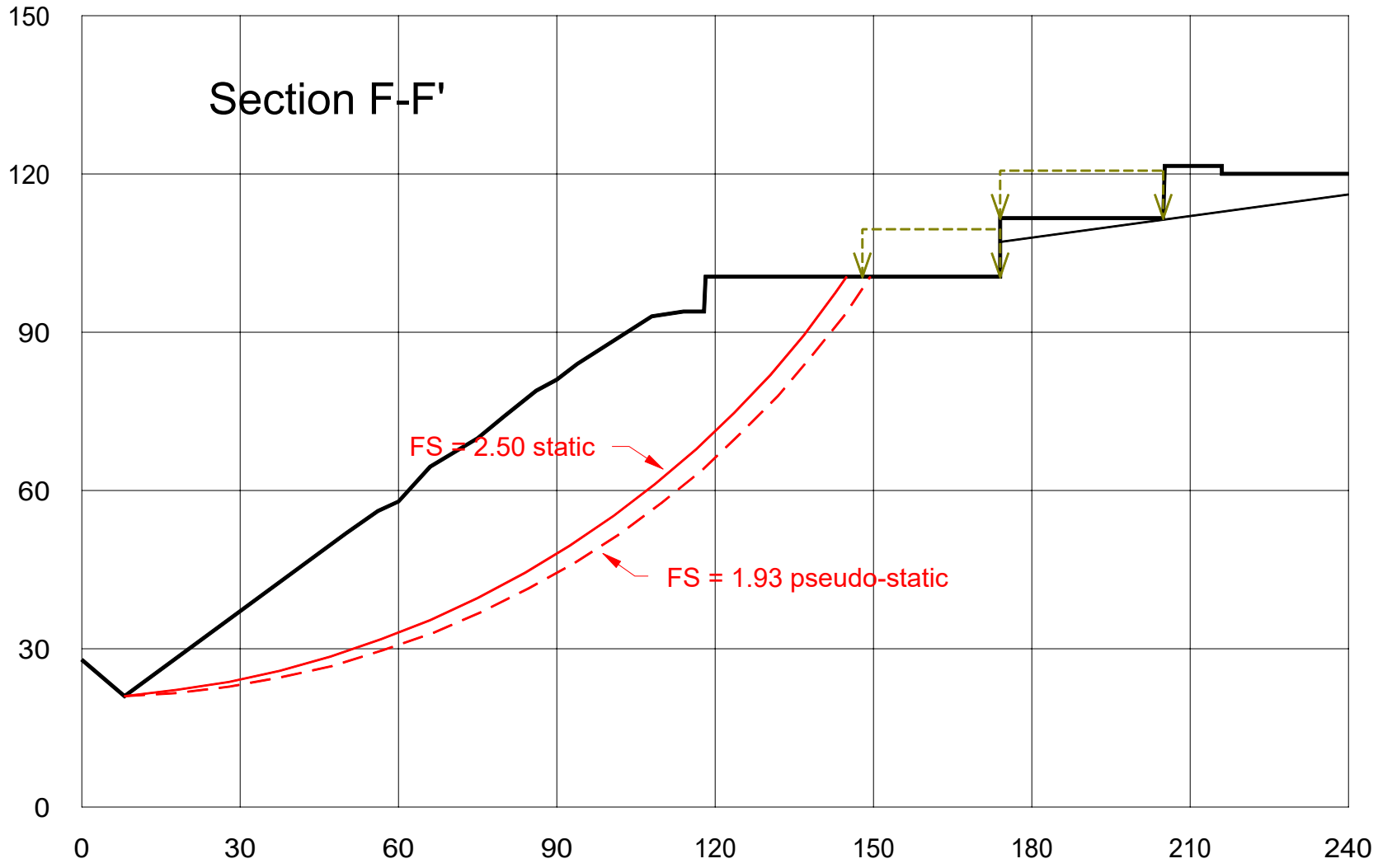
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A
60.00
X
90.00
I
120.00
S
150.00
180.00
F
210.00
T
240.00


ff2.p1
150
120
90
60
30
0
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30
60
90
120
150
180
210
240


ff2.p1s
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30
60
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150
180
210
240

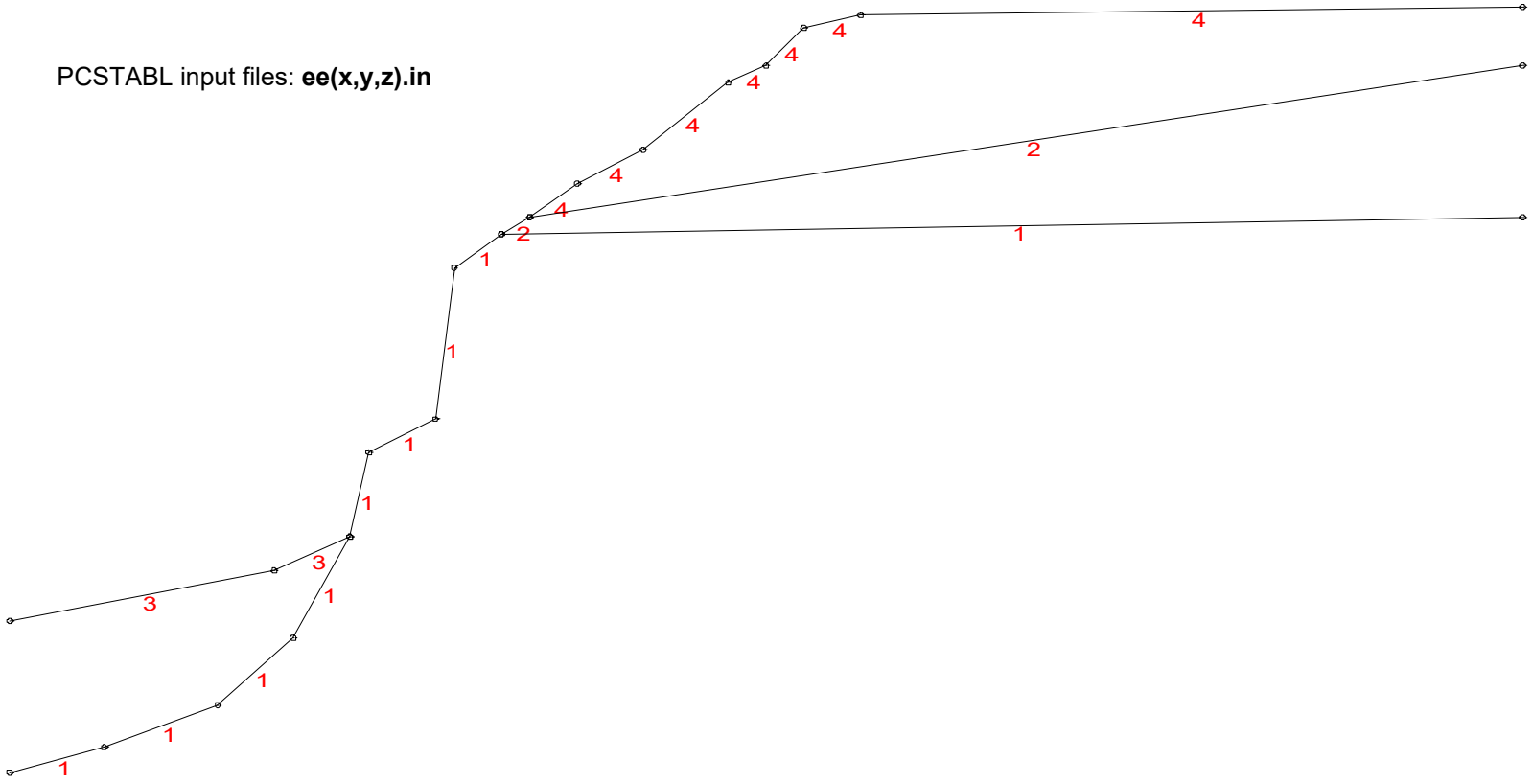

Section F-F'
150
120
90
60
30
0
0
30
60
90
120
150
180
210
240
FS = 2.50 static
FS = 1.93 pseudo-static

31451 South Coast Highway, Laguna Beach 4/14/21

Soil Assignments

no.	Material	γ_T (psf):	γ_{SAT} (psf):	c (psf):	ϕ (deg):
1	San Onofre Breccia	130	138	1000	42
2	Marine Terrace Deposits	122	136	200	36
3	Beach sand	100	110	0	30
4	Fill/Colluvium	117	130	200	32

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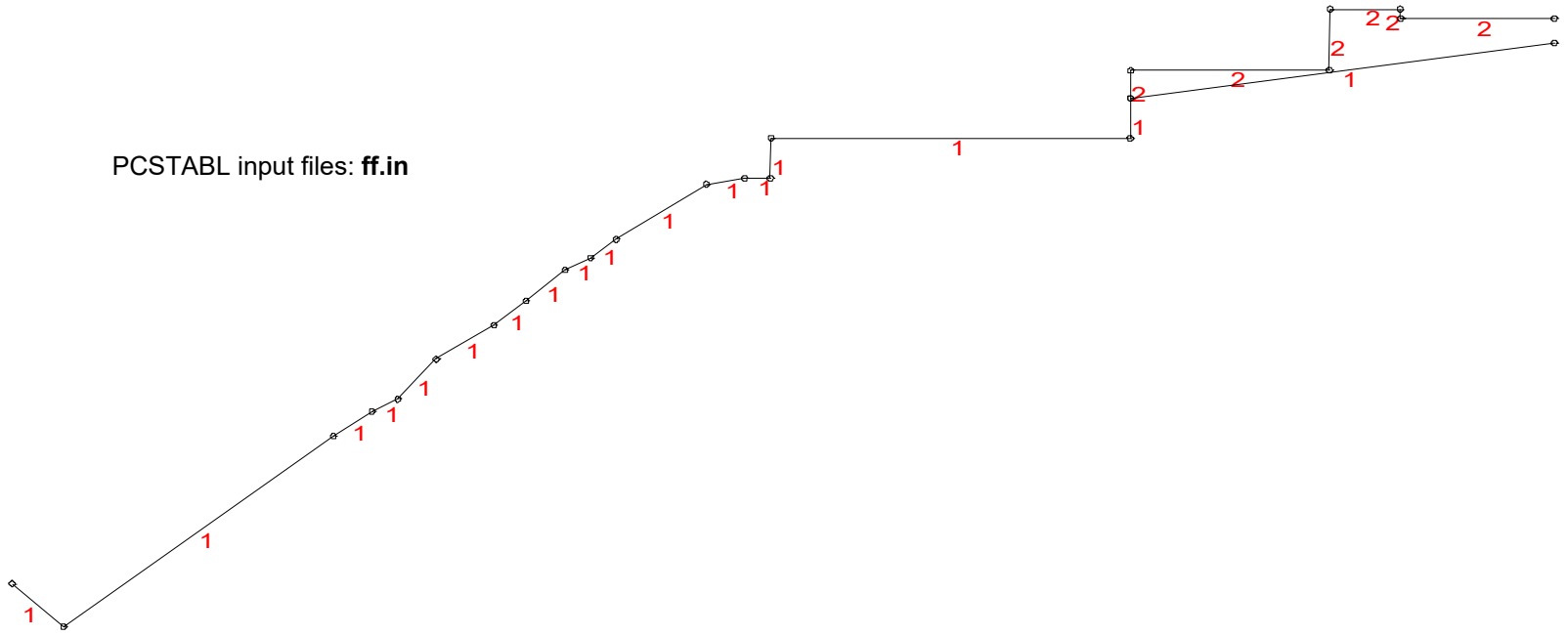


31451 South Coast Highway, Laguna Beach 4/14/21

Soil Assignments

no.	Material	γ_T (psf):	γ_{SAT} (psf):	c (psf):	ϕ (deg):
1	San Onofre Breccia	130	138	1000	42
2	Marine Terrace Deposits	122	136	200	36
3	Beach sand	100	110	0	30
4	Fill/Colluvium	117	130	200	32

PCSTABL input files: **ff.in**



APPENDIX B
(September 16, 2004)

September 16, 2004
Project No. 474.2
Log No. CG6399

Mr. Tony Reyna
C/o Texican Inc.
12631 E. Imperial Highway, Suite 223A
Santa Fe Springs, CA 90670

Subject: PRELIMINARY GEOTECHNICAL INVESTIGATION
Proposed Single-Family Residence
31451 South Coast Highway
Laguna Beach, California

References: Attached

Dear Mr. Reyna:

In accordance with your request, we have performed a preliminary geotechnical investigation at the subject site. Our work was performed during June through September 2004. The purpose of our investigation was to evaluate the geotechnical conditions beneath the portion of the property intended for new development, and to provide grading and foundation recommendations for the proposed construction of a custom, two to three-story, single-family residence. To assist with our investigation, we were provided with several architectural plans for the proposed project, prepared by Mr. Dean Nota, Architect (Reference 22), and a topographic map of the site, prepared by Toal Engineering Inc. (Reference 23).

With the above in mind, our scope of services included the following:

- Research and review of available geotechnical reports, plans, geologic literature, and aerial photographs for the site and immediate vicinity (see References).
- Four large-diameter exploratory borings for geologic observation and soil/bedrock sampling.
- Geologic mapping of the seacliff.
- Laboratory testing of samples obtained during our subsurface exploration.
- Engineering and geologic analysis of the data.

- Preparation of this report presenting the results of our field and laboratory work, analyses, and our conclusions and recommendations.

SITE DESCRIPTION

The subject property, located at 31451 South Coast Highway, Laguna Beach, California, is also identified as a portion of Lot xx of Tract xxx (see Location Map, Figure 1). The residential property consists generally of a vacant approximate x-acre irregular-shaped ocean front lot. Topographically, the property consists generally of gently to moderately and locally steep west to southwest sloping ground that is bounded to the southwest, west, and northwest by an approximate 45 to 55-feet high, approximate 1:5:1 (horizontal to vertical) to near vertical fill slope and seacliff. A typically wide sandy beach and the Pacific Ocean extend along the seaward margin of the property.

The property is bounded to the north/northwest by the remnants of a partially infilled drainage and an existing single-family residence situated at a similar elevation as the inland portion of the subject site, to the south/southeast by a concrete public beach access stairway and single-family residences situated at a similar elevation as the subject site, to the southwest and northwest by the seacliff/shoreline and Pacific Ocean, and to the northeast by South Coast Highway.

Overall topographic relief within the boundaries of the property is approximately 107-feet, with elevations ranging from approximately 122-feet (msl) along the northeast property boundary near South Coast Highway to approximately 15-feet (msl) along the general western property boundary and toe of the seacliff.

Based on our review of available maps and discussion with South Coast Water District personal, a general northwest/southeast trending tunnel containing a sewer main extends beneath the western portion of the property (see Geologic Map, Plate 1). The estimated floor of the tunnel is thought to be roughly 19-feet (msl) based solely on field measurements.

Vegetation on the site consists generally of locally occurring native shrubs, seasonal weeds/grasses, and iceplant over the majority of the gently to moderately sloping terrain of the property, and iceplant over the seaward facing fill slope along the top of the seacliff.

PROPOSED DEVELOPMENT

Our review of the available architectural plans (Reference 22) indicates that the proposed construction consists generally of a new, two to three-story, custom, single-family residence with a detached garage and swimming pool. The lower level of the residence will consist of subterranean living space and daylight at the seacliff within the southwest portion of the site. The location of the proposed new residence, garage, and swimming pool are shown on the accompanying Geologic Map, Plate 1. We anticipate wood-frame and steel construction founded on a drilled pier/grade beam foundation system with structural concrete and/or raised-wood floors. Building loads are expected to be typical for this type of relatively light construction. Retaining walls up to a maximum height of about 10-feet are anticipated in order to facilitate grade changes between the various levels of the residence. We anticipate site grading with respect to the proposed lower level will consist of cutting approximately 2 to x-feet from the existing topography, with grading for the other levels consisting of backfilling behind retaining walls to achieve design finished grades along with some minor cuts and fills on the order of 3-feet and less. No new slopes are planned.

SUBSURFACE EXPLORATION

Subsurface exploration consisted of drilling four large-diameter exploratory borings to depths ranging from approximately 7 to 40-feet below existing site grades utilizing a truck-mounted bucket-auger type drill rig. The approximate locations of borings are shown on the accompanying Geologic Map, Plate 1.

The borings were logged during excavation by an engineering geologist from this office, who visually classified the soil (Unified Soil Classification System), and obtained relatively undisturbed and bulk samples for laboratory testing. The Boring Logs are attached as Figures 2 through 6.

LABORATORY TESTING

Laboratory testing was performed on samples obtained during the subsurface exploration. Tests performed consisted of the following:

- Dry Density and Moisture Content (ASTM: D 1188 and D 2216)
- Direct Shear (ASTM: D 3080)
- Sulfate Content (EPA 9038)
- Expansion (ASTM: D 4829)

- Maximum Dry Density/Optimum Moisture Content (ASTM: D 1557-00)

Results of the dry density and moisture content determinations are presented on the Boring Logs, Figures 2 through 6. The remaining laboratory tests are presented on Figure 7.

GEOLOGIC CONDITIONS

1. Geologic Setting

The subject site is located in the extreme southwest portion of the U.S.G.S. San Juan Capistrano 7.5-minute quadrangle and within the coastal plain region of the Peninsular Ranges geomorphic province. The site and vicinity are situated along an irregular trending stretch of coastline that is characterized by numerous coves and pocket beaches that are backed by a landward succession of steep to near vertical sea cliffs, typically gently to moderately seaward sloping terrace terrain, and ultimately by moderately to steeply sloping resistant hills that comprise the western flank of the San Joaquin Hills. The property lies within a promontory of the shoreline approximately 700-feet northwest of a prominent headland known as Table Rock, and is fronted by a seasonally variable but typically wide sandy beach.

The geology of the subject lot is characterized by locally deep fills associated with a pre-existing drainage, regressive marine and continental terrace deposits that were laid down during glacio-eustatic changes in sea level in the Pleistocene, and ultimately marine sedimentary bedrock assigned to the middle Miocene San Onofre Breccia. Based on our subsurface exploration and review of the available geologic reports it appears that two wave-cut platforms, representing essentially two ancient high sea-level stands, exist within the property. The wave-cut platforms and associated geologic contacts between the terrace deposits and San Onofre Breccia lie approximately 5 to xx-feet below the existing lot grade and at approximate elevations of xx and xx-feet (msl). Structurally, the terrace deposits are considered essentially massive, while bedding attitudes observed or reported in the underlying San Onofre Breccia within the site and vicinity indicate variable dips ranging from approximately 08 to 26-degrees to the southeast and southwest. Review of the referenced aerial photographs indicates and the results of our subsurface exploration indicates the subject property appears to have been essentially bound by seaward trending drainages prior to the construction of South Coast Highway in the late 1920's. In particular, it appears that a relatively well-developed northeast/southwest trending drainage extended from east of South Coast Highway and through the general southern portion of the site to the beach (see Geologic Map, Plate 1). No evidence of

sea caves within the property boundaries were observed during our site observations and mapping.

There are no active faults or landslides known to exist or mapped within the property, and the site is not located within the presently defined boundaries of an Alquist-Priolo Earthquake Fault Zone. Localized northwest to northeast trending faulting mapped and/or reported within the seacliff near the site appears to be confined to the middle Miocene bedrock and is not considered to be active. Active fault zones within the general site region include the Newport-Inglewood, Palos Verdes, and Elsinore which are located approximately 2-miles southwest (offshore), 17-miles southwest (offshore), and 21.5-miles northeast of the site, respectively. The postulated San Joaquin Hills Blind Thrust fault (Model by Grant, et al, 1999), which has been classified as a Type B active fault by the California Geological Survey, reportedly extends from offshore to beneath the Laguna Beach area at a depth of approximately 3.5 to 4-miles (Reference 8).

Our review of the available geotechnical/coastal reports and aerial photographs pertinent to the site vicinity (see References) suggests that the mean long-term rate of seacliff retreat for this section of coastline exposing dense San Onofre Breccia is relatively low, with estimated rates ranging from approximately 0.05 to 0.2-feet/year (References 5 and 11). It should be realized, however, that seacliff retreat is typically episodic, with periods of little to no retreat to a number of feet over a short period of time. Topographic evidence of several apparent surficial failures were observed within the fill slope that bounds the general seaward portion of the property along with an apparent block fall within the northwest portion of the seacliff.

Based on the results of our subsurface exploration, geologic mapping, and review of the referenced geologic and geotechnical documents, the subject property appears to be underlain by variable but locally deep fill soils associated with the infilling of a drainage course and creation of the existing lower level pad area, variably thick surficial soils consisting of colluvium, and ultimately by a succession of Pleistocene terrace deposits and middle Miocene San Onofre Breccia bedrock.

A brief description of the geologic units observed within the site follows. The distribution of the geologic units is indicated on the accompanying Geologic Map, Plate 1, and Geologic Cross-Sections, Plate 2.

2. Geologic Units

   a. Fill – The subject site is mantled by approximately 3 to 4-feet of undifferentiated fill and colluvium that consist generally of porous, damp to moist, loose, dark brown silty fine sand with minor scattered roots. The fill/colluvium is not considered suitable for support of the proposed new construction in its existing condition.
   b. Colluvium – The undocumented fill material and natural terrain of the property are mantled by a variable but approximate x to x-feet deposit of colluvium. The colluvium consists generally of damp, loose, light brown to orange brown silty fine to medium sand with locally abundant sub-angular gravel to cobble metamorphic rock clasts. The colluvium is not considered suitable for support of the proposed structures of improvements in its existing condition.

   c. Terrace Deposits – The fill and colluvium are underlain by continental and marine terrace deposits. The terrace deposits consist generally of damp to moist, medium dense to dense, reddish brown to orange brown slightly clayey and silty fine to medium sand with locally abundant sub-angular gravel to cobble metamorphic rock clasts that grade at depth to friable fine to coarse sand with a scattered basal gravel zone along the contact with the underlying bedrock. Moderate to heavy caving was observed within the lower section of the terrace deposits during the drilling operation.

   d. San Onofre Breccia – Sedimentary bedrock deposits assigned to the middle Miocene San Onofre Breccia were encountered beneath the terrace deposits in both exploratory borings and crop-out along the seacliff backing the site and vicinity. The section of bedrock observed consisted generally of damp, dense to very dense, olive gray silty fine to coarse sandy breccia and sandstone. Gravel to boulder-size metamorphic rock clasts are typical in the breccia, and general drilling refusal was encountered in both borings in the breccia.

3. Groundwater

   Groundwater seepage was observed at several locations within the promontory headland and seacliff at the general southern and northern portion of the site from what is believed to be the terrace deposit/bedrock contact. Additionally, heavy water is evident from near the terrace deposit/bedrock contact where an apparent storm drain pipe discharges at the face of the seacliff at the southwest portion of the site near the beach access stairs. Localized perched groundwater conditions have been known to exist within the south Laguna area and site vicinity along the

terrace/bedrock contact, with the perched water believed to be the consequence of lateral migration of water from offsite areas through the relatively permeable terrace deposits and along the relatively impermeable bedrock. It should be noted that fluctuations in the amount and level of groundwater might occur due to variations in rainfall, irrigation, and other factors.

SEISMICITY

There are no known active or potentially active faults that pass through the site. The localized faulting within the bedrock mapped and/or reported in the site vicinity appear confined to the middle Miocene strata and are not considered active or construction limiting features. The nearest fault of significance is the mapped extension of the Laguna Canyon fault, which passes approximately 2000-feet northeast of the site. Recent activity on this fault has not been established within the last 11,000-years; consequently, it is not considered active. Active fault zones within the site region include the Newport-Inglewood (offshore extension), San Joaquin Hills Blind Thrust, Palos Verdes, and the Elsinore, which are located approximately 2-miles southwest, 3.5 to 4-miles below, 17-miles southwest, and 21.5-miles northeast of the site, respectively. Strong ground motion could also be expected from earthquakes occurring along the San Jacinto and San Andreas fault zones, which lie northeast of the site at distances of approximately 45.5-miles and 55 to 60-miles, respectively. The San Clemente fault, which lies approximately 58-miles southwest of the site, as well as numerous other offshore faults, could also provide strong ground motion.

The following table lists the known active faults that would have the most significant impact on the site:

Fault	Maximum Probable Earthquake (Moment Magnitude)	Slip Rate	Fault Type
Newport-Inglewood (offshore extension) 3.25-kilometers (2-miles SW)	6.9	1.5 mm/year	B
San Joaquin Hills Blind Thrust 6-kilometers (3.5 to 4-miles below)	6.6	0.5 mm/year	B
Elsinore (Glen Ivy Segment) 35.5-kilometers (21.5-miles NE)	6.8	5 mm/year	B

SEISMIC EFFECTS

1. Ground Accelerations

   The most significant probable earthquake to effect the property would be a 6.9 magnitude earthquake on the Newport-Inglewood fault. Depiction of probabilistic seismic hazard analysis utilizing a consensus of historical seismic data and the respective regional geologic conditions that are shown on the "Seismic Shaking Hazard Maps of California," CDMG Map Sheet 48 (Reference 20) and "Seismic Hazard Zone Report…" (Reference 8), indicates that peak ground accelerations of about 0.30 to 0.40g are possible with a 10% probability of being exceeded in 50 years.

2. Ground Cracks

   The risk of surface rupture due to active faulting is considered low due to the absence of an active fault on site. Ground cracks due to shaking from seismic events in the region are possible, as with all southern California.

3. Landsliding

   Review of the State of California Seismic Hazard Zones for the San Juan Capistrano quadrangle (Reference 6) indicates that the proposed building area of the site is

bounded by an area considered susceptible to seismically induced landsliding (the seacliff). The risk of gross seismically induced landsliding to effect the proposed new structure is considered low due to the generally dense and favorable structure of the underlying geologic materials and our recommendation that a drilled pier retaining structure founded in the dense underlying bedrock be constructed along the seaward side of the proposed structure to retain the terrace deposits. Surficial instability is considered possible within the seawardly exposed terrace deposits and block-falls are considered possible in the bedrock seacliff in the event of a significant earthquake.

4. Liquefaction

Review of the State of California Seismic Hazard Zones for the San Juan Capistrano quadrangle (Reference 6) indicates that the site is not located within an area considered susceptible to liquefaction. The risk of seismically induced liquefaction is considered low due to the dense underlying geologic materials and lack of shallow groundwater.

5. Tsunamis

The risk for seismically generated ocean waves to affect the site is considered low due to the elevation of the property above sea level.

CONCLUSIONS AND RECOMMENDATIONS

1. General

Based on the results of our preliminary geotechnical investigation, construction of the proposed new single-family residence is considered feasible from a geotechnical standpoint. Grading and foundation plans should take into account the appropriate geotechnical features of the site. Assuming that the conclusions and recommendations provided in this report are implemented during design and construction of the project, the proposed construction is not expected to adversely impact existing adjacent properties from a geotechnical standpoint.

The following geotechnical parameters and recommendations for the proposed residence are provided with the provision that a drilled pier retaining structure founded in the underlying bedrock will be constructed to retain the terrace deposits along the seaward margin of the building area. Modifications to this concept will require additional geotechnical analyses and revised foundation recommendations.

2. Seismic Parameters for Structural Design

Seismic considerations that may be used for structural design at the site include the following:

a. Ground Motion – The proposed residence should be designed and constructed to resist the effects of seismic ground motions as provided in Chapter 16, Division IV of the 2001 California Building Code. The basis for the design is dependent on and considers seismic zoning, site characteristics, occupancy, configuration, structural system and building height.

b. Soil Profile Type – In accordance with Section 1629.3.1, Table 16-J, and the underlying geologic conditions, a site Soil Profile of Type S_D is considered appropriate for the subject property.

c. Seismic Zone – In accordance with Section 1629.4.1 and Figure 16-2, the subject site is situated within Seismic Zone 4.

d. Seismic Zone Factor (z) – A Seismic Zone Factor of 0.40 is assigned based on Table 16-I. Since the site is within Seismic Zone 4, Section 1629.4.2 requires a Seismic Source Type and Near Source Factor.

e. Near-Source Factor (Na and Nv) – Based on the known active faults in the region and distance of the faults from the site, a Seismic Source Type of B per Table 16-U, and Near Source Factors of Na = 1.15 per Table 16-S and Nv = 1.4 per Table 16-T are provided.

f. Seismic Coefficients (Ca and Cv) – Using the Soil Profile Type and Seismic Zone Factor along with Tables 16-Q and 16-R, the Seismic Coefficients Ca = 0.44 (Na) and Cv = 0.64 (Nv) are provided, or Ca = 0.51 and Cv = 0.90.

3. Slope Stability

No new slopes are planned. Based on review of previous work relative to the development of nearby properties, our field observations, and our interpretation of the referenced aerial photographs, the existing seacliff does not exhibit evidence of gross instability. The near surface portion of the seacliff mantled by surficial soils and terrace deposits is considered to have a low to moderate potential for surficial instability during the design life of the structure. In the event of surficial instability within the seacliff, it is not expected to adversely impact the proposed residence as we have recommended that a drilled pier retaining structure extending into sound bedrock with a sufficient slope setback be constructed along the seaward side of the proposed structure to retain the terrace deposits. Typical existing exposures of the San

Onofre Breccia from within the site vicinity and the results of our subsurface work indicate coarse-grained sandstone/breccia sedimentary rock, with the measured bedding within the seacliff backing the lot appearing to dip at a gentle to moderate angle and normal or obliquely into the seacliff. Periodic maintenance of the portion of seacliff not modified by development may be necessary during the life of the residence.

4. Site Grading

Prior to grading, the site should be cleared of any existing debris and vegetation. Materials generated during clearing should be properly disposed of at an approved location off-site. Holes resulting from the removal of buried obstructions, old septic tanks/seepage pits that may be encountered during construction, or other underground structures should be removed in accordance with local ordinances and replaced with compacted fill.

In areas where the proposed cuts for the various levels of the residence or improvements do not remove all of the existing fill and colluvium, the existing fill and colluvium should be removed down to approved terrace deposits and replaced as compacted fill in order to achieve design grades. Removal depths of approximately 2 to 3-feet below existing site grades should be anticipated and should extend outside the building footprint or any hardscape improvements at least 3-feet where possible. Final removal depths should be determined in the field during grading by the Geotechnical Consultant.

Fill should be compacted by mechanical means in uniform horizontal lifts of 6 to 8-inches in thickness. All fill should be moisture conditioned to near optimum moisture content and compacted to a minimum relative compaction of 90 percent based upon ASTM: D 1557-00. The on-site materials are suitable for use as compacted fill provided all vegetation and debris are removed. Rock fragments over 6-inches in maximum dimension and other perishable or unsuitable materials should be excluded from the fill.

All grading and fill placement should be observed and tested as necessary by the Geotechnical Consultant.

5. Drilled Piers

A drilled pier retaining structure founded in the dense underlying bedrock should be constructed on the seaward side of the proposed structure to support the terrace deposits and mitigate the impact of seacliff retreat.

Drilled piers should be spaced at no more than 2.5 pier diameters and designed to resist lateral loads of 35-pounds-per-cubic-foot, equivalent fluid pressure, above the bedrock. Any additional surcharge pressures behind the drilled piers retaining structure should be added to this value. The lateral load should be applied to a continuous vertical plane and distributed to the piers in a tributary fashion. If future erosion exposes the drilled piers, the area between the piers should be supported by lagging, shotcrete, poured in place concrete, etc., structurally connected to the drilled piers and designed for a lateral pressure of 500-pounds-per-square-foot.

Drilled piers may resist lateral loads by a passive pressure of 600-pounds-per-square-foot per foot in bedrock to a maximum value of 4000-pounds-per-square-foot. The passive resistance for piers may be calculated over two pier diameters.

Drilled piers at least 24-inches in diameter may be supported by both end-bearing and skin friction. An end-bearing capacity of 4000-pounds-per-square-foot may be assumed for drilled piers founded at least 5-feet into bedrock. Skin friction may be assumed to be 250-pounds-per-square-foot for bedrock. The drilled piers should extend to a sufficient depth in order to provide a horizontal setback of at least 25-feet between the pier and the face of the adjacent seacliff.

Drilled pier excavations should be observed by the Geotechnical Consultant prior to placement of reinforcing steel and concrete.

6. Foundations and Slabs

Provided that a drilled pier retaining structure founded in the dense underlying bedrock as previously recommended in this report is constructed along the seaward side of the proposed structure, the structure may be supported by conventional continuous/spread footings founded in approved terrace deposits. Conventional continuous/spread footings extending at least 18-inches into approved bearing materials and at least 15-inches wide may be designed for a dead plus live load bearing capacity of 2000-pounds-per-square-foot. This value may be increased by one-third for loads including wind and seismic forces. A lateral bearing value of 250-pounds-per-square-foot per foot of depth and a coefficient of friction between

foundation soil and concrete of 0.35 may be assumed. Continuous footings should be reinforced with at least four No. 4 bars, two top and two bottom. Foundations located adjacent to utility trenches should extend below a 1:1 (horizontal to vertical) plane projected upward from the bottom of the trench.

Footing excavations should be observed by the Geotechnical Consultant prior to placement of reinforcement and concrete to ensure that appropriate bearing materials have been encountered.

Total and differential settlement due to foundation loads is considered to be less than 1/2 and 1/4 inch, respectively, for foundations founded as recommended.

Slab-on-grade floors should have a minimum thickness of 5-inches and should be reinforced with #4 bars spaced at 18-inches, center to center, in two directions, and supported on chairs so that the reinforcement is at mid-height in the slab. In areas where moisture sensitive floor coverings are planned, slabs should be underlain by a 4-inch layer of clean sand with at least a 6-mil visqueen vapor barrier placed at mid-height in the sand. Prior to placing concrete, the slab subgrade soils should be thoroughly moistened.

7. Retaining Walls

Retaining wall foundations should be designed in accordance with the previous building foundation recommendations. Retaining walls free to rotate (cantilevered walls) should be designed for an active pressure of 35 pounds per cubic foot (equivalent fluid pressure) assuming level backfill consisting of onsite granular soils. Walls restrained from movement at the top should be designed for an additional uniform soils pressure of 8xH pounds per square foot where H is the height of the wall in feet. Any additional surcharge pressures behind the retaining walls should be added to these values. Retaining walls should be provided with adequate drainage to prevent buildup of hydrostatic pressure and should be adequately waterproofed. The subdrain system behind retaining walls should consist at a minimum of 4-inch diameter Schedule 40 (or equivalent) perforated (perforations “down”) PVC pipe embedded in at least 1-cubic-foot of 3/4-inch crushed rock per lineal foot of pipe all wrapped in approved filter fabric. Recommendations for wall waterproofing should be provided by the Project Architect and/or Structural Engineer.

8. Temporary Slopes

Temporary slopes necessary to facilitate site grading or the construction of retaining walls may be cut vertically up to 4-feet where the cuts are not influenced by existing

structures or property line constraints. Any portion of temporary slopes near existing improvements or higher than 4-feet should be sloped at a ratio no steeper than 1:1 (horizontal to vertical), slot cut, or shored. Shoring will most likely be necessary to construct the southeast retaining wall of the residence/lower level due to the height of the proposed cut and close proximity of the cut to the adjacent property. Consideration should be given to incorporating the shoring system for the southeast portion of the residence into the permanent retaining wall as a means of constructing the wall and facilitating the excavation process.

Field observations by the Engineering Geologist during grading of temporary slopes is recommended and considered necessary to confirm anticipated conditions and provide additional recommendations as warranted. Slot cut/shoring parameters can be provided upon request.

9. Retaining Wall and Utility Trench Backfill

All retaining wall and utility trench backfill should be compacted to at least 90 percent relative compaction (ASTM: D 1557-00). Backfill should be observed and tested as necessary by the Geotechnical Consultant.

10. Sulfate Content

Representative samples of the on-site soils were submitted for sulfate analyses. The results of the soluble sulfate tests per EPA 9038 methods are summarized on the Laboratory Test Results, Figure 4. These sulfate contents are consistent with a negligible to severe sulfate exposure classifications in Table 19-A-4 of the California Building Code. Concrete in contact with the on-site materials should be designed for severe sulfate exposure in accordance with the provisions for sulfate resistant concrete included in Table 19-A-4 of the California Building Code.

11. Site Drainage

Site drainage and choice of landscaping are important. The following recommendations are intended to minimize the potential adverse effects of water on the structure and appurtenances. Surface drainage issues should be addressed by the project Architect and/or Civil Engineer.

a. Consideration should be given to providing the structure with roof gutters and downspouts that discharge into appropriate and designed outlet structures.

b. All site drainage should be directed away from the structure and to designed outlet structures. This may be accomplished through area drains or through sheet drainage. Drainage should not be allowed to pond behind retaining walls or adjacent to the structure.

c. No concentrated runoff should be allowed over and down the seaward slope and seacliff.

d. No landscaping should be allowed against the structure. Moisture accumulation or watering adjacent to foundations can result in deterioration of wood/stucco and may effect footings

e. Irrigated areas should not be over-watered. Irrigation should be limited to that required for maintaining the vegetation. Additionally, automatic systems should be seasonally adjusted.

f. All yard and roof drains should be periodically checked to verify they are not blocked and flow properly. This may be accomplished either visually or, in the case of subsurface drains, by placing a hose at the inlet and checking the outlet for flow.

12. Recommended Observation and Testing During Construction

The following tests and/or observations by the Geotechnical Consultant are recommended:

a) Site grading.

b) Drilled pier excavations at the time of drilling.

c) Footing excavations prior to placement of forms and reinforcing steel.

d) Retaining wall backdrains and backfill.

e) Utility trench backfill.

f) Driveway subgrade.

13. Grading and Foundation Plan Review

Grading and foundation plans should be reviewed by the Geotechnical Consultant to confirm conformance with the recommendations presented herein and to provide additional recommendations, as necessary.

LIMITATIONS

The analyses, conclusions and recommendations contained in this report are based on site conditions as they existed at the time of our investigation and further assume the excavations to be representative of the subsurface conditions throughout the site. If different subsurface conditions from those encountered during our exploration are observed or appear to be present in our excavations, the Geotechnical Consultant should be promptly notified for review and reconsideration of recommendations.

Our investigation was performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable Geotechnical Engineers practicing in this or similar localities. No other warranty, express or implied, is made as to the conclusions and professional advice included in this report.

This opportunity to be of service is appreciated. If you have any questions, please contact our office at your convenience.

Sincerely,

COASTAL GEOTEHCNICAL

Brandon A. Boka
Registered Geologist 5913
Certified Engineering Geologist 1966
(expires 03/31/06)

Mark D. Hetherington
Registered Civil Engineer 30488
Geotechnical Engineer 397
(expires 03/31/06)

Jamie K. Fink
Senior Geologist

REFERENCES

1) Aerial Photograph, Flight 5925, Photos 182 and 183, dated October 15, 1939.

2) Aerial Photograph, Flight GS-CP, Photos 8-55 and 8-56, dated November 29, 1946.

3) Aerial Photograph, Flight GS Vask, Photos 3-17 and 3-18, dated February 28, 1963.

4) Aerial Photographs, Flight 41, Photos 19 and 20, dated July 30, 1970.

5) California Division of Mines and Geology, State of California Seismic Hazard Zones, San Juan Capistrano Quadrangle, dated December 21, 2001.

6) California Division of Mines and Geology, "Seismic Hazard Zone Report for the Laguna Beach 7.5 Minute Quadrangle, Orange County, California," Seismic Hazard Zone Report 013, Revision dated 2001.

7) California Division of Mines and Geology, "Seismic Hazard Zone Report for the San Juan Capistrano 7.5-Minute Quadrangle, Orange County, California," Seismic Hazard Zone Report 053, dated 2001.

8) Cao, Tianqing, and Bryant, William A., et al., "The Revised 2002 California Probabilistic Seismic Hazard Maps," dated June 2003.

9) Everts, Craig H., and Moffett and Nichol Engineering, "Guidelines for Shoreline Protection, City of Laguna Beach, California," dated April 1, 1988.

10) ICBO, Maps of Known Active Faults Near-Source Zones in California and Adjacent Portions of Nevada, dated February 1998.

11) ICBO, California Building Code, 2001 Edition.

12) Jennings, Charles W., Fault Activity Map of California and Adjacent Areas, California Geologic Data Map Series, Map No. 6, 1994.

13) Leighton and Associates: Seismic and Public Safety Element of the General Plan, City of Laguna Beach, CA. 1975 (draft).

14) Moffatt and Nichol Engineering, "Coastal Flood Plain Development, Orange County Coastline," dated January 1985.

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16) Morton, P. K., and Mitter, R. V., 1981, "Geologic Map of Orange County, California, Showing Mines and Mineral Deposits," California Division of Mines and Geology, Bulletin 204, Plate 1.

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18) Peterson, M., Beeby, W., Bryant, W., et al., Seismic Shaking Hazard Maps of California, California Division of Mines and Geology, Map Sheet 48, dated 1999.

19) Toal Engineering, Inc., "Topographic Survey, Portion of Lot 22, Tract 702, Laguna Beach, CA," dated May 20, 2003.

20) Toppozada, Tousson R., Bennett, John H., Borchardt, Glenn, Soul, Richard, and Davis, James F. 1988. Planning Scenario for a Major Earthquake on the Newport-Inglewood Fault Zone. California Division of Mines and Geology, Special Publication 99.

21) Vedder, J.R., Yerkes, R.V., and Schoelhamer, J.E., "Geologic Map of the San Joaquin Hills-San Juan Capistrano Area, Orange County, California:" United States Geological Survey, Open File Map 75-522, dated 1957.

Preliminary Subject to Revision

DRILLING COMPANY: **Al-Roy Drilling** RIG: **Bucket Auger** DATE: **06/23/04**

BORING DIAMETER: **24"** DRIVE WEIGHT: **Varies** DROP: **12"** ELEVATION: **' ±**

BORING NO. **B-1**

DEPTH (FEET)	BULK SAMPLE	DRIVE SAMPLE BLOWS/FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
0.0					SM	**FILL:** Light gray silty fine to medium sand with abundant sub-angular gravel to cobble size metamorphic rock clasts and some scattered trash, damp, loose, caving
					SM SC	Brown to reddish brown slightly clayey and silty fine to medium sand with some scattered sub-angular gravel to cobble size metamorphic rock clasts, moist, loose to medium dense, variably porous
5.0		4				
10.0		7(rock in sample)				@11': Thin zone of vegetation (weeds) and abundant gravel to cobble, general trend of contact dips about 20-25/southwest
		2			SM SC	Olive brown to olive green slightly clayey and silty fine to medium sand with abundant sub-angular gravel to boulder size meatamorphic and sedimentary rock clasts, moist, loose, rock clasts are nested with voids between, slight to moderate caving
15.0		9				
						Reddish brown sandy clay and clayey fine to medium sand, moist, soft to firm
20.0		7			SM SC	**COLLUVIUM:** Dark brown slightly clayey and silty fine to coarse sand with scattered gravel to cobble size metamorphic rock clasts, moist, loose to medium dense
		5				@20.5': Abundant gravel to boulder size metamorphic rock clasts, difficult drilling, slight seepage, drilled with 18" diameter bucket below due to boulders @22': Olive green clayey fine to coarse sand with abundant gravel to cobble, moist to very moist, loose to medium dense, difficult drilling
25.0		30/6"				**BEDROCK (San Onofre Breccia):** Light olive green silty fine to coarse sandstone and breccia, damp to moist, dense to very dense, partially to moderately cemented
		40/6"				
30.0						Total Depth 27 Feet Slight Seepage @ Approximately 20.5 Feet Caving @ Approximately 0 to2 and 11 to 17 Feet

BORING LOG

HETHERINGTON ENGINEERING, INC.

GEOTECHNICAL CONSULTANTS

31451 South Coast Highway
Laguna Beach, CA

PROJECT NO. **474.1** FIGURE NO. **1**

Preliminary Subject to Revision

DRILLING COMPANY: **Al-Roy Drilling** RIG: **Bucket Auger** DATE: **06/23/04**

BORING DIAMETER: **24"** DRIVE WEIGHT: **2150 lbs.** DROP: **12"** ELEVATION: **82' ±**

BORING NO. **B-2**

DEPTH (FEET)	BULK SAMPLE	DRIVE SAMPLE	BLOWS/FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
0.0						SM	**FILL:** Light brown to brown silty fine to medium sand with scattered gravel size metamorphic rock clasts, damp, loose
	X					SM SC	Brown slightly clayey and silty fine to medium sand with scattered gravel to cobble size meatamorphic rock clasts, moist, loose to medium dense, variably porous
							@4': Increase in gravel and cobble
5.0	X	■	4				@5.5': Becomes loose, some scattered gravel size asphalt fragments
							@9.8': General trend of contact dips about 20/southeast
10.0	X	■	6				**TERRACE DEPOSITS:** Light orange brown silty fine to medium sand with scattered sub-rounded to sub-angular gravel, damp to moist, medium dense, friable
							@12': Grades to light brown to light orange brown slightly silty fine to coarse sand with occasional sub-rounded to sub-angular gravel size metamorphic rock clasts, damp to moist, medium dense, very friable, moderate to heavy caving, difficult drilling due to caving, hole belled-out significantly from about 11 to 22.5'
15.0	X	■	6				
20.0	X						
	X	■	12/3"				**BEDROCK (San Onofre Breccia):** Olive green slightly clayey and silty fine to coarse sandstone and gravelly sandstone, moist, dense to very dense
25.0							@23.3': General drilling refusal due to caving in the terrace depostits and dense bedrock
30.0							Total Depth 23.3 Feet No Groundwater Moderate to Heavy Caving @ Approximatey 11 to 22.5 Feet

BORING LOG

HETHERINGTON ENGINEERING, INC.

GEOTECHNICAL CONSULTANTS

31451 South Coast Highway
Laguna Beach, CA

PROJECT NO. **474.1** FIGURE NO. **2**

Preliminary Subject to Revision

DRILLING COMPANY: **Al-Roy Drilling** RIG: **Bucket Auger** DATE: **06/24/04**

BORING DIAMETER: **24"** DRIVE WEIGHT: **Varies** DROP: **12"** ELEVATION: **108' ±**

BORING NO. B-3

DEPTH (FEET)	BULK SAMPLE	DRIVE SAMPLE	BLOWS/FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
0.0							**FILL:** Brown to reddish brown slightly clayey and silty fine to medium sand with some scattered sub-angular gravel to cobble size metamorphic clasts. moist, loose to medium dense
	X	■	2				
						SM SC	Olive green to olive gray slightly clayey and silty fine to coarse sand with grqvel to cobble size metamorphic rock clasts, moist, loose to medium dense
5.0							
	X	■	2(no recovery)				
						SM SC	Olive green to olive gray to reddish brown slightly clayey and silty fine to medium sand with locally abundant gravel to cobble size metamorphic rock clasts, moist, loose to medium dense
10.0	X	■	4				@11 to 14': Abundant gravel to boulder size metamorphic and sedimentary rock clasts, difficult drilling
15.0	X	■	2				
							@19': Becomes very moist to wet, loose
20.0	X	■	1				
							@22': Slight seepage
	X					SC	Reddish brown clayey fine to coarse sand with scattered gravel size metamorphic rock clasts, very moist to wet, loose
25.0		■	2		▽		@25': Saturated, loose
						SM SC	**COLLUVIUM (?):** Gray to brown slightly clayey and silty fine to medium sand with some scattered sub-angular gravel to cobble size metamorphic rock clasts, saturated, loose, moderate to heavy caving
30.0							

BORING LOG

HETHERINGTON ENGINEERING, INC.

GEOTECHNICAL CONSULTANTS

31451 South Coast Highway
Laguna Beach, CA

PROJECT NO. **474.1** FIGURE NO. **3**

Preliminary Subject to Revision

DRILLING COMPANY: **Al-Roy Drilling** RIG: **Bucket Auger** DATE: **06/24/04**

BORING DIAMETER: **24"** DRIVE WEIGHT: **Varies** DROP: **12"** ELEVATION: **108' ±**

BORING NO. **B-3**

DEPTH (FEET)	BULK SAMPLE	DRIVE SAMPLE BLOWS/FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
30.0	X					
	X	35/6"				
35.0					SM SC	Dark gray to blue gray to brown clayey to silty fine to coarse sand with scattered sub-angular gravel size metamorphic rock clasts, saturated, loose, heavy caving
						BEDROCK (San Onofre Breccia): Olive green slightly clayey and silty fine to coarse sandstone, moist, dense to very dense
40.0						Total Depth 38 Feet (Hole Caved in to Approximately 31 Feet @ Completion of Drilling) Slight Seepage @ Approximately 22 Feet Groundwater @ Approximately 25 Feet Moderate to Heavy Caving from Approximately 27 to 37.5 Feet
45.0						
50.0						
55.0						
60.0						

BORING LOG

HETHERINGTON ENGINEERING, INC.

GEOTECHNICAL CONSULTANTS

31451 South Coast Highway
Laguna Beach, CA

PROJECT NO. **474.1** FIGURE NO. **4**

Preliminary Subject to Revision

DRILLING COMPANY: **Al-Roy Drilling** RIG: **Bucket Auger** DATE: **06/24/04**

BORING DIAMETER: **24"** DRIVE WEIGHT: **2150 lbs.** DROP: **12"** ELEVATION: **118' ±**

BORING NO. B-4

DEPTH (FEET)	BULK SAMPLE	DRIVE SAMPLE BLOWS/FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
0.0					SM	**COLLUVIUM:** Light brown silty fine to medium sand with abundant sub-angular gravel to boulder size metamorphic rock clasts, damp, loose, porous, roots, difficult drilling due to rocks
	X					**TERRACE DEPOSITS:** Light orange brown to light brown slightly clayey and silty fine to medium sand with sub-angular gravel to cobble size metamorphic rock clasts, damp to moist, medium dense
5.0						
	X					**BEDROCK (San Onofre Breccia):** Olive green to olive gray slightly clayey and silty fine to coarse sandstone and breccia, damp to moist, dense to very moist, partially to moderately cemented, difficult drilling
10.0						@7.5': General drilling refusal on breccia
						Total Depth 7.5 Feet
						No Groundwater
						Slight Caving from Approximately 0 to 3 Feet
15.0						
20.0						
25.0						
30.0						

BORING LOG

HETHERINGTON ENGINEERING, INC.

GEOTECHNICAL CONSULTANTS

31451 South Coast Highway
Laguna Beach, CA

PROJECT NO. **474.1** FIGURE NO. **5**

Preliminary Subject to Revision

Nota Architect

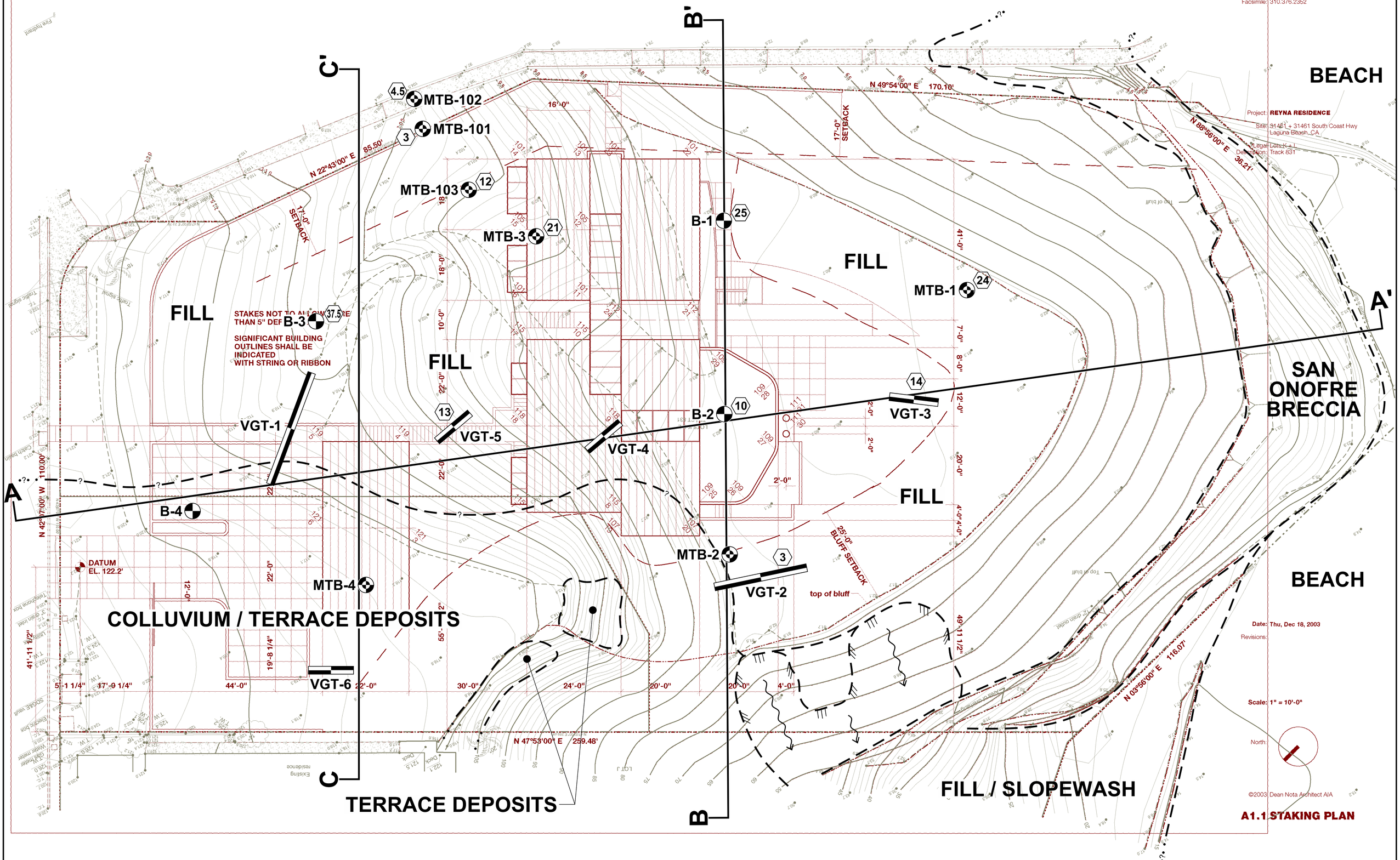
Mail: 2465 Myrtle Avenue
Hermosa Beach, CA 90254

Voice: 310.374.5535
Facsimile: 310.376.2352

Project: **REYNA RESIDENCE**

Site: 31451 + 31461 South Coast Hwy
Laguna Beach, CA

Legal: Lot 5 + 6
Description: Tract 831



LEGEND

B-2 ○	APPROXIMATE LOCATION OF BORING BY...
MTB-2 ○	APPROXIMATE LOCATION OF BORING BY ...
VGT-6 ▭	APPROXIMATE LOCATION OF TEST PIT
25	APPROXIMATE DEPTH OF FILL / COLLUVIUM BELOW EXISTING GRADE (FEET)
C C'	GEOLOGIC CROSS-SECTION

Date: Thu, Dec 18, 2003

Revisions:

Scale: 1" = 10'-0"

North

©2003 Dean Nota Architect AIA

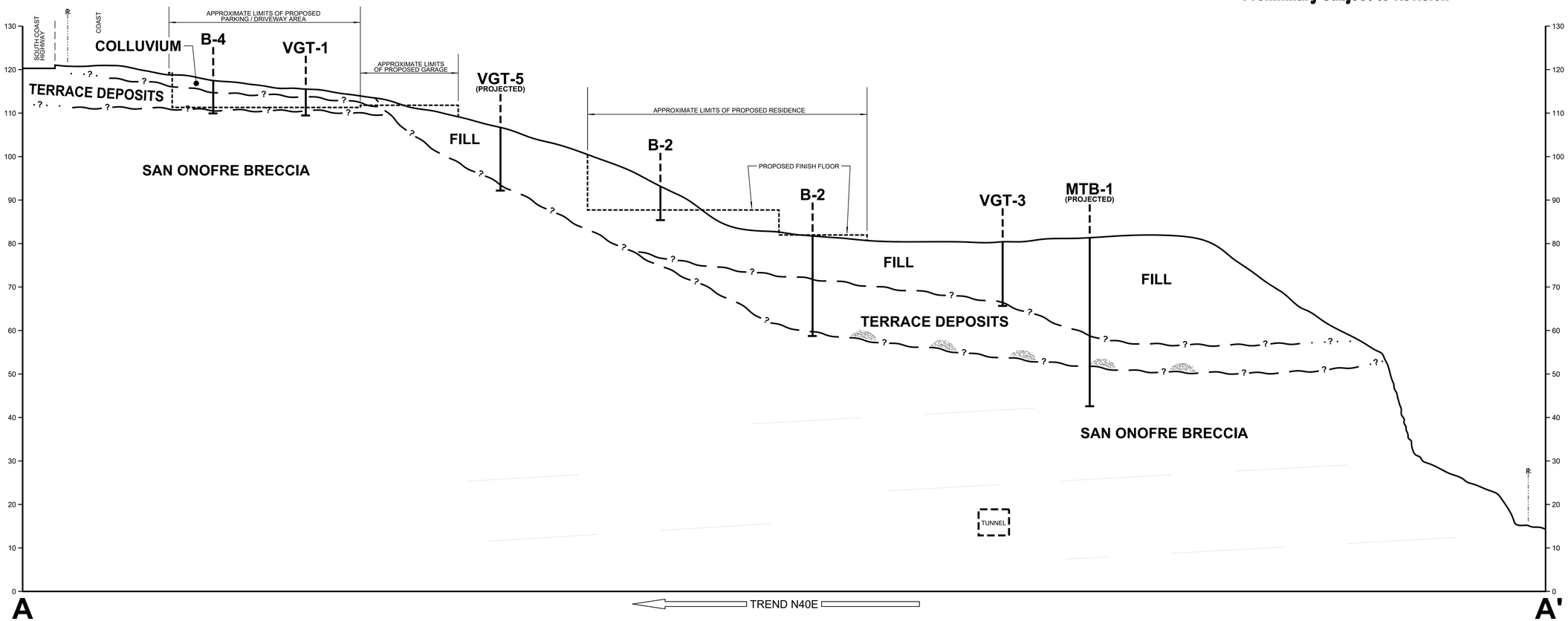
A1.1 STAKING PLAN

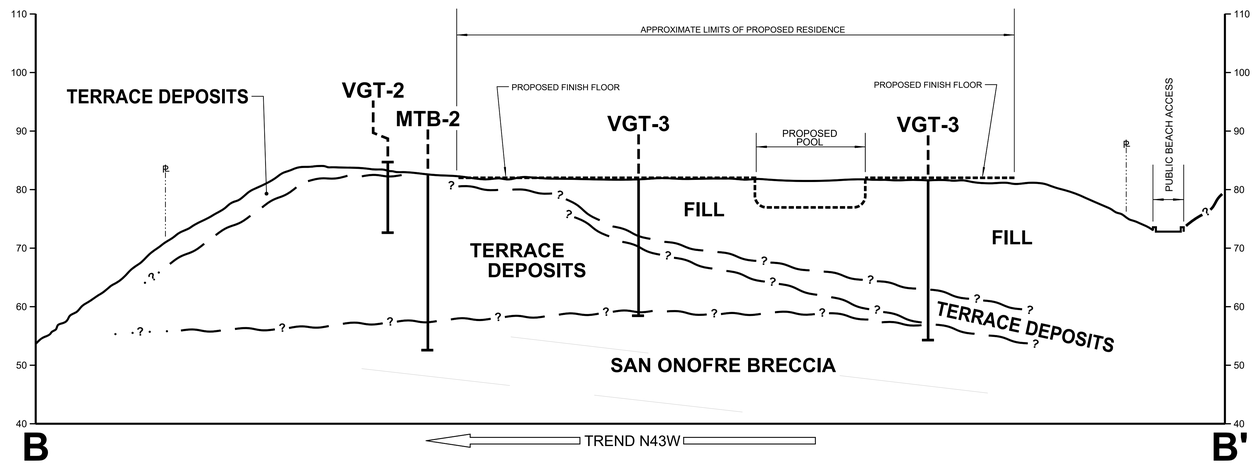
SCALE: 1" = 10'

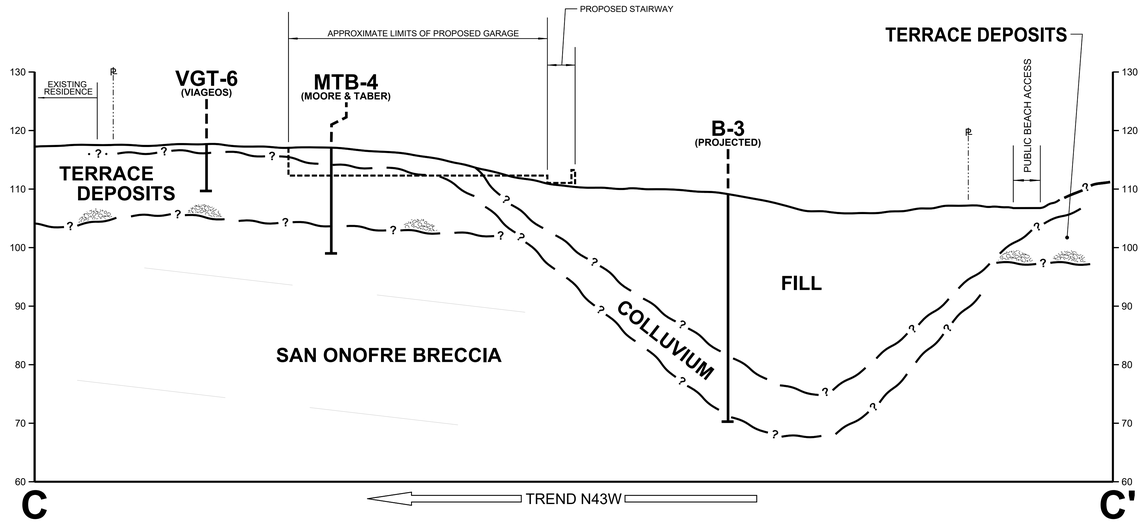
0 5 10 15 20

PLOT PLAN		
COASTAL GEOTECHNICAL GEOTECHNICAL CONSULTANTS	PROJECT NO. 474.1	PLATE NO.

Preliminary Subject to Revision







SCALE: 1" = 10'

0 1 2

0 5 10 15 20

GEOLOGIC CROSS-SECTIONS

COASTAL GEOTECHNICAL
GEOTECHNICAL CONSULTANTS

PROJECT NO. 474.1 | PLATE NO.

LABORATORY TEST RESULTS

SULFATE TEST RESULTS (EPA 9038)	
Sample Location	**Soluble Sulfate in Soil (%)**
B-1 @ 1-3’	0.2590
B-1 @ 5’	0.2460
B1 @ 20-23’	0.0270

DIRECT SHEAR (ASTM: D 3080)			
Sample Location	**Angle of Internal Friction (°)**	**Cohesion (psf)**	**Remarks**
B-1 @ 5’	33	150	Remolded to in-place design and moisture content, consolidated, saturated, drained.
B-1 @ 20-23’	40	250	Remolded to in-place design and moisture content, consolidated, saturated, drained.

EXPANSION INDEX (ASTM: D 4829)					
Sample Location	**Initial Moisture (%)**	**Compacted Dry Density (pcf)**	**Final Moisture (%)**	**Expansion Index**	**Expansion Potential**
B-1 @ 5’	8.1	117.9	16.1	18	Very low

Figure 7
Project 474.2
Log No. CG6399

APPENDIX D.3: Coastal Hazards Report

GeoSoils, Inc.

Geotechnical • Geologic • Coastal • Environmental

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

April 23, 2020 WO S7823

Tony Reyna
c/o WB & Co.
21031 Ventura Blvd. Suite 1000
Woodland Hills, CA 91364

Subject: Discussion of Coastal Hazards, 31451 Coast Highway, City of Laguna Beach, Orange County, California.

Dear Mr. Reyna:

At your request and authorization, we are pleased to present the following report describing the coastal hazards and wave runup at 31451 Coast Highway, Laguna Beach. The analysis is based upon our site inspection, existing published reports concerning the local coastal processes, site elevations, the proposed remodel development, and our knowledge of local coastal conditions. This report constitutes an investigation of the wave and water level conditions, and erosion expected at the site in consequence of extreme storm wave action, and future sea level rise (SLR). The purpose of this report is to provide the necessary project coastal hazard information to the City of Laguna Beach and the California Coastal Commission (CCC). It provides conclusions and recommendations for the susceptibility of the site to wave attack, bluff erosion, and flooding.

SCOPE OF SERVICES

1. Review of available site oceanographic reports, including the Coast of California Storm and Tidal Wave Study (CCSTWS) US Army Corps of Engineers (USACOE) report(s), review of the CCC Sea-Level Rise Policy Guidance (November 2018), site soils information, and site improvement plans provided by the project architect.

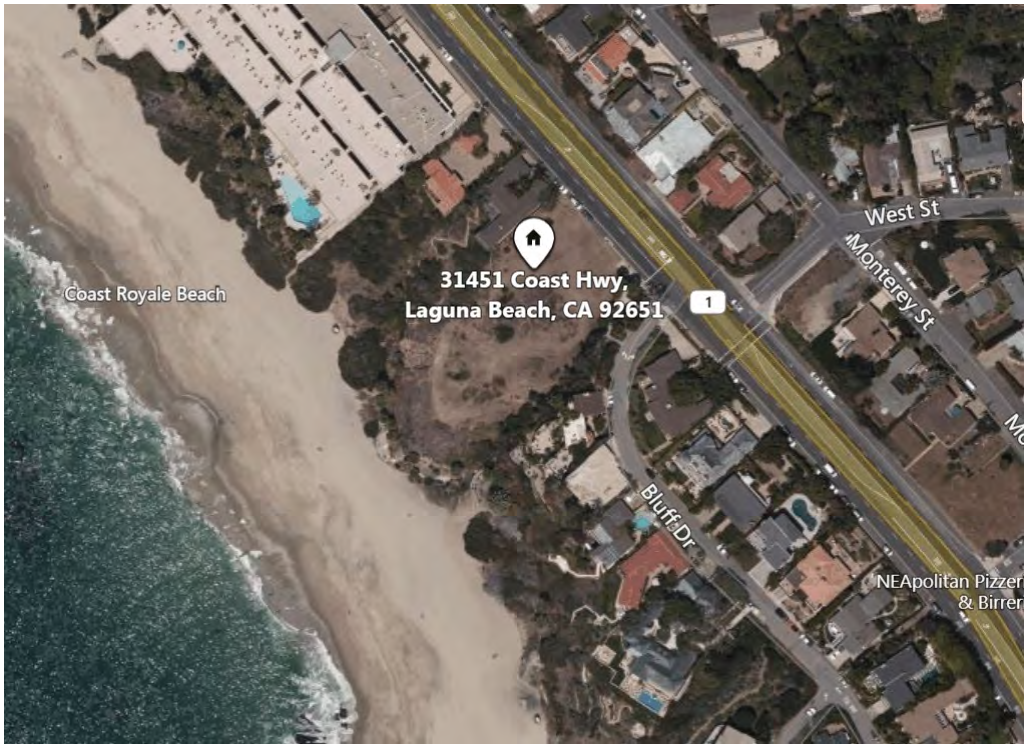
2. Research of historical aerial photographs of the site, and use of historical aerial photographs to determine historical shoreline changes.

3. Perform a site reconnaissance to inspect the condition of the site, and to assess the general condition of the shoreline.

4. Engineering analysis and preparation of a report which will include a review of the available oceanographic information, discussion of past and future erosion rates, and calculation of wave runup.

SITE VISIT

The shoreline fronting the site was inspected from the top of the bluff on April 22, 2020 by GSI personnel. Photograph 1 is a recent (2018) Microsoft Bird's Eye View. Photograph 2, downloaded with permission from the California Coastal Records Project website, shows the site and the adjacent properties in September 2013. The site visit/inspection focused on the slope condition and the current shoreline conditions. The seaward portion of the site is located at a bedrock headland with sand/cobble pocket beaches to either side. The shoreline along this stretch of coast has several bedrock outcroppings in the surf zone and nearshore, which is typical of the Laguna Beach near shore area. The site elevations vary from about ~+50 feet NAVD88 at the bluff top to elevation ~+121 feet NAVD88 at Coast Highway. The back beach elevation below the property is approximately elevation +15 feet NAVD88. The project is construction of a new home on a vacant parcel. Photograph 3 is a 1972 photograph of the area that shows that the general area has not changed, and the beach below the site has not been subject to long term erosion from wave runup attack.



Photograph 1. Subject site and adjacent properties. Note the rocky headland that shelters the pocket beach from waves.



Photograph 2. Aerial of the site and adjacent properties taken in September 2013.



Photograph 2. Aerial of the site and adjacent properties taken in 1972.

COASTAL PROCESSES

The 31451 Coast Highway site lies within the Laguna Beach Mini Littoral Cells, one of the eight coastal segments defined and studied in the US Army Corps of Engineers Coast of California Storm and Tidal Wave Study South Coast Region Orange County (USACOE 2002). A littoral cell is a coastal compartment that contains a complete cycle of littoral sedimentation including sources, transport pathways, and sediment sinks. The term mini littoral cell is used by the Corps to describe the small but discrete coastal compartments along this section of southern California shoreline. The Corps report provides a comprehensive investigation of the shoreline conditions, past and recent, for southern Orange County and some site specific information about the Laguna Beach shoreline.

The Laguna Beach Mini Littoral Cells extend from the east jetty of Newport Harbor to the Dana Point Headlands, a distance of about 14.1 miles. This shoreline is characterized by a series of small, and probably conservative pocket beaches. The pocket beaches are characteristically narrow and backed by seacliffs and slopes composed of erosion resistant bedrock below more erosive formations. The pocket beach size varies with wave conditions and shoreline orientation, but the mean beach widths have been relatively stable (USACOE 2002). The pocket beaches are bounded by either rock noses extending into the surf zone or natural headland reefs. The 31451 Coast Highway site is in the Thousand Step Coastal Reach. The report includes discussion of the coastal processes in the Thousand Step Coastal Reach area where the site is located. From 1967 to 1981, the study determined 0 ft/yr as the shoreline change rate. The USACOE study also includes a table (Chapter 5, Appendix A, Table 8) comparing historic shoreline changes. There are no noted changes in the shoreline from 1938 to 1993. The conclusion is that the shoreline in the Thousand Step Coastal Reach area has been stable with little or no long term erosion over the past several decades . The site is fronted by a bedrock headland and a shallow sand beach over an erosion resistant bedrock. The sand beach is subject to seasonal erosion and accretion but, due to the hard bedrock shoreline, the shoreline is described by the Corps as stable.

WAVES & WATER LEVELS

Waves of all periods approach the Laguna Beach shoreline. However, almost all of the energy is contained in the medium and long period waves (approximately 5 to 20 seconds). These waves approach the Southern California Bight and encounter the offshore islands. The offshore islands such as Santa Cruz, Santa Rosa, Santa Catalina and San Clemente partially shelter this section of coast from ocean swells. Between these islands are the windows that waves can pass through and approach the Laguna Beach shoreline. Waves can approach the study area through wave windows from the west and northwest and from the south. However, due to the sheltering effect of the shoreline geometry, the predominant wave energy arrives to the site from the south. Wave conditions in the Laguna Beach area have been thoroughly investigated by the USACOE and others.

As waves travel into shallower and shallower water, the wave crest is bent and becomes nearly parallel to shore, and the wave heights are modified depending on whether waves are being focused or de-focused at a particular location along the shoreline. This process is called refraction and it is dependent upon the bathymetry, and the wave height, period, and direction. Extreme wave conditions in shallow water have been calculated using historical wave data. The California Department of Boating and Waterways in partnership with the US Army Corps of Engineers maintain wave recording buoys throughout Southern California. The record of historical waves for this region, both from direct observation or recording and from hindcast analysis, is quite extensive (USACOE 1988). Waves as high as 20 feet were recorded on January 17, 1988 and 14 to 16 foot high waves with period in excess of 20 seconds were recorded during the 1982-83 El Niño winter.

The National Oceanographic and Atmospheric Administration (NOAA) National Ocean Survey (NOAA, 2012) historic tidal data station closest to the site was located at Newport Beach (Station 9410580). The tidal datum elevations are as follows:

MEAN HIGHER HIGH WATER (MHHW) = 5.25
MEAN HIGH WATER (MHW) = 4.49
MEAN TIDE LEVEL (MTL) = 2.62
MEAN SEA LEVEL (MSL) = 2.59
MEAN LOW WATER (MLW) = 0.74
NORTH AMERICAN VERTICAL DATUM-1988 (NAVD) = 0.0
MEAN LOWER LOW WATER (MLLW) = -0.18

The highest recorded historical water elevation is 7.5 feet (January 28, 1983).

OCEANOGRAPHIC DESIGN PARAMETERS

There are several factors that are important to the analysis of the vulnerability of a site along the shoreline. Some of the factors are based upon the existing topography, bathymetry, and elevation of the improvements/structures at the site. The offshore slope is relatively steep at 1/50 (V/H). The back beach elevation is at about n +15 feet NAVD88, and the lowest improvements are located above +80 feet NAVD88. Other factors are based upon extreme oceanographic conditions, or the coincidence of several extreme conditions. In order to determine design wave characteristics for the runup and force analysis, it is necessary to determine the design water level. The design water level will need to account for the expected future rise in sea level over the life of the structure in accordance with the 2018 CCC Sea-Level Rise Policy Guidance document.

Sea Level Rise

The California Coastal Commission (CCC) SLR Guidance document (2018 update) recommends that a project designer determine the range of SLR using the “best available science.” When the SLR Guidance document was adopted by the CCC in 2015, it stated

that the best available science for quantifying future SLR was the 2012 National Research Council (NRC) report. The NRC (2012) is no longer considered the state of the art for assessing the magnitude of SLR in the marine science communities. The California Ocean Protection Council (COPC) adopted an update to the State's Sea-Level Rise Guidance in March 2018. The COPC provides SLR estimates based upon various carbon emission scenarios known as a "representative concentration pathway" or RCP. The La Jolla estimates are valid for Laguna Beach. Figure 1 provides the COPC table of latest SLR adopted estimates (in feet) and the probabilities of those estimate to meet or exceed the 1991-2009 mean, based upon the best available science.

(c) La Jolla

Feet above 1991-2009 mean	MEDIAN	LIKELY RANGE	1-IN-20 CHANCE	1-IN-200 CHANCE
Year / Percentile	*50% probability SLR meets or exceeds...*	*67% probability SLR is between...*	*5% probability SLR meets or exceeds...*	*0.5% probability SLR meets or exceeds...*
2030	0.5	0.4 — 0.6	0.7	0.9
2050	0.9	0.7 — 1.2	1.4	2.0
2100 (RCP 2.6)	1.7	1.1 — 2.5	3.3	5.8
2100 (RCP 4.5)	2.0	1.3 — 2.8	3.6	6.0
2100 (RCP 8.5)	2.6	1.8 — 3.6	4.6	7.1
2100 (H++)	10			
2150 (RCP 2.6)	2.5	1.5 — 3.9	5.7	11.1
2150 (RCP 4.5)	3.1	1.9 — 4.8	6.5	11.8
2150 (RCP 8.5)	4.3	3.0 — 6.1	7.9	13.3

Figure 1. Table from COPC, providing updated SLR estimates and probabilities.

The "design life" of the proposed remodel project is 75 years. Figure 1 illustrates that SLR in the year 2100 for the likely range, and considering the most onerous RCP (8.5), is 1.8 feet to 3.6 feet above the 1991-2009 mean. This can be interpolated to be a maximum of about 3.4 feet over the next 75 years. Based upon this 2017 COPC SLR report, the maximum "likely" SLR for the project is estimated to be 3.4 feet. There is also a 0.5% chance the sea level will be about 6.0 feet in 75 years. The maximum historical water elevation in the site area is elevation ~+7.5 feet NAVD88. This actual high water record period includes the 1982-83 severe El Niño, and the 1997 El Niño events, and is therefore consistent with the methodology outlined in the CCC Sea-Level Rise Policy Guidance

document. If 3.4 and 5.5 feet are added to this 7.5 feet NAVD88 elevation, then future design maximum water levels of 10.9 feet NAVD88 and 13.5 feet NAVD88 are determined.

Determination of the maximum scour depth at the toe of the bluff enables the engineer to determine the actual water depth at the toe of the bluff and wave break point under the design water level conditions. The design scour elevation is estimated based upon the erodability of the materials at the toe of the bluff. Based upon the elevation of the bedrock at the base of the bluff, a conservative estimate of the scour elevation at the toe of the bluff in 75 years is about +4.0 feet to 4.5 feet NAVD88. This is reasonable based upon the presence of bedrock at the site proper and in the surf zone. It also assumes that the sand beach is entirely gone. Using the maximum still water elevation and the maximum scour yields a total water depth of 6.5 feet and 9 feet at the bluff toe for the two SLR cases. These values represent the range of extreme possible wave runup conditions reaching the site over the next 75 years and will be used in the design analysis.

Waves from distant storms and nearby hurricanes (chubascos) have pounded the coastline of Laguna Beach several times within the last few centuries. However, these extreme waves break further offshore and lose a significant portion of their energy before they reach the shoreline. The relatively steep offshore area allows for energy from large waves to come relatively close to the shoreline. Once a wave reaches a water depth that is about 1.28 times the wave height, the wave breaks and runs up onto the shore. The design wave height at the toe of the beach is the maximum unbroken wave at the toe when the beach/bedrock is at the maximum scour condition(the beach is gone). The total water depth is 6.5 feet and 9 feet which would yield design wave heights of 5 feet and 7 feet.

WAVE RUNUP AND OVERTOPPING ANALYSIS

As waves approach the shoreline and the site, they break and water rushes up the beach and slope. Wave runup is defined as the vertical height above the still water level to which a wave will rise on a structure (the slope) of infinite height. Overtopping is the flow rate of water over the top of the slope as a result of wave runup.

Wave runup and overtopping at the site is calculated using the USACOE Automated Coastal Engineering System (ACES). The methods to calculate runup and overtopping implemented within this ACES application are discussed in greater detail in the Coastal Engineering Manual (2004). Figure 2 from the ACES manual shows some of the variables involved in the runup and overtopping analysis. **TABLE I** below is the output for of the two SLR cases.

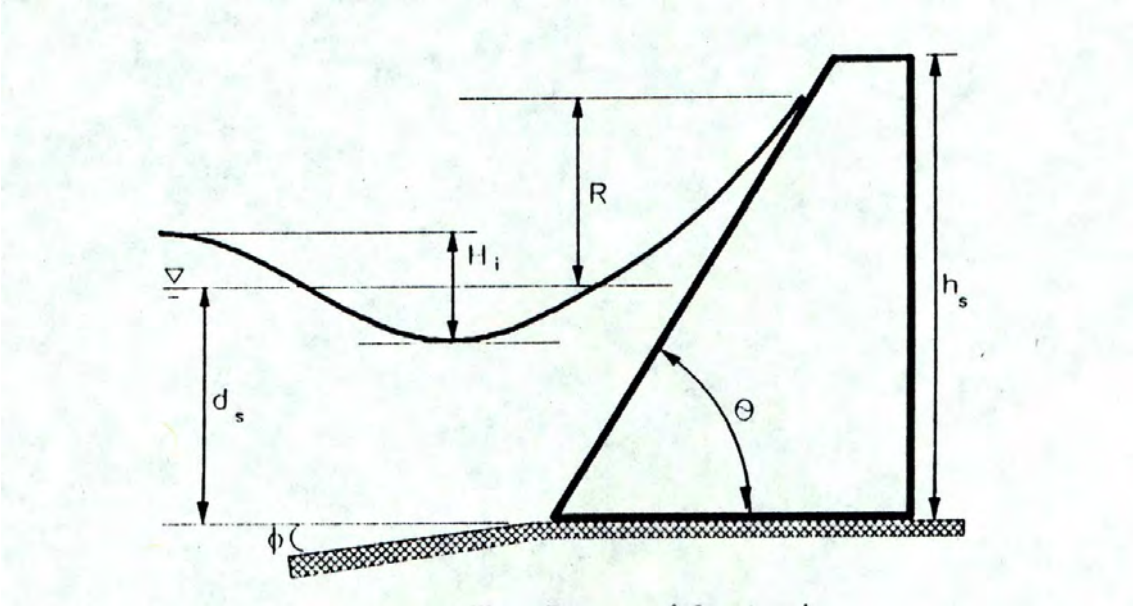


Figure 2. Wave runup terms from ACES analysis.

TABLE I

AUTOMATED COASTAL ENGINEERING SYSTEM ... Version 1.02
Project: 31451 COAST HIGHWAY LAGUNA BEACH CA 3.4 FT AND 6.0 FT SLR

WAVE RUNUP AND OVERTOPPING ON IMPERMEABLE STRUCTURES

Item		Unit	Value	
Wave Height at Toe	Hi:	ft	5.000	Smooth Slope
Wave Period	T:	sec	18.000	Runup
COTAN of Nearshore Slope			35.000	
Water Depth at Toe	ds:	ft	6.500	
COTAN of Structure Slope			0.200	
Structure Height Above Toe	hs:	ft	45.000	
Deepwater Wave Height	H0:	ft	2.784	
Relative Height	(ds/H0):		2.335	
Wave Steepness	(H0/gT^2):		0.267E-03	
Wave Runup	R:	ft	25.402	

WAVE RUNUP AND OVERTOPPING ON IMPERMEABLE STRUCTURES

Item		Unit	Value	
Wave Height at Toe	Hi:	ft	7.000	Smooth Slope
Wave Period	T:	sec	18.000	Runup
COTAN of Nearshore Slope			35.000	
Water Depth at Toe	ds:	ft	9.000	
COTAN of Structure Slope			0.200	
Structure Height Above Toe	hs:	ft	45.000	
Deepwater Wave Height	H0:	ft	4.218	
Relative Height	(ds/H0):		2.134	
Wave Steepness	(H0/gT^2):		0.405E-03	
Wave Runup	R:	ft	28.292	

The runup analysis shows that with the beach gone, and 3.4 feet of SLR in the next 75 years, the maximum wave runup is to elevation +30 feet NAVD88. For 6.0 feet of SLR in the next 75 years the maximum wave runup elevation is +34 feet NAVD88. Under both cases the wave runup will not hit the residence or other improvements. In order to understand the conservative nature of this analysis the USACE 2002 study reports a "100 year return wave and highest still water level" wave runup elevation of +20 feet NAVD88 at Aliso Beach. This higher SLR analysis assumes that the bluff is smooth and has a uniform slope. In reality the bluff is rough and the slope is not uniform. Due to the rough surface and non-uniform slope this analysis is very conservative. Both the likely and very conservative runup analysis shows that the lowest improvements, located above +80 feet NAVD88, are above the upper limit of the wave runup.

HAZARD ANALYSIS

There are three different potential oceanographic hazards identified at this site; shoreline erosion, coastal flooding, and waves. For ease of review each of these hazards will be analyzed and discussed separately, followed by a summary of the analysis including conclusions and recommendations, if necessary.

Erosion Hazard

In an effort to determine typical changes in the shoreline position aerial photographs from 1947 to 2017 were reviewed. Due to the differences in tide levels and oblique angles of the photos, it is difficult to determine the exact location of the shoreline. However, a visual comparison of the photographs shows little or no change in the headland, bluff top, or shoreline position belwo the site over the last seven decades and NO change in the slope face characteristics. The headland and pocket beach shoreline is visible in the 1947 photograph and is visible with about the same width in any subsequent photographs. The future shoreline changes over the next 75 years can be assumed to be the same as in the previous seven decades. This conclusion is also verified in the 2002 USACOE report. Sea level rise alone will not change the erosion rate of the shoreline. The erosion rate of the shoreline is dependent upon waves and the strength of the bluff material, which are independent of SLR. Based upon the steep slope of the beach, a rise in sea level may result in a landward movement of the high water line. This may result in increased wave action at the base of the bluff fronting the site.

The pocket beaches extending to the southeast and northwest, are a veneer of sand and cobbles over erosion resistant bedrock. The rock headland and the nearshore rock reefs are important to the erosion resistance of the shoreline because they remove energy from the waves. Rather than being inundated by sea level rise, the beach and the nearshore will readjust to the new sea level over time such that waves and tides will see the same profile that exists today, albeit at a higher elevation. This is the principle of beach equilibrium and

is the reason why we have beaches today even though sea level has risen over 200 feet in the last 10,000 years.

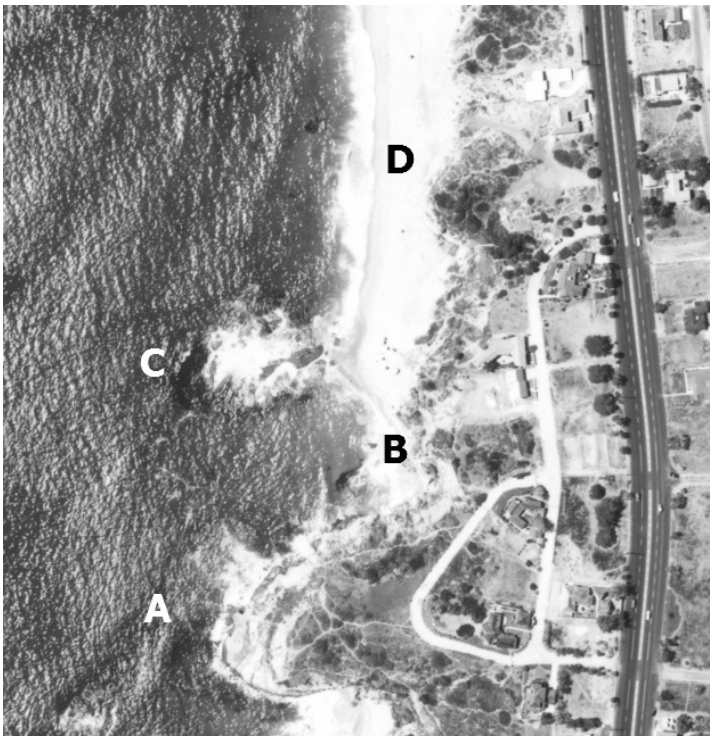
The current erosion rate of the shoreline based upon historical aerial photographs is about 0.0 ft/yr. Predicting how future sea level rise, of any magnitude, will change the erosion rate of the bedrock at the back of the beach is not as difficult as one may think. Photograph 4 shows the site and adjacent headland in August 1947. Photograph 5 shows the same area in June 2018. The bedrock in the surf zone has not eroded when subjected to constant wave action over the last 70 years. Future SLR will not increase the erosion rate of the headland and sea cliff.

Area A — This is the headland to the southeast that shows no change in the geometry or erosion over the time period.

Area B — This area is the hook shaped pocket beach to the south of the project that has not visually eroded over the 70 year time period. The 2018 beach actually looks wider than the 1947 beach. However, this may be due to seasonal changes in beach width.

Area C — This area is a rock outcropping in the surf zone in front of the beach at the site. The geometry of the bedrock outcropping in the nearshore appears essentially unchanged since at least 1947. This shows that even when the bedrock material is frequently subject to wave action very little erosion occurs

Area D — This is actual beach in front of the site that shows no change in the geometry and size over the 70 year time period. There is no change in the top of the bluff at the site over seven decades.



Photograph 4. Subject site area and adjacent shoreline in 1947. Areas A through D are provided for comparison to the 2018 photograph in Photograph 5.



Photograph 5. Subject site area and adjacent shoreline in 2018.

Bluff Retreat

The CCC SLR guidance suggest that a way to estimate erosion in the future is to look at the highest historical erosion in the area. Photographs 2, 3, 4, and 5 show the bluff and bedrock in the surf zone and in the ocean over a seven decade period. There is very little noticeable change in the bluff top or bedrock geometry. This situation would mimic the potential bluff face erosion when sea level rises in the future to the height where the frequency of wave runup hitting the bluff increases. It is important to recognize that the frequency of wave runup impacting the base of the bluff will not increase until sea level reaches about 2 feet. This will not occur until about the year 2060 (see Figure 1), roughly about 40 years from now. Comparison of Areas A through D in Photographs 4 and 5 shows no change in the bedrock and bluff. The bluff geometry is essentially unchanged when comparing the photos over the seven decade period. Using the guidance, it is reasonable to assume that little if any basal retreat of the bluff will occur for about the next >40 years and that after that the retreat will likely be less than 1 foot for the remaining 75 year life of the structure. The clarification that is important is that this is NOT bluff top retreat but rather retreat of the actual cliff base and face. In addition, the use of 6.0 feet of SLR will not result in wave runup higher than the top of the bluff. This means that the higher SLR estimate will have no impact on the rate of bluff face erosion primarily because the bluff material is very resistant to erosion.

The retreat of the actual top of the bluff along this section of Laguna Beach is not due to marine erosion but subaerial erosion. Using the estimated retreat of the cliff face/toe as the bluff top retreat rate is incorrect and not supported by the geomorphic processes that occur at this site. In general, the erosion of the bluff top is controlled by the water from drainage that flows over the land.

Flooding Hazard

The flooding hazard discussed in this section is due to water level changes in the ocean. The primary threat of flooding from ocean waters would be due to a super-elevation of the ocean. The NOAA Ocean Survey tidal data station closest to the site is very close located at the Newport Bay Entrance station (NOAA, 1999). The elevations relative to NAVD88 are provided on page 5 of this report.

Allowing for a 6 feet rise in sea level over the next 75 years, the mean higher high water level will be at +11.25 feet NAVD88. The highest observed water elevation was on January 28, 1983 during the severe El Niño winter. This elevation was +7.5 feet NAVD88. If a sea level rise of 6 feet is added to this elevation, it is about +13.5 feet NAVD88. This would be considered in excess of a 75-year recurrence interval water level. The existing site improvements are above +80 feet NAVD88, which are well above any potential ocean flood elevation. The site improvements are safe from flooding from the ocean over the next 75 years. Potential flooding associated with wave runup is considered in the next section.

Wave Runup

Wave runup may reach the back beach and bedrock bluff over the next 75 years. However, due to the elevation of the existing improvements (above +69 feet NAVD88) the wave runup will not impact the improvements. Essentially, the erosion resistant bedrock shoreline is natural shore protection and prevents further movement of the shoreline landward even under the highest SLR estimate over the next 75 years.

Tsunami

Tsunami are waves generated by submarine earthquakes, landslides, or volcanic action. It should be noted that the site development is mapped beyond the landward limit of the California Office of Emergency Services (CalOES) tsunami innundation map, Laguna Beach Quadrangle (State of California, 2009). The tsunami inundation maps are very specific as to their use. Their use is for evacuation planning only. The limitation on the use of the maps is clearly stated in the **PURPOSE OF THIS MAP** on every quadrangle of California coastline. In addition, the following two paragraphs were taken from the CalOES Local Planning Guidance on Tsunami Response concerning the use of the tsunami inundation maps.

> *In order to avoid the conflict over tsunami origin, inundation projections are based on worst-case scenarios. Since the inundation projections are intended for emergency and evacuation planning, flooding is based on the highest projection of inundation regardless of the tsunami origin. As such, projections are not an assessment of the probability of reaching the projected height (probabilistic hazard assessment) but only a planning tool.*
>
> *Inundation projections and resulting planning maps are to be used for emergency planning purposes only. They are not based on a specific earthquake and tsunami. Areas actually inundated by a specific tsunami can vary from those predicted. The inundation maps are not a prediction of the performance, in an earthquake or tsunami, of any structure within or outside of the projected inundation area.*

Due to the infrequent nature and the relatively low 500-year recurrence interval tsunami wave height, and the elevation of the improvements, the site is safe from tsunami hazards.

CALIFORNIA COASTAL COMMISSION SLR POLICY GUIDANCE INFORMATION

Step 1. Establish the projected sea level rise range for the proposed project's planning horizon using the best available science, which is COPC 2018 report.

Using the CCC SLR estimate, over the project design life, the range in the year ~2095 is between 3.0 feet and 6.0 feet. This is the project sea level rise range for the proposed project.

Step 2. Determine how physical impacts from sea level rise may constrain the project site, including erosion, structural and geologic stability, flooding, and inundation.

The analysis herein shows that it is very unlikely that wave runup will reach the bluff top development, even with 6.0 feet of SLR. Site drainage from non-ocean waters is provided by the project civil engineer. The beach fronting the site is relatively stable. The proposed project is reasonably safe from shoreline erosion due to the erosion resistant bedrock material at the beach elevation.

Step 3. Determine how the project may impact coastal resources, considering the influence of future sea level rise upon the landscape as well as potential impacts of sea level rise adaptation strategies that may be used over the lifetime of the project.

The project will not impact coastal resources in consideration of sea level rise.

Step 4. Identify alternatives to avoid resource impacts and minimize risks throughout the expected life of the development.

The project does not impact resources, and minimizes flood risk through the project design.

Step 5. Finalize project design and submit CDP application.

The project architect will incorporate this report in the project design.

CONCLUSIONS

The potential coastal hazards associated with the proposed development at 31451 Coast Highway, Laguna Beach, include shoreline erosion, wave runup, and future seal level rise. As demonstrated in USACOE 2002 the shoreline fronting the site is stable over the long term. However, the beach is subject to temporary but measurable wave runup and beach erosion. During the coincidence of an eroded beach, high tides, and high waves, thebluff fronting the site may be subject to wave runup. However, based upon our analysis, and because the proposed development is located well above the beach, the development is safe from coastal hazards. It should also be noted that there are large bed rock outcroppings in the surf zone in front of this site and adjacent properties that act like a breakwater to incoming waves. These rock outcroppings partially protect the site from waves and erosion. There are no recommendations necessary to mitigate potential coastal hazards. New shore protection will likely not be required to protect the proposed

development over the next 75 years. The proposed development will neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or adjacent area.

LIMITATIONS

Coastal engineering is characterized by uncertainty. Professional judgements presented herein are based partly on our evaluation of the technical information gathered, partly on our understanding of the proposed construction, and partly on our general experience. Our engineering work and judgements have been prepared in accordance with current accepted standards of engineering practice; we do not guarantee the performance of the project in any respect. This warranty is in lieu of all other warranties express or implied.

Respectfully submitted,





GeoSoils, Inc.
David W. Skelly MS
RCE#47857

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APPENDIX E.1: CalEEMod Data

31451 Coast Highway Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	31451 Coast Highway
Lead Agency	City of Laguna
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	0.80
Location	31451 Coast Hwy, Laguna Beach, CA 92651, USA
County	Orange
City	Laguna Beach
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	6011
EDFZ	7
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Single Family Housing	1.00	Dwelling Unit	0.56	9,891	6,281	—	3.00	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

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

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.43	13.8	13.2	0.02	0.63	2.26	2.89	0.58	1.05	1.63	—	2,214	2,214	0.10	0.05	1.07	2,234
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.91	13.8	13.1	0.02	0.63	2.26	2.89	0.58	1.05	1.63	—	2,208	2,208	0.10	0.05	0.03	2,226
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.72	7.09	7.30	0.01	0.32	0.82	1.15	0.30	0.38	0.68	—	1,329	1,329	0.05	0.02	0.17	1,334
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.13	1.29	1.33	< 0.005	0.06	0.15	0.21	0.05	0.07	0.12	—	220	220	0.01	< 0.005	0.03	221

2.2. Construction Emissions by Year, Unmitigated

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

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

2023	1.43	13.8	13.2	0.02	0.63	2.26	2.89	0.58	1.05	1.63	—	2,214	2,214	0.10	0.05	1.07	2,234
2024	0.83	8.31	10.2	0.02	0.34	0.01	0.35	0.32	< 0.005	0.32	—	1,856	1,856	0.08	0.02	0.03	1,862
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	1.43	13.8	13.1	0.02	0.63	2.26	2.89	0.58	1.05	1.63	—	2,208	2,208	0.10	0.05	0.03	2,226
2024	0.83	8.31	10.2	0.02	0.34	0.01	0.35	0.32	< 0.005	0.32	—	1,855	1,855	0.08	0.02	< 0.005	1,862
2025	1.91	9.16	11.9	0.02	0.32	0.01	0.33	0.30	< 0.005	0.30	—	2,101	2,101	0.09	0.02	< 0.005	2,108
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.72	7.09	7.20	0.01	0.32	0.82	1.15	0.30	0.38	0.68	—	1,245	1,245	0.05	0.02	0.17	1,253
2024	0.59	5.95	7.30	0.01	0.25	< 0.005	0.25	0.23	< 0.005	0.23	—	1,329	1,329	0.05	0.01	0.01	1,334
2025	0.33	1.61	2.08	< 0.005	0.06	< 0.005	0.06	0.05	< 0.005	0.05	—	369	369	0.01	< 0.005	< 0.005	371
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.13	1.29	1.31	< 0.005	0.06	0.15	0.21	0.05	0.07	0.12	—	206	206	0.01	< 0.005	0.03	207
2024	0.11	1.09	1.33	< 0.005	0.04	< 0.005	0.05	0.04	< 0.005	0.04	—	220	220	0.01	< 0.005	< 0.005	221
2025	0.06	0.29	0.38	< 0.005	0.01	< 0.005	0.01	0.01	< 0.005	0.01	—	61.1	61.1	< 0.005	< 0.005	< 0.005	61.3

2.4. Operations Emissions Compared Against Thresholds

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

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.53	0.06	0.88	< 0.005	0.07	0.03	0.10	0.07	0.01	0.08	9.87	119	129	0.08	< 0.005	0.38	132
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.52	0.06	0.80	< 0.005	0.07	0.03	0.10	0.07	0.01	0.08	9.87	116	126	0.08	< 0.005	0.08	129

Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.28	0.04	0.36	< 0.005	0.01	0.03	0.03	0.01	0.01	0.01	1.14	98.2	99.3	0.06	< 0.005	0.20	102
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.05	0.01	0.07	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	0.19	16.3	16.4	0.01	< 0.005	0.03	16.9

2.5. Operations Emissions by Sector, Unmitigated

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

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.03	0.03	0.31	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	81.3	81.3	< 0.005	< 0.005	0.31	82.6
Area	0.49	0.02	0.57	< 0.005	0.07	—	0.07	0.07	—	0.07	9.37	18.0	27.4	0.03	< 0.005	—	28.2
Energy	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	18.9	18.9	< 0.005	< 0.005	—	18.9
Water	—	—	—	—	—	—	—	—	—	—	0.07	0.75	0.82	0.01	< 0.005	—	1.06
Waste	—	—	—	—	—	—	—	—	—	—	0.43	0.00	0.43	0.04	0.00	—	1.50
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.07	0.07
Total	0.53	0.06	0.88	< 0.005	0.07	0.03	0.10	0.07	0.01	0.08	9.87	119	129	0.08	< 0.005	0.38	132
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.03	0.03	0.28	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	78.2	78.2	< 0.005	< 0.005	0.01	79.2
Area	0.49	0.02	0.51	< 0.005	0.07	—	0.07	0.07	—	0.07	9.37	17.9	27.3	0.03	< 0.005	—	28.1
Energy	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	18.9	18.9	< 0.005	< 0.005	—	18.9
Water	—	—	—	—	—	—	—	—	—	—	0.07	0.75	0.82	0.01	< 0.005	—	1.06
Waste	—	—	—	—	—	—	—	—	—	—	0.43	0.00	0.43	0.04	0.00	—	1.50
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.07	0.07

Total	0.52	0.06	0.80	< 0.005	0.07	0.03	0.10	0.07	0.01	0.08	9.87	116	126	0.08	< 0.005	0.08	129
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.03	0.03	0.28	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	77.3	77.3	< 0.005	< 0.005	0.13	78.4
Area	0.25	< 0.005	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.64	1.33	1.97	< 0.005	< 0.005	—	2.03
Energy	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	18.9	18.9	< 0.005	< 0.005	—	18.9
Water	—	—	—	—	—	—	—	—	—	—	0.07	0.75	0.82	0.01	< 0.005	—	1.06
Waste	—	—	—	—	—	—	—	—	—	—	0.43	0.00	0.43	0.04	0.00	—	1.50
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.07	0.07
Total	0.28	0.04	0.36	< 0.005	0.01	0.03	0.03	0.01	0.01	0.01	1.14	98.2	99.3	0.06	< 0.005	0.20	102
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.01	0.01	0.05	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	12.8	12.8	< 0.005	< 0.005	0.02	13.0
Area	0.05	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.11	0.22	0.33	< 0.005	< 0.005	—	0.34
Energy	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.12	3.12	< 0.005	< 0.005	—	3.14
Water	—	—	—	—	—	—	—	—	—	—	0.01	0.12	0.14	< 0.005	< 0.005	—	0.18
Waste	—	—	—	—	—	—	—	—	—	—	0.07	0.00	0.07	0.01	0.00	—	0.25
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01
Total	0.05	0.01	0.07	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	0.19	16.3	16.4	0.01	< 0.005	0.03	16.9

3. Construction Emissions Details

3.1. Grading (2023) - Unmitigated

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

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

Off-Road Equipment	1.39	13.5	12.4	0.02	0.63	—	0.63	0.58	—	0.58	—	1,855	1,855	0.08	0.02	—	1,861
Dust From Material Movement	—	—	—	—	—	2.07	2.07	—	1.00	1.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.39	13.5	12.4	0.02	0.63	—	0.63	0.58	—	0.58	—	1,855	1,855	0.08	0.02	—	1,861
Dust From Material Movement	—	—	—	—	—	2.07	2.07	—	1.00	1.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.51	4.90	4.52	0.01	0.23	—	0.23	0.21	—	0.21	—	676	676	0.03	0.01	—	678
Dust From Material Movement	—	—	—	—	—	0.76	0.76	—	0.37	0.37	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.89	0.82	< 0.005	0.04	—	0.04	0.04	—	0.04	—	112	112	< 0.005	< 0.005	—	112
Dust From Material Movement	—	—	—	—	—	0.14	0.14	—	0.07	0.07	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.65	0.00	0.00	0.01	0.01	0.00	0.00	0.00	—	138	138	0.01	< 0.005	0.61	141
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.28	0.12	< 0.005	< 0.005	0.01	0.02	< 0.005	0.01	0.01	—	221	221	0.02	0.03	0.46	233
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.05	0.56	0.00	0.00	0.01	0.01	0.00	0.00	0.00	—	132	132	0.01	< 0.005	0.02	133
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.29	0.12	< 0.005	< 0.005	0.01	0.02	< 0.005	0.01	0.01	—	221	221	0.02	0.03	0.01	232
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.02	0.21	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	48.6	48.6	< 0.005	< 0.005	0.10	49.3
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.11	0.04	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	80.7	80.7	0.01	0.01	0.07	84.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	8.05	8.05	< 0.005	< 0.005	0.02	8.16
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.4	13.4	< 0.005	< 0.005	0.01	14.0

3.3. Building Construction (2023) - Unmitigated

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

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

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.86	8.71	10.2	0.02	0.38	—	0.38	0.35	—	0.35	—	1,848	1,848	0.07	0.01	—	1,855
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.86	8.71	10.2	0.02	0.38	—	0.38	0.35	—	0.35	—	1,848	1,848	0.07	0.01	—	1,855
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	2.06	2.42	< 0.005	0.09	—	0.09	0.08	—	0.08	—	438	438	0.02	< 0.005	—	439
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.38	0.44	< 0.005	0.02	—	0.02	0.02	—	0.02	—	72.5	72.5	< 0.005	< 0.005	—	72.7
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	4.98	4.98	< 0.005	< 0.005	0.02	5.06
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.50	3.50	< 0.005	< 0.005	0.01	3.66
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	4.74	4.74	< 0.005	< 0.005	< 0.005	4.79
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.51	3.51	< 0.005	< 0.005	< 0.005	3.65
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	1.14	1.14	< 0.005	< 0.005	< 0.005	1.15
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.83	0.83	< 0.005	< 0.005	< 0.005	0.87
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	0.19	0.19	< 0.005	< 0.005	< 0.005	0.19
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.14	0.14	< 0.005	< 0.005	< 0.005	0.14
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Building Construction (2024) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.82	8.30	10.2	0.02	0.34	—	0.34	0.32	—	0.32	—	1,847	1,847	0.07	0.01	—	1,854
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.82	8.30	10.2	0.02	0.34	—	0.34	0.32	—	0.32	—	1,847	1,847	0.07	0.01	—	1,854
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.59	5.95	7.28	0.01	0.25	—	0.25	0.23	—	0.23	—	1,323	1,323	0.05	0.01	—	1,328
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	1.09	1.33	< 0.005	0.04	—	0.04	0.04	—	0.04	—	219	219	0.01	< 0.005	—	220
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	4.88	4.88	< 0.005	< 0.005	0.02	4.95
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.46	3.46	< 0.005	< 0.005	0.01	3.62
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	4.64	4.64	< 0.005	< 0.005	< 0.005	4.70
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.46	3.46	< 0.005	< 0.005	< 0.005	3.61
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	3.37	3.37	< 0.005	< 0.005	0.01	3.42
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.48	2.48	< 0.005	< 0.005	< 0.005	2.59

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	0.56	0.56	< 0.005	< 0.005	< 0.005	0.57
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.41	0.41	< 0.005	< 0.005	< 0.005	0.43
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Building Construction (2025) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.77	7.73	10.1	0.02	0.29	—	0.29	0.27	—	0.27	—	1,848	1,848	0.07	0.01	—	1,854
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	1.36	1.78	< 0.005	0.05	—	0.05	0.05	—	0.05	—	325	325	0.01	< 0.005	—	327
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.25	0.32	< 0.005	0.01	—	0.01	0.01	—	0.01	—	53.9	53.9	< 0.005	< 0.005	—	54.1
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	4.55	4.55	< 0.005	< 0.005	< 0.005	4.60
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.41	3.41	< 0.005	< 0.005	< 0.005	3.56
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	0.81	0.81	< 0.005	< 0.005	< 0.005	0.82
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.60	0.60	< 0.005	< 0.005	< 0.005	0.63
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	0.13	0.13	< 0.005	< 0.005	< 0.005	0.14
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.10	0.10	< 0.005	< 0.005	< 0.005	0.10
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Architectural Coating (2025) - Unmitigated

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

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

Off-Road Equipment	0.16	1.42	1.72	< 0.005	0.03	—	0.03	0.03	—	0.03	—	244	244	0.01	< 0.005	—	245
Architectural Coatings	0.98	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.25	0.30	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	—	42.2	42.2	< 0.005	< 0.005	—	42.3
Architectural Coatings	0.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.98	6.98	< 0.005	< 0.005	—	7.00
Architectural Coatings	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	0.91	0.91	< 0.005	< 0.005	< 0.005	0.92
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	0.16	0.16	< 0.005	< 0.005	< 0.005	0.16
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	0.03	0.03	< 0.005	< 0.005	< 0.005	0.03
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.03	0.03	0.31	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	81.3	81.3	< 0.005	< 0.005	0.31	82.6
Total	0.03	0.03	0.31	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	81.3	81.3	< 0.005	< 0.005	0.31	82.6
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.03	0.03	0.28	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	78.2	78.2	< 0.005	< 0.005	0.01	79.2
Total	0.03	0.03	0.28	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	78.2	78.2	< 0.005	< 0.005	0.01	79.2

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.01	0.01	0.05	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	12.8	12.8	< 0.005	< 0.005	0.02	13.0
Total	0.01	0.01	0.05	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	12.8	12.8	< 0.005	< 0.005	0.02	13.0

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	6.59	6.59	< 0.005	< 0.005	—	6.62
Total	—	—	—	—	—	—	—	—	—	—	—	6.59	6.59	< 0.005	< 0.005	—	6.62
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	6.59	6.59	< 0.005	< 0.005	—	6.62
Total	—	—	—	—	—	—	—	—	—	—	—	6.59	6.59	< 0.005	< 0.005	—	6.62
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	1.09	1.09	< 0.005	< 0.005	—	1.10
Total	—	—	—	—	—	—	—	—	—	—	—	1.09	1.09	< 0.005	< 0.005	—	1.10

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.3	12.3	< 0.005	< 0.005	—	12.3
Total	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.3	12.3	< 0.005	< 0.005	—	12.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.3	12.3	< 0.005	< 0.005	—	12.3
Total	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.3	12.3	< 0.005	< 0.005	—	12.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.03	2.03	< 0.005	< 0.005	—	2.04
Total	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.03	2.03	< 0.005	< 0.005	—	2.04

4.3. Area Emissions by Source

4.3.2. Unmitigated

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

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.26	0.02	0.51	< 0.005	0.07	—	0.07	0.07	—	0.07	9.37	17.9	27.3	0.03	< 0.005	—	28.1

Consumer	0.21	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.01	< 0.005	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.15	0.15	< 0.005	< 0.005	—	0.15
Total	0.49	0.02	0.57	< 0.005	0.07	—	0.07	0.07	—	0.07	9.37	18.0	27.4	0.03	< 0.005	—	28.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.26	0.02	0.51	< 0.005	0.07	—	0.07	0.07	—	0.07	9.37	17.9	27.3	0.03	< 0.005	—	28.1
Consumer Products	0.21	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.49	0.02	0.51	< 0.005	0.07	—	0.07	0.07	—	0.07	9.37	17.9	27.3	0.03	< 0.005	—	28.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.11	0.20	0.31	< 0.005	< 0.005	—	0.32
Consumer Products	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.02	0.02	< 0.005	< 0.005	—	0.02
Total	0.05	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.11	0.22	0.33	< 0.005	< 0.005	—	0.34

4.4. Water Emissions by Land Use

4.4.2. Unmitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	0.07	0.75	0.82	0.01	< 0.005	—	1.06
Total	—	—	—	—	—	—	—	—	—	—	0.07	0.75	0.82	0.01	< 0.005	—	1.06
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	0.07	0.75	0.82	0.01	< 0.005	—	1.06
Total	—	—	—	—	—	—	—	—	—	—	0.07	0.75	0.82	0.01	< 0.005	—	1.06
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	0.01	0.12	0.14	< 0.005	< 0.005	—	0.18
Total	—	—	—	—	—	—	—	—	—	—	0.01	0.12	0.14	< 0.005	< 0.005	—	0.18

4.5. Waste Emissions by Land Use

4.5.2. Unmitigated

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

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

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	0.43	0.00	0.43	0.04	0.00	—	1.50
Total	—	—	—	—	—	—	—	—	—	—	0.43	0.00	0.43	0.04	0.00	—	1.50
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	0.43	0.00	0.43	0.04	0.00	—	1.50
Total	—	—	—	—	—	—	—	—	—	—	0.43	0.00	0.43	0.04	0.00	—	1.50
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	0.07	0.00	0.07	0.01	0.00	—	0.25
Total	—	—	—	—	—	—	—	—	—	—	0.07	0.00	0.07	0.01	0.00	—	0.25

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.07	0.07
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.07	0.07

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.07	0.07
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.07	0.07
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

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

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

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

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

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

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

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

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Grading and Excavation	Grading	3/1/2023	9/1/2023	5.00	133	—
Foundation and Building Construction	Building Construction	9/2/2023	3/31/2025	5.00	411	—
Architectural Coating	Architectural Coating	1/2/2025	3/31/2025	5.00	63.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Grading and Excavation	Graders	Diesel	Average	1.00	6.00	148	0.41
Grading and Excavation	Rubber Tired Dozers	Diesel	Average	1.00	6.00	367	0.40
Grading and Excavation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37

Foundation and Building Construction	Cranes	Diesel	Average	1.00	4.00	367	0.29
Foundation and Building Construction	Forklifts	Diesel	Average	2.00	6.00	82.0	0.20
Foundation and Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48
Grading and Excavation	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Foundation and Building Construction	Bore/Drill Rigs	Diesel	Average	1.00	6.00	83.0	0.50
Foundation and Building Construction	Cement and Mortar Mixers	Diesel	Average	2.00	6.00	10.0	0.56
Foundation and Building Construction	Pumps	Diesel	Average	1.00	6.00	11.0	0.74
Foundation and Building Construction	Aerial Lifts	Diesel	Average	1.00	6.00	46.0	0.31
Architectural Coating	Aerial Lifts	Diesel	Average	1.00	6.00	46.0	0.31

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Grading and Excavation	—	—	—	—
Grading and Excavation	Worker	10.0	18.5	LDA,LDT1,LDT2
Grading and Excavation	Vendor	—	10.2	HHDT,MHDT
Grading and Excavation	Hauling	3.08	20.0	HHDT
Grading and Excavation	Onsite truck	—	—	HHDT
Foundation and Building Construction	—	—	—	—
Foundation and Building Construction	Worker	0.36	18.5	LDA,LDT1,LDT2
Foundation and Building Construction	Vendor	0.11	10.2	HHDT,MHDT

Foundation and Building Construction	Hauling	0.00	20.0	HHDT
Foundation and Building Construction	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	0.07	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	20,030	6,677	0.00	0.00	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Grading and Excavation	—	3,270	99.8	0.00	—

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction

Water Exposed Area	2	61%	61%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Single Family Housing	0.01	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2023	0.00	349	0.03	< 0.005
2024	0.00	349	0.03	< 0.005
2025	0.00	349	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	9.44	9.54	8.55	3,404	104	105	94.2	37,489

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Single Family Housing	—

Wood Fireplaces	0
Gas Fireplaces	1
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	0
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
20030.004	6,677	0.00	0.00	—

5.10.3. Landscape Equipment

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

5.11. Operational Energy Consumption

5.11.1. Unmitigated

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

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Single Family Housing	6,895	349	0.0330	0.0040	38,335

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	37,526	99,497

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	0.27	0.00

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

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

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

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

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

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

5.16.2. Process Boilers

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

5.17. User Defined

Equipment Type	Fuel Type
—	—

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

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

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

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

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	8.07	annual days of extreme heat
Extreme Precipitation	4.10	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	10.5	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A

Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

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

6.3. Adjusted Climate Risk Scores

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

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

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

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

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	63.3
AQ-PM	40.4
AQ-DPM	13.7
Drinking Water	37.3
Lead Risk Housing	36.2
Pesticides	0.00
Toxic Releases	36.1
Traffic	75.2
Effect Indicators	—
CleanUp Sites	0.00
Groundwater	0.00
Haz Waste Facilities/Generators	39.8
Impaired Water Bodies	77.3
Solid Waste	0.00
Sensitive Population	—
Asthma	6.63
Cardio-vascular	2.80
Low Birth Weights	77.9
Socioeconomic Factor Indicators	—
Education	4.67
Housing	33.7
Linguistic	3.74
Poverty	19.4

Unemployment	70.0

7.2. Healthy Places Index Scores

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

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	88.56666239
Employed	25.70255357
Median HI	94.7773643
Education	—
Bachelor's or higher	95.00834082
High school enrollment	100
Preschool enrollment	95.7141024
Transportation	—
Auto Access	72.44963429
Active commuting	10.99704863
Social	—
2-parent households	80.9829334
Voting	68.92082638
Neighborhood	—
Alcohol availability	58.32157064
Park access	81.35506224
Retail density	27.11407674
Supermarket access	22.52021045
Tree canopy	79.71256256
Housing	—
Homeownership	80.70062877

Housing habitability	85.1790068
Low-inc homeowner severe housing cost burden	66.68805338
Low-inc renter severe housing cost burden	67.75311177
Uncrowded housing	66.9190299
Health Outcomes	—
Insured adults	88.23302964
Arthritis	0.0
Asthma ER Admissions	90.1
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	95.9
Cognitively Disabled	93.6
Physically Disabled	98.4
Heart Attack ER Admissions	94.5
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	95.0
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0

No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	62.3
SLR Inundation Area	48.3
Children	93.4
Elderly	11.5
English Speaking	98.1
Foreign-born	12.5
Outdoor Workers	88.5
Climate Change Adaptive Capacity	—
Impervious Surface Cover	74.9
Traffic Density	47.2
Traffic Access	23.0
Other Indices	—
Hardship	4.5
Other Decision Support	—
2016 Voting	91.3

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	17.0
Healthy Places Index Score for Project Location (b)	90.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

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

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	A 7,584.23 SF SFD plus a 619.01 SF garage, 263.45 SF mechanical, and 1,424.67 SF deck area; total SF = 9,891.36 SF. Irrigated landscaped area = 6,281.22 SF
Construction: Construction Phases	Construction anticipated to start ~March 1, 2023, and be complete by March 2025
Construction: Off-Road Equipment	Added extra equipment for excavation, foundation and concrete work.

APPENDIX E.2: Energy Data

Construction Transportation Energy Worksheet

Emission Source	Emissions ($MTCO_2$) [1]	
	Diesel-Powered	Gasoline-Powered
Grading		
Off-Road	112	--
Hauling	14.0	--
Vendor	0.00	--
Worker		8.16
Building Construction (2023)		
Off-Road	72.7	--
Hauling	0.00	--
Vendor	0.14	--
Worker	--	0.19
Building Construction (2024)		
Off-Road	220	--
Hauling	0.00	--
Vendor	0.43	--
Worker	--	0.57
Building Construction (2025)		
Off-Road	54.1	--
Hauling	0.00	--
Vendor	0.10	--
Worker	--	0.14
Architectural Coating (2025)		
Off-Road	7.00	--
Hauling	0.00	--
Vendor	0.00	--
Worker	--	0.03
Total Emissions in $MTCO_2$	*480.47*	*9.09*
Total Emissions in pounds CO_2	*1,059,255.03*	*20,040.02*
Total Fuel Consumption [2]	**47,843**	**1,022**

$MTCO_2$ = metric tons of carbon dioxide

1 *$MTCO_2$ emissions for each phase of construction taken from the CalEEMod output sheets prepared for the Project.*

2 *Diesel fuel has a CO_2 factor of 22.14 pounds of CO_2 per 1 gallon of diesel fuel. Gasoline has a CO_2 factor of 19.6 pounds of CO_2 per 1 gallon of gasoline. Source: U.S. Energy Information Administration, Environment Carbon Dioxide Emissions Coefficients, Release date: February 2, 2016.*

Operational Transportation Energy Worksheet

Source: EMFAC2021 (v1.0.2) Emissions Inventory
Region Type: County
Region: Orange
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/year for CVMT and EVMT, trips/year for Trips, kWh/year for Energy Consumption, tons/year for Emissions, 1000 gallons/year for Fuel Consumption

Region	Calendar Year	Vehicle Categor	Model Year	Speed	Fuel	Total VMT	Fuel Consumption	MPG
Orange	2025	HHDT	Aggregate	Aggregate	Diesel	399674472.9	65906.134	6.06429855
Orange	2025	LDA	Aggregate	Aggregate	Diesel	30930917.53	716.2312664	43.1856566
Orange	2025	LDT1	Aggregate	Aggregate	Diesel	148646.4777	6.219657773	23.8994625
Orange	2025	LDT2	Aggregate	Aggregate	Diesel	30517603.96	930.9055577	32.7827068
Orange	2025	LHDT1	Aggregate	Aggregate	Diesel	311138854.5	14922.2797	20.8506247
Orange	2025	LHDT2	Aggregate	Aggregate	Diesel	133372438.5	7572.231555	17.6133598
Orange	2025	MDV	Aggregate	Aggregate	Diesel	62636095.42	2560.709825	24.4604425
Orange	2025	MH	Aggregate	Aggregate	Diesel	9678207.841	952.7464096	10.1582202
Orange	2025	MHDT	Aggregate	Aggregate	Diesel	362113035.2	40334.46322	8.97775764
Orange	2025	OBUS	Aggregate	Aggregate	Diesel	10680448.22	1479.414342	7.21937588
Orange	2025	SBUS	Aggregate	Aggregate	Diesel	5255881.951	709.8347329	7.40437416
						Total:	136,091,170	
Orange	2025	HHDT	Aggregate	Aggregate	Gasoline	187211.8249	43.47263428	4.30642927
Orange	2025	LDA	Aggregate	Aggregate	Gasoline	14534305570	473572.1317	30.6907958
Orange	2025	LDT1	Aggregate	Aggregate	Gasoline	1194865048	46625.02559	25.6271183
Orange	2025	LDT2	Aggregate	Aggregate	Gasoline	7484135199	298757.1671	25.0508976
Orange	2025	LHDT1	Aggregate	Aggregate	Gasoline	542979042.4	37806.15523	14.3621862
Orange	2025	LHDT2	Aggregate	Aggregate	Gasoline	81865387.67	6538.733519	12.5200679
Orange	2025	MCY	Aggregate	Aggregate	Gasoline	113090178.1	2670.803515	42.3431291
Orange	2025	MDV	Aggregate	Aggregate	Gasoline	4393105851	215941.9231	20.343923
Orange	2025	MH	Aggregate	Aggregate	Gasoline	18620734.7	3808.503156	4.88925279
Orange	2025	MHDT	Aggregate	Aggregate	Gasoline	124187027.5	23898.25776	5.19648875
Orange	2025	OBUS	Aggregate	Aggregate	Gasoline	11353030.69	2167.479519	5.23789526
Orange	2025	SBUS	Aggregate	Aggregate	Gasoline	10025036.68	1122.109613	8.9340975
Orange	2025	UBUS	Aggregate	Aggregate	Gasoline	13828658.34	1132.165713	12.2143412
						Total:	1,114,083,928	
Orange	2025	HHDT	Aggregate	Aggregate	Electricity	2610319.399	0	
Orange	2025	LDA	Aggregate	Aggregate	Electricity	1257487800	0	
Orange	2025	LDT1	Aggregate	Aggregate	Electricity	4643810.615	0	
Orange	2025	LDT2	Aggregate	Aggregate	Electricity	53582168.77	0	
Orange	2025	LHDT1	Aggregate	Aggregate	Electricity	9849739.22	0	
Orange	2025	LHDT2	Aggregate	Aggregate	Electricity	2416266.968	0	
Orange	2025	MDV	Aggregate	Aggregate	Electricity	57809096.36	0	
Orange	2025	MHDT	Aggregate	Aggregate	Electricity	3604599.599	0	
Orange	2025	OBUS	Aggregate	Aggregate	Electricity	145234.659	0	
Orange	2025	SBUS	Aggregate	Aggregate	Electricity	118054.8077	0	
Orange	2025	UBUS	Aggregate	Aggregate	Electricity	25414.45858	0	
Orange	2025	HHDT	Aggregate	Aggregate	Natural Gas	27205812.46	4529.024941	
Orange	2025	MHDT	Aggregate	Aggregate	Natural Gas	4052604.383	477.6589834	
Orange	2025	OBUS	Aggregate	Aggregate	Natural Gas	1565132.662	173.2346267	
Orange	2025	SBUS	Aggregate	Aggregate	Natural Gas	6364376.471	1473.213504	
Orange	2025	UBUS	Aggregate	Aggregate	Natural Gas	36306650.92	12193.20514	
Orange	2025	LDA	Aggregate	Aggregate	Plug-in Hybrid	542610088.6	9023.534744	
Orange	2025	LDT1	Aggregate	Aggregate	Plug-in Hybrid	3726366	56.09025826	
Orange	2025	LDT2	Aggregate	Aggregate	Plug-in Hybrid	85884545.9	1357.727071	
Orange	2025	MDV	Aggregate	Aggregate	Plug-in Hybrid	50455120.41	826.6486853	

Total VMT	Diesel VMT	Gasoline VMT	Average Diesel MPG*	Average Gasoline MPG*
32,029,157,781	1,356,146,602	28,522,547,976	14	27
Percent of Total	4.23	89.05		

* weighted by percentage of VMT for each vehicle category

APPENDIX F.1: Phase I and II

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31451 COAST HIGHWAY PROJECT, CITY OF LAGUNA BEACH, CALIFORNIA

Extended Phase I and Phase II Cultural Resources Assessment

Prepared for
Mr. Tony Reyna
c/o John Diao
16530 Ventura Boulevard, Suite 305
Encino, CA 91436

November 2022

ESA

Confidential – Not For Public Distribution

31451 COAST HIGHWAY PROJECT, CITY OF LAGUNA BEACH, CALIFORNIA

Extended Phase I and Phase II Cultural Resources Assessment

Prepared for:
Mr. Tony Reyna
c/o John Diao
16530 Ventura Boulevard, Suite 305
Encino, CA 91436

November 2022

Prepared by:
ESA

Principal Investigators:
Kyle Garcia, M.A., RPA
Monica Strauss, M.A., RPA

Report Authors:
Kyle Garcia, M.A., RPA
Mike Vader, B.A.
Sara Dietler, B.A.
Tom Ostrander, M.Sc., RPA
Fatima Clark, B.A.

Project Location:
San Juan Capistrano (CA) USGS 7.5-minute Topographic Quad
Township 8 South, Range 8 West, Section 6

Resources: CA-ORA-842 (update); P-30-177513
Acreage: 0.56 Acres

16755 Von Karman Avenue
Suite 200
Irvine, CA 92606
949.753.7001
esassoc.com

ESA

Bend	Oakland	San Francisco
Camarillo	Orlando	Santa Monica
Delray Beach	Pasadena	Sarasota
Destin	Petaluma	Seattle
Irvine	Portland	Sunrise
Los Angeles	Sacramento	Tampa
Miami	San Diego	

D202100155.00

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STATEMENT OF CONFIDENTIALITY

This report contains confidential cultural resources location information and distribution of this report is restricted. Cultural resources are nonrenewable, and their scientific, cultural, and aesthetic values can be significantly impaired by disturbance. To deter vandalism, artifact hunting, and other activities that can damage cultural resources, the locations of cultural resources are confidential. The legal authority to restrict cultural resources information is in subdivision (r) of Section 6254 and Section 6254.10 of the California Government Code, subdivision (d) of Section 15120 of Title 14 of the California Code of Regulations, Section 304 of the National Historic Preservation Act of 1966, as amended, and Section 9 of the Archaeological Resources Protection Act.

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APPENDIX F.2: AB 52 Tribal Cultural Resources Consultation Letters and Response

October 10, 2022

Campo Band of Diegueno Mission Indians
Ralph Goff, Chairperson
36190 Church Road, Suite 1
Campo, CA 91606
Phone: (619) 478-9046
Via Email: rgoff@campo-nsn.gov

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Chairperson Goff:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

Ewiiaapaayp Band of Kumeyaay
Indians
Robert Pinto, Chairperson
4054 Willows Road
Alpine, CA, 91901
Phone: (619) 368 - 4382
Via Email: ceo@ebki-nsn.gov

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Chairperson Pinto:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

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Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

Ewiiaapaayp Band of Kumeyaay
Indians
Michael Garcia, Vice Chairperson
4054 Willows Road
Alpine, CA, 91901
Phone: (619) 933 - 2200
michaelg@leaningrock.net

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Vice Chairperson Garcia:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chairperson
P.O. Box 393
Covina, CA, 91723
Phone: (626)926-4131
admin@gabrielenoindians.org

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Chairperson Salas:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box693
San Gabriel, CA,91778
Phone: (626)483-3564
admin@gabrielenoindians.org

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Chairperson Morales:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 ½ Judge John Aiso St.,#231
Los Angeles, CA,90012
Phone:(951)807-0479
sgoad@gabrielino-tongva.com

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Vice Chairperson Goad:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

Gabrielino Tongva Indians of California Tribal Council
Christina Conley, Tribal Consultant and Administrator
P.O. Box 941078
Simi Valley, CA,93094
Phone: (626)407-8761
christina.marsden@alumni.usc.edu

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Ms. Conley:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

Gabrielino Tongva Indians of California Tribal Council
Robert Dorame, Chairperson
P.O. Box490
Bellflower, CA,90707
Phone: (562)761-6417
gtongva@gmail.com

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Chairperson Dorame:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

Gabrielino-Tongva Tribe
Charles Alvarez
23454 Vanowen Street
West Hills, CA,91307
Phone: (310)403-6048
roadkingcharles@aol.com

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Mr. Alvarez:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

Juaneno Band of Mission Indians
Sonia Johnston, Chairperson
P.O. Box 25628
Santa Ana, CA,92799
sonia.johnston@sbcglobal.net

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Chairperson Johnston:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

Juaneno Band of Mission Indians Acjachemen Nation - Romero
Teresa Romero, Chairperson
31411-A La Matanza Street
San Juan Capistrano, CA, 92675
Phone: (949) 488 - 3484
Fax: (949) 488-3294
tromero@juaneno.com

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Chairperson Belardes:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

Juaneno Band of Mission Indians Acjachemen Nation -Belardes
Matias Belardes, Chairperson
32161 Avenida Los Amigos
San Juan Capistrano, CA,92675
Phone: (949)293-8522
kaamalam@gmail.com

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Chairperson Belardes:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

Juaneno Band of Mission Indians Acjachemen Nation 84A
Heidi Lucero, Chairperson
31411-A La Matanza Street
San Juan Capistrano, CA,92675
Phone: (562)879-2884
hllucero105@gmail.com

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Chairperson Lucero:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

La Jolla Band of Luiseno Indians
Norma Contreras, Chairperson
22000 Highway76
Pauma Valley, CA, 92061
Phone: (760)742-3771

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Chairperson Contreras:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

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

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Mr. Miller:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

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

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Chairperson Parada:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

Manzanita Band of Kumeyaay Nation
Angela Elliott Santos, Chairperson
P.O. Box1302
Boulevard, CA,91905
Phone: (619)766-4930

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Chairperson Santos:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

Mesa Grande Band of Diegueno Mission Indians
Michael Linton, Chairperson
P.O Box270
Santa Ysabel, CA,92070
Phone: (760)782-3818
mesagrandeband@msn.com

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Chairperson Linton:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

Pala Band of Mission Indians
Shasta Gaughen, Tribal Historic Preservation Officer
PMB50,35008Pala Temecula Rd.
Pala, CA, 92059 Phone: (760)891-3515
sgaughen@palatribe.com

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Officer Gaughen:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

Pauma Band of Luiseno Indians
Temet Aguilar, Chairperson
P.O. Box369
Pauma Valley, CA,92061
Phone: (760)742-1289
bennaecalac@aol.com

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Chairperson Aguilar:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

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

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Chairperson Aguilar:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

Santa Rosa Band of Cahuilla Indians
Lovina Redner, Tribal Chair
P.O. Box 391820
Anza, CA, 92539
Phone: (951)659-2700
lsaul@santarosa-nsn.gov

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Ms. Redner:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

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

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Mr. Ontiveros:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

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Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

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

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Chairperson Vivanco:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The input of the Campo Band of Diegueno Mission Indians is important to the City of Laguna Beach's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish to consult on the proposed project. If you require any additional information or have any questions, please contact me at 949-464-6629 or via e-mail at mcaron@lagunabeachcity.net. Thank you for your assistance.

Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

October 10, 2022

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

RE: AB 52 Consultation, proposed 31451 Coast Highway Project Location, Laguna Beach, California

Dear Chairperson Aguilar:

The City of Laguna Beach is preparing an Initial Study for the proposed 31451 Coast Highway. The proposed project would involve development of a single-family residence on a vacant oceanfront parcel. The proposed project is subject to the California Environmental Quality Act.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

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Sincerely,

Martina Caron
Principal Planner
City of Laguna Beach

Enclosure: Project Location Map

Subject: FW: 31451 Coast highway Laguna Beach
Date: Wednesday, January 18, 2023 at 2:08:31 PM Pacific Standard Time
From: Caron, Martina CD
To: Jennifer Johnson
Attachments: Gab_logofinal_trans.gif

FYI.

Martina Caron, AICP
Principal Planner
City of Laguna Beach
mcaron@lagunabeachcity.net
949.464.6629

Please note City Hall Counter Hours:
Mon – Thurs 7:30 – 4:30
Every other Friday 7:30 – 4:30
Closed alternating Fridays

Click here to see pending Zoning Plan Checks, assigned Planners, and booking meetings.

From: Christina Marsden Conley <christina.marsden@alumni.usc.edu>
Sent: Saturday, October 22, 2022 8:55 AM
To: Caron, Martina CD <mcaron@lagunabeachcity.net>
Cc: Robert Dorame <gtongva@gmail.com>
Subject: 31451 Coast highway Laguna Beach

[**NOTICE:** This message originated outside of City of Laguna Beach -- **DO NOT CLICK** on **links** or open **attachments** unless you are sure the content is safe.]

Good morning,
I was looking at the location of this project and we would have serious concerns about it's tribal cultural sensitivity. In June, we made unrecorded discoveries in this area. There are significant areas of concern within this APE. Would you please send me your cultural resource reporting, we will want to be a part of the consultation and monitoring process.

Take care,
Christina

tehoovet taamet
C H R I S T I N A C O N L E Y
•Native American Monitor - Caretaker of our Ancestral Land
•Cultural Resource Administrator Under Tribal Chair, Robert Dorame (Most Likely Descendant) of Pimugna (Catalina Island)
•Native American Heritage Commission Contact
•Fully qualified as a California State Recognized Native American Tribe fulfilling SB18, AB52 Compliance Regulations
•HAZWOPER Certified
•626.407.8761

NAHC recognizes GTIOC Tribal Territory

31451 Coast Highway Project AB 52 Correspondence

Contact List	Date Letter Sent to contact	Date of Response	Comments/Concerns
Campo Band of Diegueno Mission Indians Ralph Goff, Chairperson 36190 Church Road, Suite1 Campo, CA,91906 Phone: (619)478-9046 Fax: (619)478-5818 Email: rgoff@campo-nsn.gov			70191120000076371193– DELIVERED 10/14/2022
Ewiiaapaayp Band of Kumeyaay Indians Robert Pinto, Chairperson 4054 Willows Road Alpine, CA, 91901 Phone: (619)368-4382 Fax: (619)445-9126 Email: ceo@ebki-nsn.gov			70191120000076371209 – DELIVERED 10-14-22
Ewiiaapaayp Band of Kumeyaay Indians Michael Garcia, Vice Chairperson 4054 Willows Road Alpine, CA, 91901 Phone: (619)933-2200 Fax: (619)445-9126 Email: michaelg@leaningrock.net			70183090000120882106 – DELIVERED 10-18-2022
Gabrieleno Band of Mission Indians – Kizh Nation Andrew Salas, Chairperson P.O. Box393 Covina, CA,91723 Phone: (626)926-4131 Email: admin@gabrielenoindians.org			70183090000120882113– DELIVERED 10/14/2022

Contact List	Date Letter Sent to contact	Date of Response	Comments/Concerns
Gabrieleno/Tongva San Gabriel Band of Mission Indians Anthony Morales, Chairperson P.O. Box693 San Gabriel, CA, 91778 Phone: (626)483-3564 Fax: (626)286-1262 Email: GTTribalcouncil@aol.com			70183090000120882120
Gabrielino /Tongva Nation Sandonne Goad, Chairperson 106 ½ Judge John Aiso St.,#231 Los Angeles, CA, 90012 Phone: (951)807-0479 Email: sgoad@gabrielino-tongva.com			70183090000120882137 – DELIVERED 10/14
Gabrielino Tongva Indians of California Tribal Council Christina Conley, Tribal Consultant and Administrator P.O. Box941078 Simi Valley, CA,93094 Phone: (626)407-8761 Email:christina.marsden@alumni.usc.edu			70183090000120882144
Gabrielino Tongva Indians of California Tribal Council Robert Dorame, Chairperson P.O. Box 490 Bellflower, CA, 90707 Phone: (562)761-6417 Fax: (562)761-6417 gtongva@gmail.com			70183090000120882151– DELIVERED 10/14/2022
			70183090000120882168

Contact List	Date Letter Sent to contact	Date of Response	Comments/Concerns
Gabrielino-Tongva Tribe Charles Alvarez, 23454 Vanowen Street West Hills, CA, 91307 Phone: (310)403-6048 roadkingcharles@aol.com			
Juaneno Band of Mission Indians Sonia Johnston, Chairperson P.O. Box 25628 Santa Ana, CA, 92799 sonia.johnston@sbcglobal.net			70183090000120882175 - RETURNED
Juaneno Band of Mission Indians Acjachemen Nation -Belardes Matias Belardes, Chairperson 32161 Avenida Los Amigos San Juan Capisttrano, CA 92675 Phone: (949)293-8522 kaamalam@gmail.com			70183090000120882182 – DELIVERED 10/15
Juaneno Band of Mission Indians Acjachemen Nation 84A Heidi Lucero, Chairperson 31411-A La Matanza Street San Juan Capistrano, CA 92675 Phone: (562)879-2884 hllucero105@gmail.com			70183090000120882205 – DELIVERED 10/14
La Jolla Band of Luiseno Indians Norma Contreras, Chairperson 22000 Highway 76 Pauma Valley, CA, 92061 Phone: (760)742-3771			70202450000210601149

Contact List	Date Letter Sent to contact	Date of Response	Comments/Concerns
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			70202450000210601156– DELIVERED 10/17/2022
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			70202450000210601163 – DELIVERED 10/14
Manzanita Band of Kumeyaay Nation Angela Elliott Santos, Chairperson P.O. Box1302 Boulevard, CA, 91905 Phone: (619)766-4930 Fax: (619)766-4957			70202450000210601170
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 mesagrandeband@msn.com			70202450000210601194

Contact List	Date Letter Sent to contact	Date of Response	Comments/Concerns
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			70202450000210601187 – DELIVERED 10/14
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			70202450000210601200– DELIVERED 10/17/2022
Santa Rosa Band of Cahuilla Indians Lovina Redner, Tribal Chair P.O. Box 391820 Anza, CA, 92539 Phone: (951)659-2700 Fax: (951)659-2228 lsaul@santarosa-nsn.gov			70202450000210601217 – DELIVERED 10/14/2022
Soboba Band of Luiseno Indians Joseph Ontiveros, Cultural Resource Department P.O. BOX487 San Jacinto, CA, 92581 Phone: (951)663-5279 Fax: (951)654 4198 jontiveros@soboba-nsn.gov			70202450000210601224– DELIVERED 10/17/2022

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			70202450000210601231– DELIVERED 10/17/2022
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			70202450000210601248
Juaneno Band of Mission Indians Acjachemen Nation - Romero Teresa Romero, Chairperson 31411-A La Matanza Street San Juan Capistrano, CA, 92675 Phone: (949) 488 - 3484 Fax: (949) 488-3294 tromero@juaneno.com			70202450000210601255 – DELIVERED 10/14
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			70202450000210601262 – DELIVERED 10/14

APPENDIX G: Paleontological Resources Letter

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007
tel 213.763.DINO
www.nhm.org

NATURAL HISTORY MUSEUM
LOS ANGELES COUNTY

Research & Collections

e-mail: paleorecords@nhm.org

October 16, 2022

EcoTierra Consulting
Attn: Jennifer Johnson

re: Paleontological resources for the 31451 Coast Highway Project

Dear Jennifer:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for proposed development at the 31451 Coast Highway project area as outlined on the portion of the San Juan Capistrano USGS topographic quadrangle map that you sent to me via e-mail on October 10, 2022. We do not have any fossil localities that lie directly within the proposed project area, but we do have fossil localities nearby from the same sedimentary deposits that occur in the proposed project area, either at the surface or at depth.

The following table shows the closest known localities in the collection of the Natural History Museum of Los Angeles County (NHMLA).

Locality Number	Location	Formation	Taxa	Depth
LACM VP 4166	Between N Hampton Rd and Crown Valley Pkwy, N of intersection with Playa Blanca*	Capistrano Formation	Requiem shark (*Carcharrhinus*), mackerel shark (*Isurus*), aquatic mammal (Cetacea), seals/sea lions (Otariidae), porpoise (Phocoenidae)	Unknown
LACM VP 1115	near Salt Creek Trail in Salt Creek Corridor Regional Park; San Joaquin Hills	Pleistocene terrace deposit	Mammoth (*Mammuthus*)	Unknown
LACM IP 10032 - 10036	Monarch Beach Development, near intersection of Niguel Rd and Camino del Avion	Pleistocene terrace deposits	Decapods indeterminate (Decapoda), barnacles (Sessila), gastropods (Borsonella, Fissurella, Hipponix, *Lottia*), (*Tellina*), bivalves (*Tivela*, *Tresus*, *Yoldia*)	Unknown (collected during trenching)
LACM VP 4950	29482 Ana Maria Lane; Laguna Niguel	Capistrano Formation (light yellow sand & gray clay)	Baleen whale (Mysticeti)	Unknown (found in a trench being excavated

				for a retaining wall)
LACM VP 4337	Alicia Parkway, NE of Clipper Cove Park; Laguna Niguel	Capistrano Formation	Whale clade (Cetacea)	Unknown
LACM VP 4979-4983	Shea Homes, housing development along cliff northeast of the intersection of Golden Lantern and Camino los Padres, San Juan Capistrano	Capistrano Formation	Uncatalogued vertebrates	Unknown

VP, Vertebrate Paleontology; IP, Invertebrate Paleontology; bgs, below ground surface

This records search covers only the records of the NHMLA. It is not intended as a paleontological assessment of the project area for the purposes of CEQA or NEPA. Potentially fossil-bearing units are present in the project area, either at the surface or in the subsurface. As such, NHMLA recommends that a full paleontological assessment of the project area be conducted by a paleontologist meeting Bureau of Land Management or Society of Vertebrate Paleontology standards.

Sincerely,



Alyssa Bell, Ph.D.
Natural History Museum of Los Angeles County

enclosure: invoice

APPENDIX H: Hydrology Report

PRELIMINARY WATER QUALITY MANAGEMENT PLAN

Project Name:

31451 SOUTH COAST HIGHWAY, LAGUNA BEACH, CA 92651

APN : 056-032-26

Prepared for:

Mr. Tony Reyna

718 The Strand,
Hermosa Beach, CA
Tel: (310) 376-0057

Prepared by:

TOAL ENGINEERING, INC.

139 Avenida Navarro
San Clemente, CA 92672
(949) 492-8586

Engineer: Adam L. Toal

Registration No. 59275

Email: Atoal@toalengineering.com

Engineer's Seal

Prepared on: December 23, 2020

Revised on: February 1, 2022

Job Number**: 19099**

Project Owner's Certification			
Permit/Application No.	TBD	Grading Permit No.	TBD
Tract/Parcel Map No.	Parcel 1, LLA 08-05	Building Permit No.	TBD
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract)			APN: 056-032-26

This Water Quality Management Plan (WQMP) has been prepared for Mr. Tony Reyna by Toal Engineering, Inc. The WQMP is intended to comply with the requirements of the local NPDES Stormwater Program requiring the preparation of the plan.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the current Orange County Drainage Area Management Plan (DAMP) and the intent of the non-point source NPDES Permit for Waste Discharge Requirements for the County of Orange, Orange County Flood Control District and the incorporated Cities of Orange County within the San Diego Region (South Orange County). Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the WQMP. An appropriate number of approved and signed copies of this document shall be available on the subject site in perpetuity.

Owner: Tony Reyna			
Title	Owner		
Company	Mr. Tony Reyna		
Address	718 the Strand, Hermosa Beach, CA		
Email	Tony_Reyna@texicaninc.com		
Telephone #	(310) 376-0057		
Signature		Date	3/31/2021

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Section 1 Discretionary Permit(s) and Water Quality Conditions

Project Infomation			
Permit/Application No.	TBD	Site Address or Tract/Parcel Map No.	31451 South Coast Hwy., Laguna Beach, CA 92651 Parcel 1, LLA 08-05
Additional Information/ Comments:	N/A		
Water Quality Conditions			
Water Quality Conditions from prior approvals or applicable watershed-based plans	There are no Water Quality Conditions from prior approval or applicable watershed-based plans.		

Section 2 Project Description

2.1 General Description

Description of Proposed Project			
Site Location	Address: 31451 Coast Highway, Laguna Beach, CA 92651 Legal: Parcel 1, LLA 08-05		
Project Area (ft^2): **16,348**	Number of Dwelling Units: **1**	SIC Code: **1521**	
Narrative Project Description:	The project consists of the construction of a new custom single-family residence, pool and spa on a vacant, bluff top parcel on the southwesterly side of Coast Highway, facing the Pacific Ocean. Areas, as well as total percentage of the project area of each different type of improvements are listed below: Lot size: 24,339 sq.ft. (0.5587 acres) Project area (Disturbed area): 16,348 sq.ft. (0.375 acres) Builing footprint: 4,403 sq.ft. (0.101 acres) Pool/Spa/Reflected Pool: 890 sq.ft. (0.020 acres) Pervious Driveway: 2,077 sq.ft. (0.048 acres) Total proposed hardscape areas (excluding builings): 3,283 sq.ft. (0.075 acres) Total proposed Landscape(pervious) area : 7,772 sq.ft. (0.178 acres) **Total Pervious area: 7,772 sq. ft. (0.178 acres)** **Total impervious area: 7,686 sq.ft. (0.176 acres)** **Pool/spa (not included): 890 sq.ft. (0.020 acres)**		

Project Area	Pervious		Impervious	
	Area (acres)	Percentage	Area (acres)	Percentage
Pre-Project Conditions	**0.354**	**100%**	**0**	**0%**
Post-Project Conditions	**0.178**	**52%**	**0.176**	**48%**

2.2 Post Development Drainage Characteristics

Site drainage will be collected by drain inlets and channel drains in site hardscape and landscape areas to collect excess runoff and not allow surface water to accumulate and result in standing water/ponding situation, the collected runoff will be conveyed to a storm water lift station and pumped into the Coast Highway via rectangular curb outlet. The Pump system will include detention storage (capacity of min. 391 CF) to limit peak discharge into the public street.

The storm water treatment flow rate will be diverted into a storm water planter box upstream of the lift station below the grade with 7 inches ponding depth and area of 310 S.F. (the minimum required is 308 S.F. based on Worksheet 7 Attachment B) for treatment prior to discharge. The treated runoff will be discharged to the pump system and will be pumped to the street via rectangular curb outlet.

The drainage characteristics are shown on the Site Plan and Drainage Plan in Section 4.

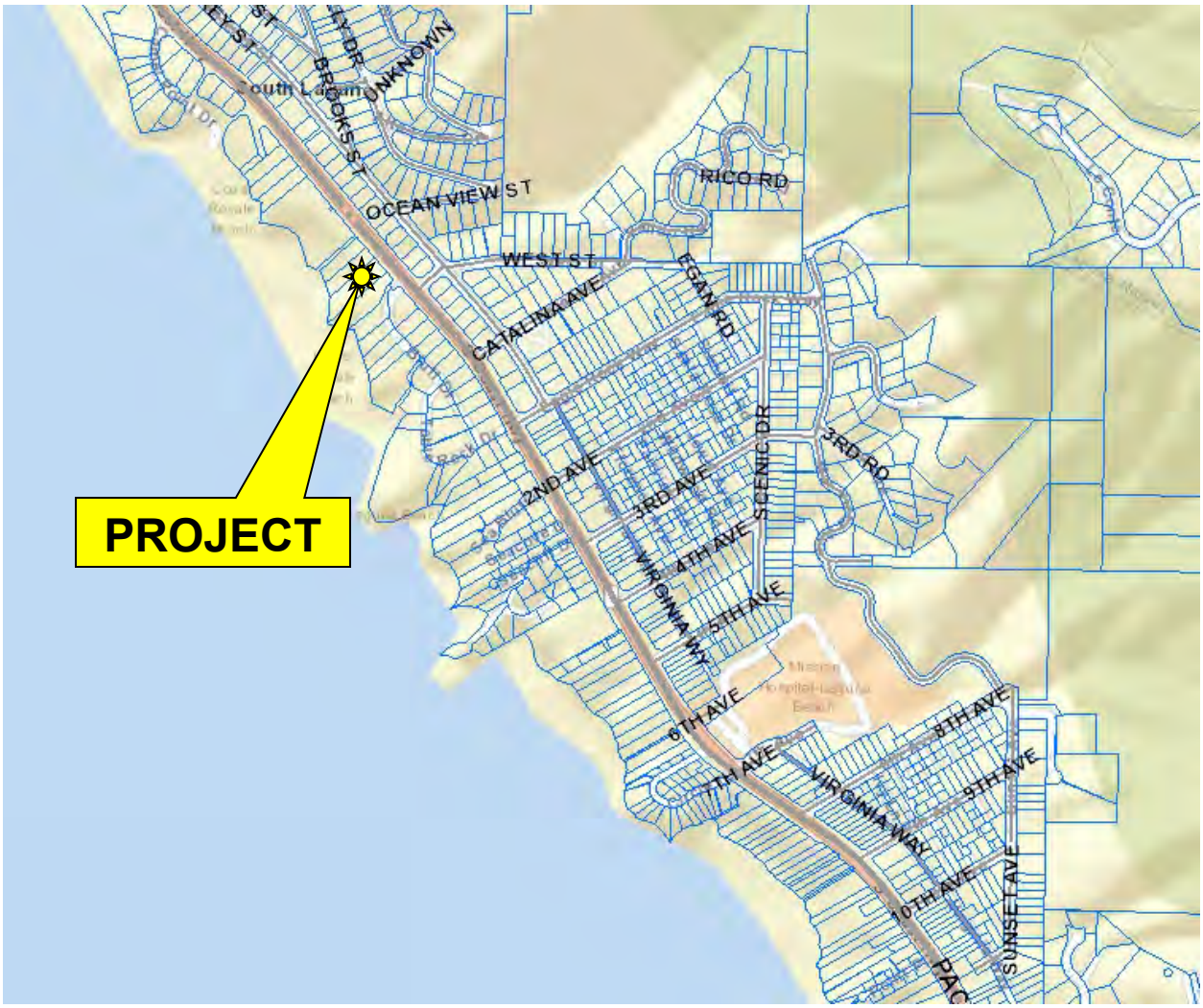


Figure 1. Project Location Map
Source: City of Laguna Beach Gis Website

2.3 Property Ownership / Management

Mr. Tony Reyna
718 The Strand,
Hermosa Beach, CA
Tel: (310) 376-0057

Section 3 Site & Watershed Characterization

3.1 Site Conditions

3.1.1 Existing Site Conditions

Existing condition:
The site consists of an irregularly shaped parcel of land which is vacant and undeveloped. The site is bounded on the southwest by the Pacific Ocean Shoreline, on the northeast by Coast Highway, on the southeast by 31461 South Coast Hwy. with the area of 23,641 sq.f.t which is undeveloped, and on the northwesterly side by 31425 South Coast Hwy. with the area of 14,780 which is developed and consists of the existing residential building and appurtenant hardscape and landscape.

Topography:
The site consists of a gently sloping pad trending southwesterly adjacent to Coast Highway, followed by a steeply sloping area to a second pad area, followed by a coastal bluff descending to the Pacific Ocean shoreline. Site elevations vary between approximately 15 feet and 123 feet for an overall relief or roughly 108 feet.

Existing Drainage Patterns:
Under existing conditions, surface runoff flows across the site in a southwesterly direction and drains over the bluff edge onto the Pacific Ocean Shoreline. A portion of the surface runoff flows to the adjacent property at northwest side then discharges to the ocean.

Environmentally Sensitive Features:
The Coastal bluff located below and Southwest (seaward) of the project area.

Existing Infrastructure:
Public sewer, water, and dry utility facilities are located within Coast Highway. None on site.

Existing Land Uses				
Land Use Description	Total Area (acres)	Impervious Area (acres)	Pervious Area (acres)	Imperviousness (%)
Vacant Natural	**0.373**	**0**	**0.373**	**0%**
Total	**0.373**	**0**	**0.373**	**0%**

3.1.2 Infiltration-Related Characteristics

The majority of the site **is comprised of HSG-D** type soils per the USGS web Soils survey and the Orange County Hydrology Manual (See Attachment F). Type D soils are not suitable for on-site fully infiltration. Also, per SOC- TGD 9-28-2017, Infiltration is not suitable within 50' of the slope edge or within 8 feet of the building foundations, also due to the geotechnical hazards (being close to the

slope) partially infiltration is not feasible, rendering the entire project area unsuitable for fully or partially infiltration. See Worksheet 1 page 18.

3.1.2.1 Hydrogeologic Conditions

This part will be completed upon receiving the Soils report.

The project is not within an area mapped for shallow groundwater per the Exhibit Maps in Appendix XVI of the TGD.

3.1.2.2 Soil and Geologic Infiltration Characteristics

This part will be completed upon receiving the Soils report.

3.1.2.3 Geotechnical Conditions

This part will be completed upon receiving the Soils report.

3.1.2.4 Summary of Infiltration Opportunities and Constraints of Existing Site

The majority of the on-site areas are comprised of Type D soils which are unsuitable for infiltration. Also, the steep slopes and other potential geotechnical hazards exclude the use of fully or partially infiltration BMPs for this project.

3.2 Proposed Site Development Activities

3.2.1 Overview of Site Development Activities

The project consists of the construction of a new custom single-family residence, pool and spa on a vacant, bluff top parcel on the southwesterly side of Coast Highway, facing the Pacific Ocean.

See Site Plan and Drainage Plan in Section 4.

3.2.2 Project Attributes Influencing Stormwater Management

Potential pollutant-generating activities:
There are no significant pollutant-generating activities anticipated for this residential development. See Section 4.4 for applicable Site Design and Source Control BMPs.

Building Use:
The proposed structure is a 4,403 s.f. single family residence with 667 s.f. attached garage.

Proposed landscaping:
Drought-tolerant residential landscaping with Drivable turf area. Areas of each different type of pervious area are listed below:

Pervious area : 5,695 sq.ft.

Drivable turb (Pervious Driveway) :2,077 sq.ft.

Total pervious area : 7,772 sq.ft.

Drainage Patterns:
As discussed in section 2.2, Under existing conditions, surface runoff flows across the site in a southwesterly direction and drains over the bluff edge onto the Pacific Ocean Shoreline. A portion of the surface runoff flows to the adjacent property at northwest side then discharges to the ocean.

Under proposed condition, drainage from the developed portion of the site will be collected, treated, and pumped into Coast Highway. The storm water lift station will include a detention chamber to limit peak discharge into public street.

Proposed Slopes:
The on-site slopes outside of the project area (but within the property) will remain untouched.

Manufactured slope within the development limits will be stabilized and laid back no steeper than 2:1 h:v. The proposed area of manufactured slopes is small compared to the project area.

Environmentally Sensitive Features:
No construction activities will occur on or within 25′ of coastal bluff.

Proposed Land Uses				
Land Use Description	Total Area (acres)	Impervious Area (acres)	Pervious Area (acres)	Imperviousness (%)
Single Family Residential	**0.354**	**0.176**	**0.178**	**48%**
Total	**0.354**	**0.176**	**0.178**	**48%**

3.2.3 Effects on Infiltration and Harvest and Use Feasibility

As discussed in Section 3.1.2.4, there is no opportunity for on-site fully or partially infiltration due to type D soils and associated geotechnical hazards; Harvest and Use was considered for this project, but was also deemed infeasible due to lack of demand for irrigation water. On-site slopes beyond the project limits will remain untouched in their natural, non-irrigated condition. The bulk of the pervious area within the project limits consist of reconstructed slopes, which will be planted with native, drought-tolerant species and then temporarily irrigated until the vegetation is established; once established, the temporary irrigation will be turned off and disconnected.

3.3 Receiving Waterbodies

The project site is located in the Dana Point Coastal Streams Watershed – San Diego Region. Runoff discharged from the project site flows north westerly in Coast Highway and is discharged into Aliso Creek near the Pacific Ocean at Aliso Beach Park.

Aliso Creek and the Pacific Ocean shoreline at this location are included in the CWA section 303(d) list. Listed pollutants include Suspended Solid/Sediments, Nutrients, Pathogens (Bacteria/Virus) Pesticides, Oils & Grease, trash and debris.

3.4 Stormwater Pollutants or Conditions of Concern

Pollutants or Conditions of Concern				
Pollutant	Expected from Proposed Land Uses/Activities (Yes or No)	Receiving Waterbody Impaired (Yes or No)	Priority Pollutant from WQIP or other Water Quality Condition? (Yes or No)	**Pollutant of Concern (Primary, Other, or No)**
Suspended-Solids	Yes	No	No	Other
Nutrients	Yes	No	No	Other
Heavy Metals	No	No	No	No
Bacteria/Virus/Pathogens	Yes	Yes	Yes	Primary
Pesticides	Yes	No	No	Other
Oil and Grease	Yes	No	No	Other
Toxic Organic Compounds	No	No	No	No
Trash and Debris	Yes	No	No	Other
Dry Weather Runoff	Yes	No	Yes	Primary

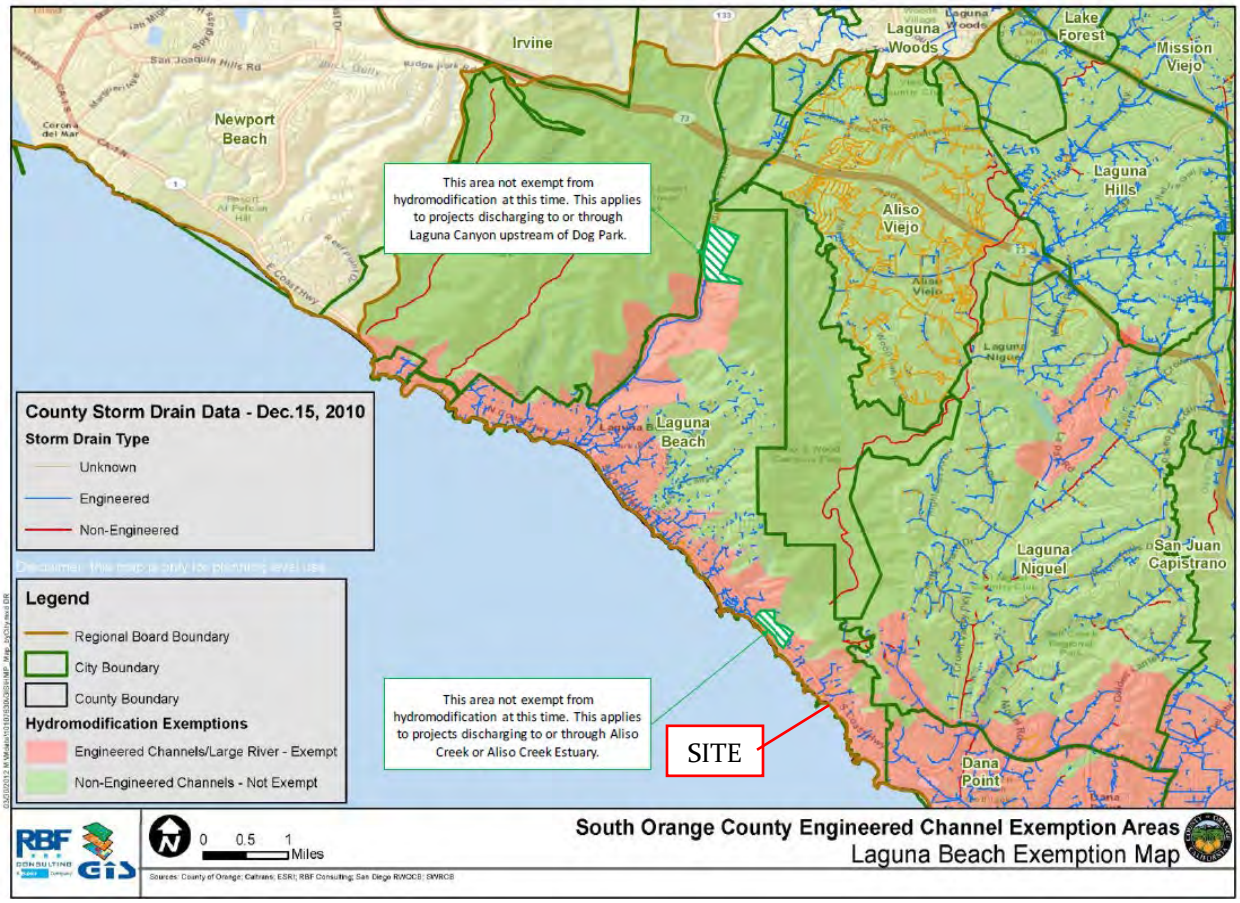
3.5 Hydrologic Conditions of Concern

Determine if streams located downstream from the project area are potentially susceptible to hydromodification impacts.

☒ No – See Laguna Beach Exemption Map (Figure F-4) from the SOC HMP revised 9/28/17.

☐ Yes – Describe applicable hydrologic conditions of concern below.

Figure F-4: Laguna Beach Exemption Map



As shown on the above map, the project site is located on the West side of Coast Highway, within the region hatched for hydromodification exemption (per Figure F-4: Laguna Beach Exemption Map in the SOC HMP dated April 1, 2015 and revised on September 28, 2017.

3.6 Critical Course Sediment Yield Areas

Not Applicable.

Section 4 Site Plan and Drainage Plan

4.1 Drainage Management Area Delineation

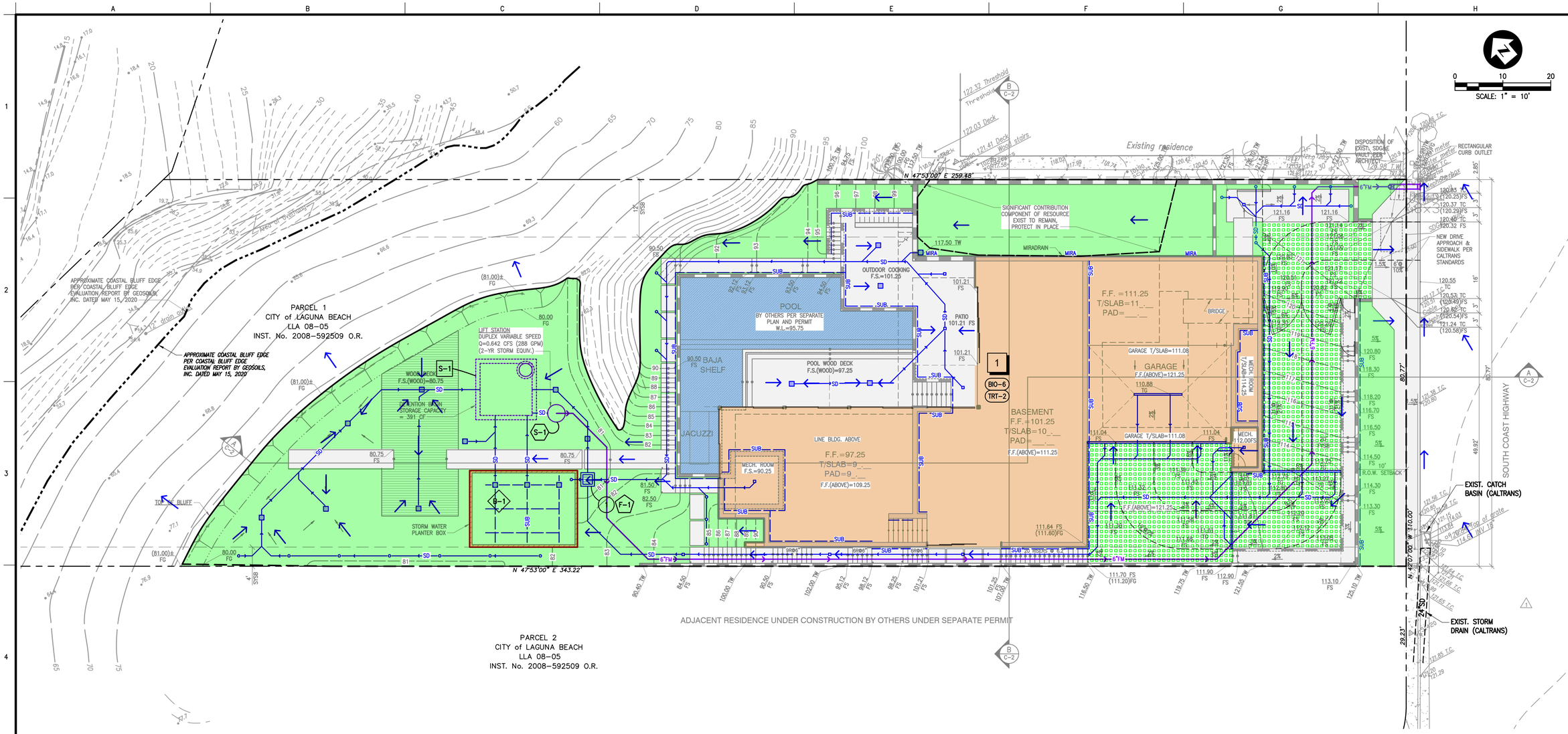
The project area includes one DMA as shown on the WQMP Site Plan on the following page, summarized as follows:

This DMA includes the residential building, the permeable driveway, and the hardscape and landscape areas. Runoff from DMA-1 is conveyed to a Bioretention planter box for treatment before being pumped into Coast Highway.

GIS Coordinates of the bioretention planter box for DMA-1: 33.505010, -117.747481

See DMA summary table in section 4.3.4.

The site is one DMA because the site runoff has all been collected and conveyed to the same southwesterly end of the project to be treated by one BMP. The BMP location was chosen because the elevation of the location allows gravity flow from all areas of the project. The storm water pump will convey the treated runoff and any overflow to the proposed storm drain system. Infiltration BMPs and Hydrologic source control BMPs were not chosen due to the soils type "D". There is insufficient irrigation demand for Harvest and Reuse as described in Section 4.3.1.



PARCEL 2
CITY of LAGUNA BEACH
LLA 08-05
INST. No. 2008-592509 O.R.

WQMP LEGEND

- PROPOSED LANDSCAPE
- PROPOSED BUILDING
- PROPOSED HARDSCAPE
- PROPOSED POOL OR WATER FEATURE
- 1 — DRAINAGE MANAGEMENT AREA NUMBER
- DRAINAGE MANAGEMENT AREA BOUNDARY
- PROPERTY LINE
- PROPOSED STORM DRAIN
- SUB — PROPOSED SUBDRAIN
- FM — PROPOSED FORCE MAIN
- PROPOSED INLET
- RUNOFF FLOW DIRECTION
- F-X — FILTER INSERT
- X — FLOW CONTROL STRUCTURE
- B-X — BIORETENTION BMP
- S-X — DETENTION STORAGE
- P-X — STORM WATER LIFT STATION

DMA STATISTICS

	DMA-1	Total
Total Area (sf)	15,458	15,458
Impervious Area (sf)	7,686	7,686
Pervious Area (sf)	7,772	7,772
imp	0.480	0.480
C	0.510	0.510
d (in)	0.750	0.750
DCV (cf)	493	493

BMP LIST

NON-STRUCTURAL SOURCE CONTROL BMPs

- N1 EDUCATION FOR PROPERTY OWNERS
- N3 COMMON AREA LANDSCAPE MANAGEMENT
- N4 BMP MAINTENANCE
- N11 COMMON AREA LITTER CONTROL
- N12 EMPLOYEE TRAINING
- N14 COMMON AREA CATCH BASIN INSPECTION

STRUCTURAL SOURCE CONTROL BMPs

- S3 TRASH STORAGE AREAS
- S4 EFFICIENT IRRIGATION SYSTEMS

BIOTREATMENT BMP W/O INFILTRATION

- BIO-6 BIORETENTION WITH UNDERDRAIN AND IMPERVIOUS LINER

TREATMENT CONTROL BMPs

- TRT-2 CATCH BASIN INSERT

BIORETENTION BMPs

B-1 BIORETENTION WITH UNDERDRAIN AND IMPERVIOUS LINER.
SURFACE AREA = 300 S.F.
PONDING DEPTH = 7 INCHES.
MEDIA DEPTH = 24 INCHES.
GRAVEL LAYER DEPTH = 12 INCHES.
MEDIA INFILTRATION RATE = 2.5 IN/HR.

DETENTION STORAGE

S-1 UNDERGROUND CAST-IN-PLACE CONCRETE CHAMBER
VOLUME REQUIREMENT: STORE RUNOFF IN EXCESS OF 2-YEAR STORM PEAK VOLUME = 305 C.F.
1-FOOT FREEBOARD REQUIRED.

STORM WATER LIFT STATION

P-1 VARIABLE SPEED DUPLEX PUMP SYSTEM
MAX Q = POST-PROJECT 2-YEAR PEAK RUNOFF = 0.642 CFS (288 GPM)
BACKUP POWER SOURCE REQUIRED

FLOW CONTROL STRUCTURE

1 24" CATCH BASIN
ORIFICE CONTROL OUTLET TO BIOFILTRATION PLANTER BOX
OVERFLOW BYPASS TO DETENTION CHAMBER

FILTER INSERT

F-1 OLDCASTLE FloGard +Plus MODEL FGP-24F8.

PLANS PREPARED BY:
TOAL ENGINEERING, INC.
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REGISTERED PROFESSIONAL ENGINEER
ADAM L. TOAL
No. 59275
CIVIL
STATE OF CALIFORNIA

ADAM L. TOAL
R.C.E. 59275
DATE: _____

PREPARED FOR:
MR. TONY REYNA
718 THE STRAND
HERMOSA BEACH, CA
(310) 376-0057

REVISIONS	BY	DATE	APVD.	DATE

THE REYNA RESIDENCE

WATER QUALITY MANAGEMENT PLAN

PARCEL 1, LLA 08-05
31451 SOUTH COAST HIGHWAY, LAGUNA BEACH, CA

DATE: 1/26/22	H. SCALE: 1"=10'
SURVEY DATE: 5/20	V. SCALE: N/A
DRN.: A.A.	DWG. NO.
CHD.: A.L.T.	W-1
APPD.: A.L.T.	
JOB NO. 19099	SHEET 1 OF 1

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4.2 Overall Site Design BMPs

Minimize Impervious Area:
Driveway and walkways designed to minimum widths. Utilized multi-floor building to minimize building footprint.

Maximize Natural Infiltration Capacity:
N/A due to the soils type, steep topography and geotechnical hazards related to infiltration for the project site.

Preserve Existing Drainage Patterns and Time of Concentration:
Since the property is undeveloped, the runoff sheet flows toward the slope and discharges to the ocean. Time of concentration is reduced by the project as a necessary consequence of proper drainage design on the steep slopes. Site discharge is limited to the 2-year peak event to minimize impact to the public street.

Disconnect Impervious Areas:
Pervious areas are distributed throughout the project. Hardscape areas are designed to drain to landscape areas where practicable; however, priority is given in the drainage design to protect foundations and other structures from the effects of runoff, including maintenance considerations.

Protect Existing Vegetation and Sensitive Areas:
Existing vegetation on sloped areas beyond the project limits shall remain untouched.

Revegetate Disturbed Areas:
Sloped areas within the project limits, also the pervious surfaces around the structure shall be revegetated with native, drought- tolerant plant species in accordance with the project landscape plan. Vegetation shall comply with the City's Water Efficient Landscape Ordinance 9.55.020 (drought tolerant species with low water use).

Soil Stockpiling and Site Generated Organics:
Soils harvested during remedial grading shall be checked by the geotechnical engineer of record and designated for on-site use to the maximum extent feasible for revegetation purposes.

Firescaping:
Proposed landscape plant palette shall incorporate plants appropriate for the zone(s) around the development in an effort to mitigate fire risk to the maximum extent practicable.

Water Efficient Landscaping:
Plant materials on the disturbed slope areas shall consist of drought-tolerant species with limited irrigation requirements.

Slopes and Channel Buffers:

For planting, see Water Efficient Landscaping above. Additionally, drainage devices are proposed around the development area to capture storm runoff and avoid water flowing over slopes.

4.3 DMA Characteristics and Site Design BMPs

4.3.1 DMA-1

Location:
DMA-1 includes the residential building, permeable driveway, and hardscape and landscape areas. Runoff from DMA-1 is conveyed to a Bioretention planter box for treatment before being pumped into Coast Highway.

Area:
DMA-1 measures 15,458 sq. ft. (0.355 ac) with an impervious area of 7,686 sq. ft (0.176 acres) or 48% of the total area. Please note that the area of the pool is not included. (890 sq. ft.)

Topographic Features and Drainage Pattern:
Runoff within DMA-1 is collected by a series of roof gutters and drain inlets and conveyed via underground drainpipes to a detention storage and then discharges to the Biofiltration system at the rear yard as shown on Site plan. Treated runoff is then discharged to the pump system and pumped to the Coast Highway and ultimately flows north westerly in Coast Highway and is discharged into Aliso Creek near the Pacific Ocean at Aliso Beach Park.

BMP Locations/Placement:
The bioretention unit is located at the Southwesterly side of the project; this location was selected to avoid conflicts with footings, residential area, top of bluff and bluff setback.

Land Uses and Pollutant-Generating Activities:
Single Family Residential development. See Table in Section 3.4 for expected project pollutants for this type of development.

Site Design BMPs:
HSCs were considered for this DMA, but were not implemented due to infiltration infeasibility, topography constraints related to the hillside and slopes (Coastal Bluff), and architectural design considerations related to the roof. The roof gutters and Downspouts have been designed and located to discharge far from the previous surfaces.

Infiltration Feasibility:
See Worksheet 1 for the entire project on following page. As shown thereon, and discussed earlier in Sections 3.1.2.4 and 3.2.3., infiltration is not feasible for this project.

Harvested Stormwater Demand and Feasibility:

As discussed earlier in Section 3.2.3, Harvest and Use is not feasible for this project. On-site pervious areas do not generate sufficient irrigation demand, as these areas are to be planted with native, drought tolerant species and will not be irrigated after vegetation has been initially established. A LID BMP that can fully address the runoff from this DMA was selected instead.

Worksheet 1: Infiltration Feasibility Categorization

Categorization of Infiltration Feasibility Condition			***Page 1 of 5***
Part 1: Physical Limitations of Infiltration Based on the criteria for physical limitations of infiltration described in Section 3.1.2.2, what level of physical feasibility of infiltration is the maximum that the BMP location will support?			
	Physical Infiltration Feasibility Category	**Mark applicable category**	**Next step**
1	Full Infiltration of the DCV		Continue to Part 2
	Biotreatment with Partial Infiltration		Continue to Part 3
	Biotreatment with No Infiltration	**X**	Select and Utilize Biotreatment with No Infiltration
Provide summary of basis: HSG-D soils and geotechnical hazards related to proposed foundations and the coastal bluff.			

4.3.3 DMA Summary

Drainage Management Areas				
DMA (Number/Description)	Total Area (acres)	Imperviousness (%)	Infiltration Feasibility Category (Full, Partial, or No Infiltration)	Hydrologic Source Controls Used
DMA-1: Building, driveway, hardscape, and landscape	0.355	48	No Infiltration	None

4.4 Source Control BMPs

Non-Structural Source Control BMPs				
Identifier	Name	Check One		Reason Source Control is Not Applicable
		Included	Not Applicable	
N1	Education for Property Owners, Tenants and Occupants	☒	☐	
N2	Activity Restrictions	☐	☒	N/A – single residential development
N3	Common Area Landscape Management	☒	☐	
N4	BMP Maintenance	☒	☐	
N5	Title 22 CCR Compliance (How development will comply)	☐	☒	No hazardous materials onsite.
N6	Local Industrial Permit Compliance	☐	☒	Not an industrial project.
N7	Spill Contingency Plan	☐	☒	No bulk storage of chemicals.
N8	Underground Storage Tank Compliance	☒	☐	
N9	Hazardous Materials Disclosure Compliance	☐	☒	No bulk storage of hazardous materials on-site.
N10	Uniform Fire Code Implementation	☐	☒	No bulk storage of hazardous materials on-site.
N11	Common Area Litter Control	☒	☐	
N12	Employee Training	☒	☐	
N13	Housekeeping of Loading Docks	☐	☒	N/A – residential development with no loading dock onsite.
N14	Common Area Catch Basin Inspection	☒	☐	
N15	Street Sweeping Private Streets and Parking Lots	☐	☒	N/A – single-family residential
N16	Retail Gasoline Outlets	☐	☒	Not a retail gasoline outlet.

N1 - Education for Property Owners, Tenants, and Occupants

Property owner(s) shall read and be familiar with this WQMP. The owner and occupants shall take an active role in promoting water quality (i.e. proper disposal of trash/waste, avoiding non-stormwater discharges, etc.). For more information, visit: http://ocwatersheds.com/publiced

N3 - Common Area Landscape Management

Property landscape management will be done under the supervision of the Owner. Plant material shall be selected with consideration taken for minimizing water and fertilizer requirements. Maintenance personnel shall be instructed to minimize irrigation, maintain the irrigation system in proper working condition, and keep inlet grates clear of debris. Maintenance shall be consistent with provisions of the Conservation Resolution and County Management Guidelines, EPA Preventing Pollution through Efficient Water Use, and Proper Use of Fertilizer and Pesticides.

N4-BMP Maintenance

See Inspection and Maintenance Responsibility & Frequency Plan in Attachment D.

N8-Underground Storage Tank Compliance

See Inspection and Maintenance Responsibility & Frequency Plan in Attachment D.

N11 - Litter Control

Litter within the boundaries of the subject property will be cleaned up by the owner or contracted maintenance company under the supervision of the property owner. Collected debris shall be placed in the appropriate waste container for off-site disposal or recycling.

N12 – Employee Training

All contracted landscape and maintenance personnel shall read and be familiar with this WQMP. A copy should be made available at time of hire, and subsequently accessible for the duration of the service contract. Discussions between property owner and maintenance personnel, regarding onsite water quality expectations, shall take place on an annual basis. See also link in N1 above.

N14 - Catch Basin Inspection

Drain inlets, catch basins, surface gutters, and outlets shall be inspected and cleaned prior to the rainy season (October 1st) each year. See Inspection and Maintenance Responsibility & Frequency Plan in Attachment D.

Structural Source Control BMPs				
Identifier	**Name**	**Check One**		**Reason Source Control is Not Applicable**
		Included	**Not Applicable**	
S1	Provide storm drain system stenciling and signage	☐	☒	Private residence
S2	Design and construct outdoor material storage areas to reduce pollution introduction	☐	☒	No significant outdoor material storage areas.
S3	Design and construct trash and waste storage areas to reduce pollution introduction	☒	☐	
S4	Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control	☒	☐	
S5	Protect slopes and channels and provide energy dissipation	☐	☒	Drainage devices provided upstream of proposed improvements. No project runoff is discharged onto slopes.
	Incorporate requirements applicable to individual priority project categories (from SDRWQCB NPDES Permit)	☐	☐	
S6	Dock areas	☐	☒	No dock areas.
S7	Maintenance bays	☐	☒	No maintenance bays.
S8	Vehicle wash areas	☐	☒	No vehicle wash areas.
S9	Outdoor processing areas	☐	☒	No outdoor processing areas.
S10	Equipment wash areas	☐	☒	No equipment wash areas.
S11	Fueling areas	☐	☒	No fueling areas.
S12	Hillside landscaping	☒	☐	
S13	Wash water control for food preparation areas	☐	☒	Single-family residence.
S14	Community car wash racks	☐	☒	Not a commercial car wash.

S3

The trash area is located at the Southwest corner of the residence, adjacent to the parking garage entrance. The ground around the trash area shall be kept clear of loose debris, and the lids to all containers shall remain closed when not in use.

S4

The irrigation system is to be designed and constructed to facilitate irrigation and avoid over-watering. The use of an automated timer system will control valve run times, and low precipitation heads will minimize the amount of water entering the landscape areas. The system shall be equipped with a moisture detection system and/or rain shut-off trigger(s) to avoid unnecessary irrigation. The use of drought-tolerant plant materials, and the grouping of different species with similar watering requirements, will help to reduce the amount of irrigation needed to maintain healthy vegetation on-

site. The property owner shall refer to the "Water Quality Guidelines for Landscaping and Gardening" (see Educational Materials attachments) for additional information.

S12

The sloped areas within the limits of this project shall be revegetated with native, drought-tolerant plant material. Temporary irrigation will be used until the vegetation on the slope has been established, at which point the irrigation system will be turned off.

Section 5 Low Impact Development BMP

5.1 LID BMPs in DMA-1

Infiltration Feasibility Category: Biotreatment with no Infiltration.

Harvest and Use Status: Not Feasible (insufficient demand)

Space constraints: None.

5.1.1 Hydrologic Source Controls for DMA-1

None used. Adequate treatment provided using structural LID BMPs.

5.1.2 Structural LID BMP for DMA-1

BMP Type:

The selected LID BMP for this DMA is a Bioretention (bio-infiltration with underdrain) BMP BIO-6. (see Attachment B for BIO-6 fact sheet)

BMP Sizing:

Sizing of "bioretention with underdrain" BMPs utilizes Worksheet 8 (see Attachment B).

BMP Design:

$DCV = C \times d \times A$

C = (0.75 × imp + 0.15) where: imp = 0.48

C = 0.51

d = 0.75 *inches*

A = 0.355 *ac.*

DCV = 0.75 x 0.51x 0.355 x 43,560 x (1 in./ 12 ft.)

DCV =493 c.f. See Worksheet 8

5.3 Summary of LID BMPs

DMA	DMA-1
BMP Type	Bio-retention BIO-6
$V_{treat-req}$	646.6 cu-ft
$V_{treated}$	724.2 cu-ft
$V_{media-retain}$	61.9 cu-ft
Sizing Criteria Met $V_{treated} > V_{treat-req}$	YES

Section 6 Hydromodification BMPs

Hydromodification Control BMPs are not required. See Section II.3 of this WQMP.

Hydromodification Control BMPs	
BMP Name	**BMP Description**
N/A.	

Section 7 Educational Materials Index

Educational Materials			
Residential Material (http://www.ocwatersheds.com)	**Check If Applicable**	**Business Material (http://www.ocwatersheds.com)**	**Check If Applicable**
The Ocean Begins at Your Front Door	☒	Tips for the Automotive Industry	☐
Tips for Car Wash Fund-raisers	☐	Tips for Using Concrete and Mortar	☐
Tips for the Home Mechanic	☐	Tips for the Food Service Industry	☐
Homeowners Guide for Sustainable Water Use	☒	Proper Maintenance Practices for Your Business	☐
Household Tips	☒	Compliance BMPs for Mobile Businesses	☐
Proper Disposal of Household Hazardous Waste	☒	**Other Material**	**Check If Attached**
Recycle at Your Local Used Oil Collection Center (North County)	☐		
Recycle at Your Local Used Oil Collection Center (Central County)	☐	Tips for Pool Maintenance	☒
Recycle at Your Local Used Oil Collection Center (South County)	☒		☐
Tips for Maintaining a Septic Tank System	☐		☐
Responsible Pest Control	☒		☐
Sewer Spill	☐		☐
Tips for the Home Improvement Projects	☒		☐
Tips for Horse Care	☐		☐
Tips for Landscaping and Gardening	☒		☐
Tips for Pet Care	☐		☐
Tips for Projects Using Paint	☐		☐

Attachment A: Educational Materials



Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, many common activities can lead to water pollution if you're not careful. Home improvement projects and work sites must be maintained to ensure that building materials do not enter the street, gutter or storm drain. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never dump building materials into the ocean, so don't let them enter the storm drains. Follow these tips to help prevent water pollution.

For more information,
please call the
Orange County Stormwater Program
at **1-877-89-SPILL** (1-877-897-7455)
or visit
www.ocwatersheds.com

To report a spill,
call the
Orange County 24-Hour
Water Pollution Problem
Reporting Hotline
at **1-877-89-SPILL** (1-877-897-7455).

For emergencies, dial 911.

The tips contained in this brochure provide useful information to help prevent water pollution while performing home improvement projects. If you have other suggestions, please contact your city's stormwater representatives or call the Orange County Stormwater Program.

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Help Prevent Ocean Pollution:

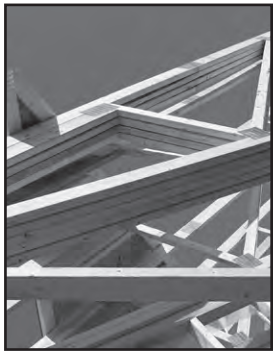
Tips for Home Improvement Projects



Tips for Home Improvement Projects

Home improvement projects can cause significant damage to the environment. Whether you hire a contractor or work on the house yourself, it is important to follow these simple tips while renovating, remodeling or improving your home:

General Construction



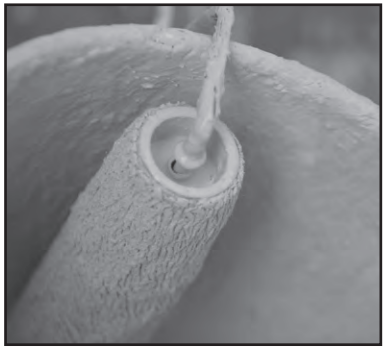
- Schedule projects for dry weather.
- Keep all construction debris away from the street, gutter and storm drain.
- Store materials under cover with temporary roofs or plastic sheets to eliminate or reduce the possibility that rainfall, runoff or wind will carry materials from the project site to the street, storm drain or adjacent properties.

Building Materials

- Never hose materials into a street, gutter or storm drain.
- Exposed piles of construction material should not be stored on the street or sidewalk.
- Minimize waste by ordering only the amount of materials needed to complete the job.
- Do not mix more fresh concrete than is needed for each project.
- Wash concrete mixers and equipment in a designated washout area where the water can flow into a containment area or onto dirt.
- Dispose of small amounts of dry excess materials in the trash. Powdery waste, such as dry concrete, must be properly contained within a box or bag prior to disposal. Call your local trash hauler for weight and size limits.

Paint

- Measure the room or object to be painted, then buy only the amount needed.
- Place the lid on firmly and store the paint can upside-down in a dry location away from the elements.
- Tools such as brushes, buckets and rags should never be washed where excess water can drain into the street, gutter or storm drain. All tools should be rinsed in a sink connected to the sanitary sewer.
- When disposing of paint, never put wet paint in the trash.
- Dispose of water-based paint by removing the lid and letting it dry in the can. Large amounts must be taken to a Household Hazardous Waste Collection Center (HHWCC).



- Oil-based paint is a household hazardous waste. All leftover paint should be taken to a HHWCC.
- For HHWCC locations and hours, call **(714) 834-6752** or visit **www.oclandfills.com**.

Erosion Control

- Schedule grading and excavation projects for dry weather.
- When temporarily removing soil, pile it in a contained, covered area where it cannot spill into the street, or obtain the required temporary encroachment or street closure permit and follow the conditions instructed by the permit.
- When permanently removing large quantities of soil, a disposal location must be found prior to excavation. Numerous businesses are available to handle disposal needs. For disposal options, visit **www.ciwmb.ca.gov/SWIS**.
- Prevent erosion by planting fast-growing annual and perennial grasses. They will shield and bind the soil.

Recycle

- Use a construction and demolition recycling company to recycle lumber, paper, cardboard, metals, masonry (bricks, concrete, etc.), carpet, plastic, pipes (plastic, metal and clay), drywall, rocks, dirt and green waste.



- For a listing of construction and demolition recycling locations in your area, visit **www.ciwmb.ca.gov/recycle.**

Spills

- Clean up spills immediately by using an absorbent material such as cat litter, then sweep it up and dispose of it in the trash.
- Immediately report spills that have entered the street, gutter or storm drain to the County's 24-Hour Water Pollution Problem Reporting Hotline at **1-877-897-7455** or visit **www.ocwatersheds.com** to fill out an incident reporting form.

PROJECT Pollution PREVENTION

Did You Know?

- Most people believe that the largest source of water pollution in urban areas comes from specific sources such as factories and sewage treatment plants. In fact, the largest source of water pollution comes from city streets, neighborhoods, construction sites and parking lots. This type of pollution is sometimes called "non-point source" pollution.
- There are two types of non-point source pollution: stormwater and urban runoff
- Stormwater runoff results from rainfall. When rainstorms cause large volumes of water to rinse the urban landscape, picking up pollutants along the way.
- Urban runoff can happen any time of the year when excessive water use from irrigation, vehicle washing and other sources carries trash, lawn clippings and other urban pollutants into storm drains.

Where Does It Go?

- Anything we use outside homes, vehicles and businesses – like motor oil, paint, pesticides, fertilizers and cleaners – can be blown or washed into storm drains.
- A little water from a garden hose or rain can also send materials into storm drains.
- Storm drains are separate from our sanitary sewer systems; unlike water in sanitary sewers (from sinks or toilets), water in storm drains is not treated before entering our waterways.

Sources of Non-Point Source Pollution

- Automotive leaks and spills.
- Improper disposal of used oil and other engine fluids.
- Metals found in vehicle exhaust, weathered paint, rust, metal plating and tires.
- Pesticides and fertilizers from lawns, gardens and farms.
- Improper disposal of cleaners, paint and paint removers.
- Soil erosion and dust debris from landscape and construction activities.
- Litter, lawn clippings, animal waste, and other organic matter.
- Oil stains on parking lots and paved surfaces.

The Effect on the Ocean

Non-point source pollution can have a serious impact on water quality in Orange County. Pollutants from the storm drain system can harm marine life as well as coastal and wetland habitats. They can also degrade recreation areas such as beaches, harbors and bays.

Stormwater quality management programs have been developed throughout Orange County to educate and encourage the public to protect water quality, monitor runoff in the storm drain system, investigate illegal dumping and maintain storm drains.

Support from Orange County residents and businesses is needed to improve water quality and reduce urban runoff pollution. Proper use and disposal of materials will help stop pollution before it reaches the storm drain and the ocean.

The Ocean Begins at Your Front Door

Even if you live miles from the Pacific Ocean, you may be unknowingly polluting it.

Dumping one quart of motor oil into a storm drain can contaminate 250,000 gallons of water.

PROJECT Pollution PREVENTION

For More Information

California Environmental Protection Agency
www.calepa.ca.gov

- **Air Resources Board**
  www.arb.ca.gov
- **Department of Pesticide Regulation**
  www.cdpr.ca.gov
- **Department of Toxic Substances Control**
  www.dtsc.ca.gov
- **Integrated Waste Management Board**
  www.ciwmb.ca.gov
- **Office of Environmental Health Hazard Assessment**
  www.oehha.ca.gov
- **State Water Resources Control Board**
  www.waterboards.ca.gov

Earth 911 - Community-Specific Environmental Information 1-800-cleanup or visit www.1800cleanup.org

Health Care Agency's Ocean and Bay Water Closure and Posting Hotline
(714) 433-6400 or visit www.ocbeachinfo.com

Integrated Waste Management Dept. of Orange County (714) 834-6752 or visit www.oclandfills.com for information on household hazardous waste collection centers, recycling centers and solid waste collection

O.C. Agriculture Commissioner
(714) 447-7100 or visit www.ocagcomm.com

Stormwater Best Management Practice Handbook
Visit www.cabmphandbooks.com

UC Master Gardener Hotline
(714) 708-1646 or visit www.uccemg.com

The Orange County Stormwater Program has created and moderates an electronic mailing list to facilitate communications, take questions and exchange ideas among its users about issues and topics related to stormwater and urban runoff and the implementation of program elements. To join the list, please send an email to ocstormwaterinfo-join@list.ocwatersheds.com

Orange County Stormwater Program

Aliso Viejo	(949)	425-2535
Anaheim Public Works Operations	(714)	765-6860
Brea Engineering	(714)	990-7666
Buena Park Public Works	(714)	562-3655
Costa Mesa Public Services	(714)	754-5323
Cypress Public Works	(714)	229-6740
Dana Point Public Works	(949)	248-3584
Fountain Valley Public Works	(714)	593-4441
Fullerton Engineering Dept.	(714)	738-6853
Garden Grove Public Works	(714)	741-5956
Huntington Beach Public Works	(714)	536-5431
Irvine Public Works	(949)	724-6315
La Habra Public Services	(562)	905-9792
La Palma Public Works	(714)	690-3310
Laguna Beach Water Quality	(949)	497-0378
Laguna Hills Public Services	(949)	707-2650
Laguna Niguel Public Works	(949)	362-4337
Laguna Woods Public Works	(949)	639-0500
Lake Forest Public Works	(949)	461-3480
Los Alamitos Community Dev.	(562)	431-3538
Mission Viejo Public Works	(949)	470-3056
Newport Beach, Code & Water Quality Enforcement	(949)	644-3215
Orange Public Works	(714)	532-6480
Placentia Public Works	(714)	993-8245
Rancho Santa Margarita	**(949)**	**635-1800**
San Clemente Environmental Programs	**(949)**	**361-6143**
San Juan Capistrano Engineering	**(949)**	**234-4413**
Santa Ana Public Works	**(714)**	**647-3380**
Seal Beach Engineering	**(562)**	**431-2527 x317**
Stanton Public Works	**(714)**	**379-9222 x204**
Tustin Public Works/Engineering	**(714)**	**573-3150**
Villa Park Engineering	**(714)**	**998-1500**
Westminster Public Works/Engineering	**(714)**	**898-3311 x446**
Yorba Linda Engineering	**(714)**	**961-7138**
Orange County Stormwater Program	**(877)**	**897-7455**

Orange County 24-Hour Water Pollution Problem Reporting Hotline 1-877-89-SPILL (1-877-897-7455)

On-line Water Pollution Problem Reporting Form
www.ocwatersheds.com

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The Ocean Begins at Your Front Door



Never allow pollutants to enter the street, gutter or storm drain!

Follow these simple steps to help reduce water pollution:

Household Activities

- Do not rinse spills with water. Use dry cleanup methods such as applying cat litter or another absorbent material, sweep and dispose of in the trash. Take items such as used or excess batteries, oven cleaners, automotive fluids, painting products and cathode ray tubes, like TVs and computer monitors, to a Household Hazardous Waste Collection Center (HHWCC).
- For a HHWCC near you call (714) 834-6752 or visit www.oclandfills.com.
- Do not hose down your driveway, sidewalk or patio to the street, gutter or storm drain. Sweep up debris and dispose of it in the trash.

Automotive

- Take your vehicle to a commercial car wash whenever possible. If you wash your vehicle at home, choose soaps, cleaners, or detergents labeled non-toxic, phosphate- free or biodegradable. Vegetable and citrus-based products are typically safest for the environment.
- Do not allow washwater from vehicle washing to drain into the street, gutter or storm drain. Excess washwater should be disposed of in the sanitary sewer (through a sink or toilet) or onto an absorbent surface like your lawn.
- Monitor your vehicles for leaks and place a pan under leaks. Keep your vehicles well maintained to stop and prevent leaks.
- Never pour oil or antifreeze in the street, gutter or storm drain. Recycle these substances at a service station, a waste oil collection center or used oil recycling center. For the nearest Used Oil Collection Center call 1-800-CLEANUP or visit www.1800cleanup.org.

Pool Maintenance

- Pool and spa water must be dechlorinated and free of excess acid, alkali or color to be allowed in the street, gutter or storm drain.
- When it is not raining, drain dechlorinated pool and spa water directly into the sanitary sewer.
- Some cities may have ordinances that do not allow pool water to be disposed of in the storm drain. Check with your city.

Landscape and Gardening

- Do not over-water. Water your lawn and garden by hand to control the amount of water you use or set irrigation systems to reflect seasonal water needs. If water flows off your yard onto your driveway or sidewalk, your system is over-watering. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of waste by composting, hauling it to a permitted landfill, or as green waste through your city's recycling program.
- Follow directions on pesticides and fertilizer, (measure, do not estimate amounts) and do not use if rain is predicted within 48 hours.
- Take unwanted pesticides to a HHWCC to be recycled. For locations and hours of HHWCC, call (714) 834-6752 or visit www.oclandfills.com.

Trash

- Place trash and litter that cannot be recycled in securely covered trash cans.
- Whenever possible, buy recycled products.
- Remember: Reduce, Reuse, Recycle.

Pet Care

- Always pick up after your pet. Flush waste down the toilet or dispose of it in the trash. Pet waste, if left outdoors, can wash into the street, gutter or storm drain.
- If possible, bathe your pets indoors. If you must bathe your pet outside, wash it on your lawn or another absorbent/permeable surface to keep the washwater from entering the street, gutter or storm drain.
- Follow directions for use of pet care products and dispose of any unused products at a HHWCC.

Common Pollutants

Home Maintenance

- Detergents, cleaners and solvents
- Oil and latex paint
- Swimming pool chemicals
- Outdoor trash and litter

Lawn and Garden

- Pet and animal waste
- Pesticides
- Clippings, leaves and soil
- Fertilizer

Automobile

- Oil and grease
- Radiator fluids and antifreeze
- Cleaning chemicals
- Brake pad dust



Do your part to prevent water pollution in our creeks, rivers, bays and ocean.

Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, not properly disposing of household hazardous waste can lead to water pollution. Batteries, electronics, paint, oil, gardening chemicals, cleaners and other hazardous materials cannot be thrown in the trash. They also must never be poured or thrown into yards, sidewalks, driveways, gutters or streets. Rain or other water could wash the materials into the storm drain and eventually into our waterways and the ocean. In addition, hazardous waste must not be poured in the sanitary sewers (sinks and toilets).

NEVER DISPOSE OF HOUSEHOLD HAZARDOUS WASTE IN THE TRASH, STREET, GUTTER, STORM DRAIN OR SEWER.

For more information, please call the **Orange County Stormwater Program** at **1-877-89-SPILL** (1-877-897-7455) or visit **www.ocwatersheds.com**

To Report Illegal Dumping of Household Hazardous Waste call 1-800-69-TOXIC

To report a spill, call the **Orange County 24-Hour Water Pollution Problem Reporting Hotline 1-877-89-SPILL** (1-877-897-7455).

For emergencies, dial 911.

RECYCLE USED OIL

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Help Prevent Ocean Pollution:

Proper Disposal of Household Hazardous Waste



The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

ORANGE COUNTY

Pollution Prevention

Leftover household products that contain corrosive, toxic, ignitable, or reactive ingredients are considered to be "household hazardous waste" or "HHW." HHW can be found throughout your home, including the bathroom, kitchen, laundry room and garage.

WHEN POSSIBLE, USE NON-HAZARDOUS OR LESS-HAZARDOUS PRODUCTS.

Disposal of HHW down the drain, on the ground, into storm drains, or in the trash is illegal and unsafe.

Proper disposal of HHW is actually easy. Simply drop them off at a Household Hazardous Waste Collection Center (HHWCC) for free disposal and recycling. Many materials including anti-freeze, latex-based paint, motor oil and batteries can be recycled. Some centers have a "Stop & Swap" program that lets you take partially used home, garden, and automobile products free of charge. There are four HHWCCs in Orange County:

Anaheim:.....1071 N. Blue Gum St
Huntington Beach:.....17121 Nichols St
Irvine:..... 6411 Oak Canyon
San Juan Capistrano:... 32250 La Pata Ave

Centers are open Tuesday-Saturday, 9 a.m.-3 p.m. Centers are closed on rainy days and major holidays. For more information, call **(714) 834-6752** or visit **www.oclandfills.com.**

Common household hazardous wastes

- Batteries
- Paint and paint products
- Adhesives
- Drain openers
- Household cleaning products
- Wood and metal cleaners and polishes
- Pesticides
- Fungicides/wood preservatives
- Automotive products (antifreeze, motor oil, fluids)
- Grease and rust solvents
- Fluorescent lamps
- Mercury (thermometers & thermostats)
- All forms of electronic waste including computers and microwaves
- Pool & spa chemicals
- Cleaners
- Medications
- Propane (camping & BBQ)
- Mercury-containing lamps
- Television & monitors (CRTs, flatscreens)

Tips for household hazardous waste

- Never dispose of HHW in the trash, street, gutter, storm drain or sewer.
- Keep these materials in closed, labeled containers and store materials indoors or under a cover.
- When possible, use non-hazardous products.
- Reuse products whenever possible or share with family and friends.
- Purchase only as much of a product as you'll need. Empty containers may be disposed of in the trash.
- HHW can be harmful to humans, pets and the environment. Report emergencies to 911.





Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, many common activities can lead to water pollution if you're not careful. Fertilizers, pesticides and other chemicals that are left on yards or driveways can be blown or washed into storm drains that flow to the ocean. Overwatering lawns can also send materials into storm drains. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never pour gardening products into the ocean, so don't let them enter the storm drains. Follow these easy tips to help prevent water pollution.

For more information, please call the **Orange County Stormwater Program** at **1-877-89-SPILL** (1-877-897-7455) or visit **www.ocwatersheds.com**

UCCE Master Gardener Hotline: (714) 708-1646

To report a spill, call the **Orange County 24-Hour Water Pollution Problem Reporting Hotline 1-877-89-SPILL** (1-877-897-7455).

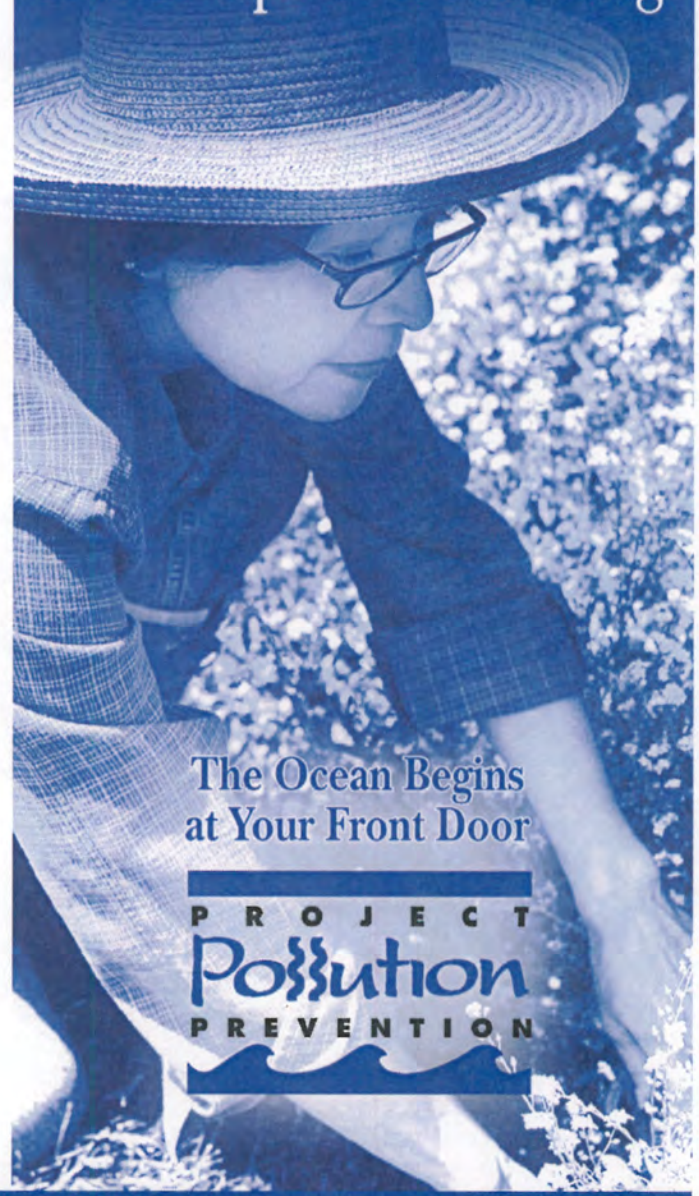
For emergencies, dial 911.

The tips contained in this brochure provide useful information to help prevent water pollution while landscaping or gardening. If you have other suggestions, please contact your city's stormwater representatives or call the Orange County Stormwater Program.

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Help Prevent Ocean Pollution:

Tips for Landscape & Gardening



The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

Tips for Landscape & Gardening

Never allow gardening products or polluted water to enter the street, gutter or storm drain.

General Landscaping Tips

- Protect stockpiles and materials from wind and rain by storing them under tarps or secured plastic sheeting.
- Prevent erosion of slopes by planting fast-growing, dense ground covering plants. These will shield and bind the soil.
- Plant native vegetation to reduce the amount of water, fertilizers, and pesticide applied to the landscape.



- Never apply pesticides or fertilizers when rain is predicted within the next 48 hours.

Garden & Lawn Maintenance

- Do not overwater. Use irrigation practices such as drip irrigation, soaker hoses or micro spray systems. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of green waste by composting, hauling it to a permitted landfill, or recycling it through your city's program.



- Use slow-release fertilizers to minimize leaching, and use organic fertilizers.
- Read labels and use only as directed. Do not over-apply pesticides or fertilizers. Apply to spots as needed, rather than blanketing an entire area.
- Store pesticides, fertilizers and other chemicals in a dry covered area to prevent exposure that may result in the deterioration of containers and packaging.



- Rinse empty pesticide containers and re-use rinse water as you would use the product. Do not dump rinse water down storm drains. Dispose of empty containers in the trash.
- When available, use non-toxic alternatives to traditional pesticides, and use pesticides specifically designed to control the pest you are targeting. For more information, visit **www.ipm.ucdavis.edu**.
- If fertilizer is spilled, sweep up the spill before irrigating. If the spill is liquid, apply an absorbent material such as cat litter, and then sweep it up and dispose of it in the trash.
- Take unwanted pesticides to a Household Hazardous Waste Collection Center to be recycled. Locations are provided below.

Household Hazardous Waste Collection Centers

Anaheim:	1071 N. Blue Gum St.
Huntington Beach:	17121 Nichols St.
Irvine:	6411 Oak Canyon
San Juan Capistrano:	32250 La Pata Ave.

For more information, call (714) 834-6752 or visit www.oclandfills.com



Clean beaches and healthy creeks, rivers, bays, and ocean are important to Orange County. However, many common activities can lead to water pollution if you're not careful. Swimming pools and spas are common in Orange County, but they must be maintained properly to guarantee that chemicals aren't allowed to enter the street, where they can flow into the storm drains and then into the waterways. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never dump pool chemicals into the ocean, so don't let it enter the storm drains. Follow these easy tips to help prevent water pollution.

For more information, please call the **Orange County Stormwater Program** at **1-877-89-SPILL** (1-877-897-7455) or visit **www.ocwatersheds.com**

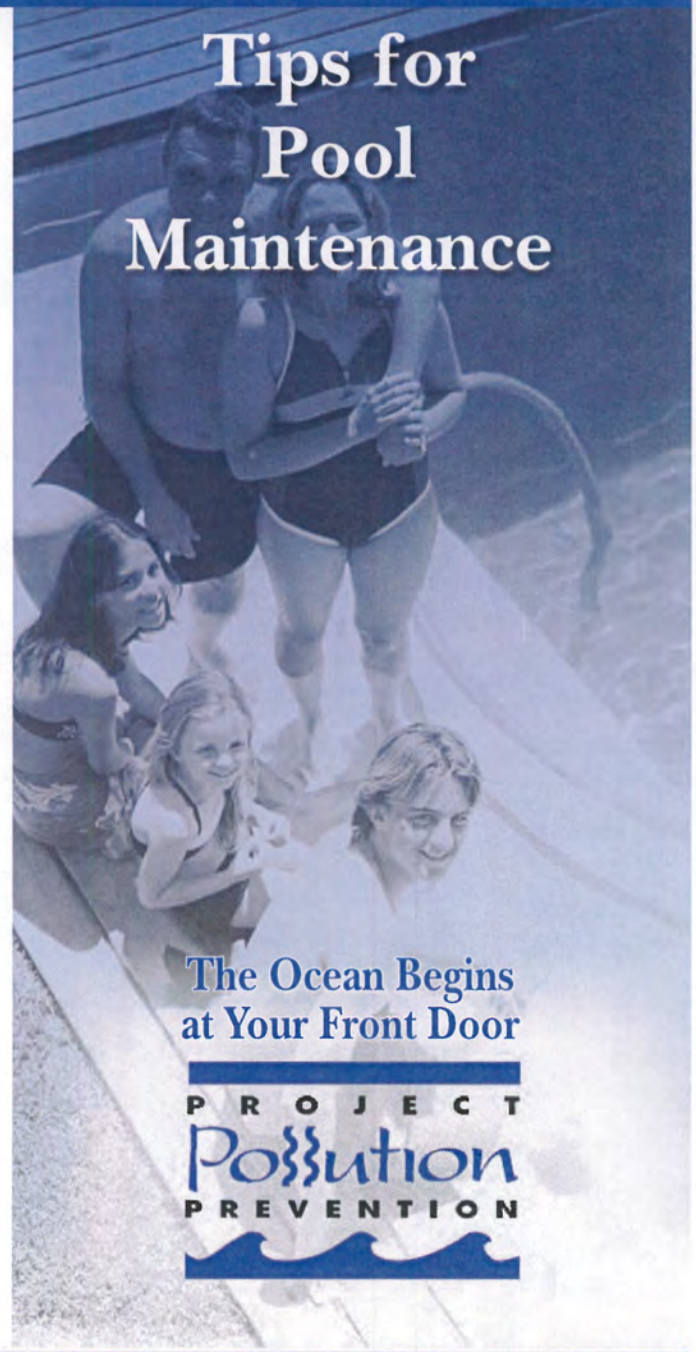
To report a spill, call the **Orange County 24-Hour Water Pollution Reporting Hotline 1-877-89-SPILL** (1-877-897-7455).

For emergencies, dial 911.

The tips contained in this brochure provide useful information to help prevent water pollution while maintaining your pool. If you have other suggestions, please contact your city's stormwater representatives or call the Orange County Stormwater Program.

Help Prevent Ocean Pollution:

Tips for Pool Maintenance



The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

Tips for Pool Maintenance

Many pools are plumbed to allow the pool to drain directly to the sanitary sewer. If yours is not, follow these instructions for disposing of pool and spa water.



Acceptable and Preferred Method of Disposal

When you cannot dispose of pool water in the sanitary sewer, the release of dechlorinated swimming pool water is allowed if all of these tips are followed:

- The residual chlorine does not exceed 0.1 mg/l (parts per million).
- The pH is between 6.5 and 8.5.
- The water is free of any unusual coloration, dirt or algae.
- There is no discharge of filter media.
- There is no discharge of acid cleaning wastes.
- Some cities may have ordinances that do not allow pool water to be disposed into a storm drain. Check with your city.

How to Know if You're Following the Standards

You can find out how much chlorine is in your water by using a pool testing kit. Excess chlorine can be removed by discontinuing the use of chlorine for a few days prior to discharge or by purchasing dechlorinating chemicals from a local pool supply company. Always make sure to follow the instructions that come with any products you use.





Doing Your Part

By complying with these guidelines, you will make a significant contribution toward keeping pollutants out of Orange County's creeks, streams, rivers, bays and the ocean. This helps to protect organisms that are sensitive to pool chemicals, and helps to maintain the health of our environment.

PROJECT Pollution PREVENTION

Do your part to prevent water pollution in our creeks, rivers, bays and ocean.

Clean beaches and healthy creeks, rivers, bays, and ocean are important to Orange County. However, many common household activities can lead to water pollution if you're not careful.

Remember the Water in Your Storm Drain is Not Treated BEFORE It Enters Our Waterways

Litter, oil, chemicals and other substances that are left on your yard or driveway can be blown or washed into storm drains that flow to the ocean. Over-watering your lawn and washing your car can also flush materials into the storm drains. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated.

You would never pour soap, fertilizers or oil into the ocean, so don't let them enter streets, gutters or storm drains. Follow the easy tips in this brochure to help prevent water pollution.

For more information, please call the **Orange County Stormwater Program** at **1-877-89-SPILL** (1-877-897-7455) or visit **www.ocwatersheds.com**

To report a spill, call the **Orange County 24-Hour Water Pollution Problem Reporting Hotline 1-877-89-SPILL** (1-877-897-7455).

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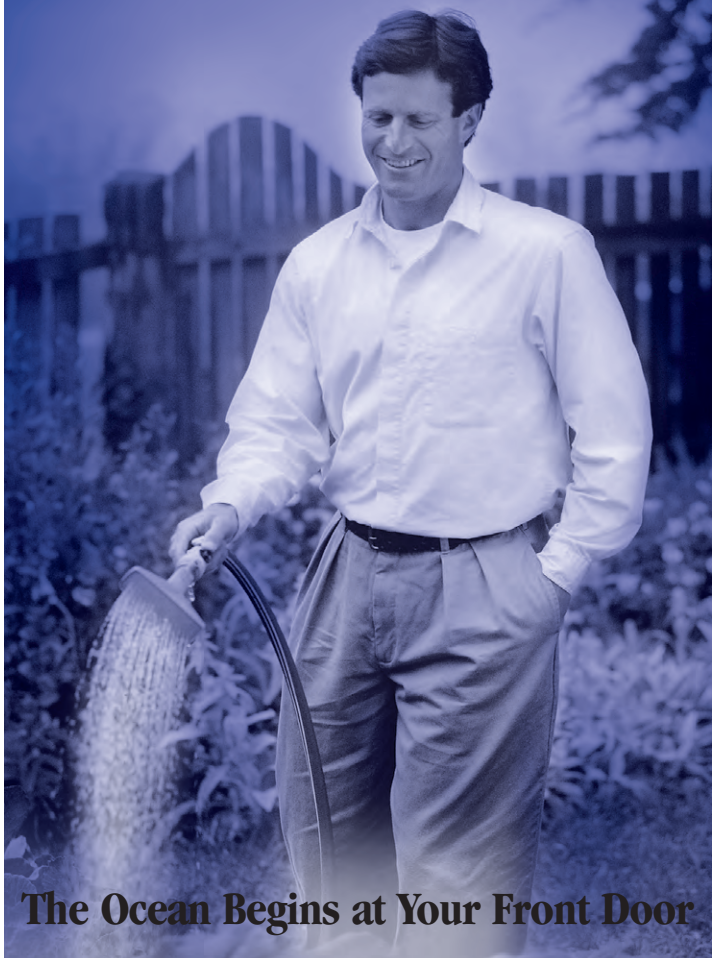
The tips contained in this brochure provide useful information to help prevent water pollution while performing everyday household activities. If you have other suggestions, please contact your city's stormwater representatives or call the Orange County Stormwater Program.

GENUINE RECYCLED PAPER
50% PRE-CONSUMER AND 15% POST-CONSUMER

RECYCLE USED OIL

Help Prevent Ocean Pollution:

Household Tips



The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

Pollution Prevention

Household Activities

- **Do not rinse spills with water!** Sweep outdoor spills and dispose of in the trash. For wet spills like oil, apply cat litter or another absorbent material, then sweep and bring to a household hazardous waste collection center (HHWCC).
- Securely cover trash cans.
- Take household hazardous waste to a household hazardous waste collection center.
- Store household hazardous waste in closed, labeled containers inside or under a cover.
- Do not hose down your driveway, sidewalk or patio. Sweep up debris and dispose of in trash.
- Always pick up after your pet. Flush waste down the toilet or dispose of in the trash.
- Bathe pets indoors or have them professionally groomed.

Household Hazardous Wastes include:

- ▲ **Batteries**
- ▲ **Paint thinners, paint strippers and removers**
- ▲ **Adhesives**
- ▲ **Drain openers**
- ▲ **Oven cleaners**
- ▲ **Wood and metal cleaners and polishes**
- ▲ **Herbicides and pesticides**
- ▲ **Fungicides/wood preservatives**
- ▲ **Automotive fluids and products**
- ▲ **Grease and rust solvents**
- ▲ **Thermometers and other products containing mercury**
- ▲ **Fluorescent lamps**
- ▲ **Cathode ray tubes, e.g. TVs, computer monitors**
- ▲ **Pool and spa chemicals**

Gardening Activities

- Follow directions on pesticides and fertilizers, (measure, do not estimate amounts) and do not use if rain is predicted within 48 hours.
- Water your lawn and garden by hand to control the amount of water you use. Set irrigation systems to reflect seasonal water needs. If water flows off your yard and onto your driveway or sidewalk, your system is over-watering.
- Mulch clippings or leave them on the lawn. If necessary, dispose in a green waste container.
- Cultivate your garden often to control weeds.

Washing and Maintaining Your Car

- Take your car to a commercial car wash whenever possible.
- Choose soaps, cleaners, or detergents labeled "non-toxic," "phosphate free" or "biodegradable." Vegetable and citrus-based products are typically safest for the environment, **but even these should not be allowed into the storm drain.**
- Shake floor mats into a trash can or vacuum to clean.
- Do not use acid-based wheel cleaners and "hose off" engine degreasers at home. They can be used at a commercial facility, which can properly process the washwater.
- **Do not dump washwater onto your driveway, sidewalk, street, gutter or storm drain.** Excess washwater should be disposed of in the sanitary sewers (through a sink, or toilet) or onto an absorbent surface like your lawn.
- Use a nozzle to turn off water when not actively washing down automobile.
- Monitor vehicles for leaks and place pans under leaks. Keep your car well maintained to stop and prevent leaks.
- Use cat litter or other absorbents and sweep to remove any materials deposited by vehicles. Contain sweepings and dispose of at a HHWCC.
- Perform automobile repair and maintenance under a covered area and use drip pans or plastic sheeting to keep spills and waste material from reaching storm drains.
- **Never pour oil or antifreeze in the street, gutter or storm drains.** Recycle these substances at a service station, HHWCC, or used oil recycling center. For the nearest Used Oil Collection Center call 1-800-CLEANUP or visit www.ciwmb.ca.gov/UsedOil.

For locations and hours of Household Hazardous Waste Collection Centers in Anaheim, Huntington Beach, Irvine and San Juan Capistrano, call (714)834-6752 or visit www.oclandfills.com.



Did you know that just one quart of oil can pollute 250,000 gallons of water?

A clean ocean and healthy creeks, rivers, bays and beaches are important to Orange County. However, not properly disposing of used oil can lead to water pollution. If you pour or drain oil onto driveways, sidewalks or streets, it can be washed into the storm drain. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering the ocean. Help prevent water pollution by taking your used oil to a used oil collection center.

Included in this brochure is a list of locations that will accept up to five gallons of used motor oil at no cost. Many also accept used oil filters. Please contact the facility before delivering your used oil. This listing of companies is for your reference and does not constitute a recommendation or endorsement of the company.

Please note that used oil filters may not be disposed of with regular household trash. They must be taken to a household hazardous waste collection or recycling center in Anaheim, Huntington Beach, Irvine or San Juan Capistrano. For information about these centers, visit www.oclandfills.com.

Please do not mix your oil with other substances!

For more information, please call the Orange County Stormwater Program at 1-877-89-SPILL (1-877-897-7455) or visit www.watersheds.com.

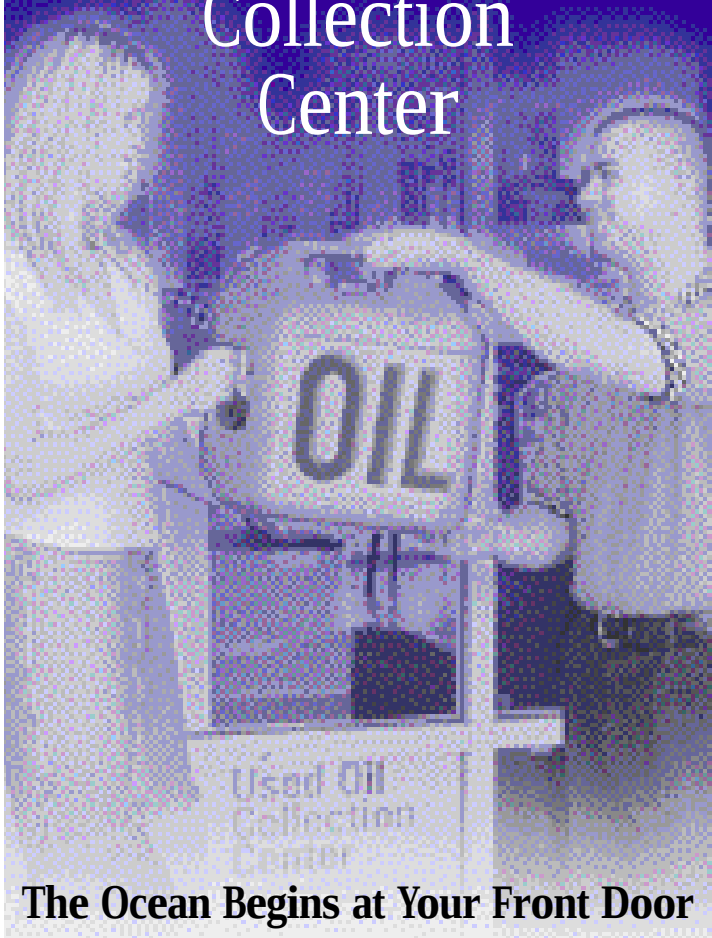
For information about the proper disposal of household hazardous waste, call the Household Waste Hotline at (714) 834-6752 or visit www.oclandfills.com.

RECYCLE USED OIL

For additional information about the nearest oil recycling center, call the Used Oil Program at 1-800-CLEANUP or visit www.cleanup.org.

Help Prevent Ocean Pollution:

Recycle at Your Local Used Oil Collection Center



The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

SOUTH COUNTY

Used Oil Collection Centers

ALISO VIEJO

Big O Tires
27812 Aliso Creek Rd, Suite E-100
(949) 362-4225

Econo Lube N' Tune
22932 Glenwood Dr.
(949) 643-9667

Jiffy Lube
27832 Aliso Creek Road
(949) 362-0005

Pep Boys
26881 Aliso Creek Road
(949) 362-9254

DANA POINT

Dana Point Fuel Dock
34661 Puerto Pl. (949) 496-6113

EZ Lube Inc.
34242 Doheny Park Rd.
(949) 477-1223

FOOTHILL RANCH

USA Express Tire & Service
26492 Town Center Dr.
(714) 826-1001

LAGUNA BEACH

USA Express Tire & Service Inc.
350 Broadway (949) 494-7111

LAKE FOREST

Big O Tires
20742 Lake Forest Dr.
(949) 443-4155

EZ Lube
26731 Rancho Parkway
(949) 465-9912

Firestone Store
24421 Rockfield Blvd.
(949) 581-2660

Jiffy Lube
20781 Lake Forest Dr.
(949) 583-0470

Kragen Auto Parts
24601 Raymond Way
(949) 829-8292

Pep Boys
22671 Lake Forest Dr.
(949) 855-9593

Ryan's Foothill Ranch Transmission
20622 Pascal Way (949) 770-6888

USA Express Tire & Service
24561 Trabuco Rd (949) 454-8001

LAGUNA NIGUEL

Econo Lube N Tune
27912 Forbes Rd. (949) 364-5833

Laguna Niguel Auto Center
26042 Cape Dr. #12
(949) 582-2191

LAGUNA HILLS

David J Phillips Buick
24888 Alicia Pkwy.
(949) 831-0434

EZ Lube
24281 Moulton Pkwy.
(949) 830-9840

EZ Lube
26921 Moulton Pkwy.
(949) 751-3436

Kragen Auto Parts
26562 Moulton Ave.
(949) 831-0434

Firestone Store
24196 Laguna Hills Mall
(949) 581-4700

MISSION VIEJO

AAA Complete Auto Care & Tire
27913 Center Street
(949) 347-8200

Autobahn West
25800 Jeronimo Rd. Suite 401
(949) 770-2312

Auto Zone
22942 Los Alisos (949) 830-8181

Econo Lube & Tune
25902 El Paseo (949) 582-5483

Jiffy Lube
27240 La Paz Rd. (949) 455-0470

Kragen Auto Parts
24510 Alicia Pkwy. (949) 951-9175

Mission Viejo Chevron
27742 Crown Vly. Pkwy.
(949) 364-0137

Oilmax 10 Minute Lube
25800 Jeronimo Rd. #300
(949) 859-9271

Ramona Auto Service
27210 La Paz Rd. (949) 583-1233

RANCHO SANTA MARGARITA

Jiffy Lube
23401 Antonio Parkway
(949) 589-7447

SAN CLEMENTE

EZ Lube
525 Avenida Pico (949) 940-1850

Kragen Auto Parts
1113 S. El Camino Real
(949) 492-9850

Kragen Auto Parts
400 Camino de Estrella
(949) 240-9195

San Clemente Car Wash & Oil
1731 N. El Camino Real
(949) 847-4924

SAN JUAN CAPISTRANO

Saturn of San Juan Capistrano
33033 Camino Capistrano
(949) 248-5411

Texaco Xpress Lube
27201 Ortega Hwy.
(949) 489-8008

This information was provided by the County of Orange Integrated Waste Management Department and the California Integrated Waste Management Board (CIWMB).



Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, many common activities such as pest control can lead to water pollution if you're not careful. Pesticide treatments must be planned and applied properly to ensure that pesticides do not enter the street, gutter or storm drain. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never dump pesticides into the ocean, so don't let it enter the storm drains. Pesticides can cause significant damage to our environment if used improperly. If you are thinking of using a pesticide to control a pest, there are some important things to consider.

For more information,
please call
University of California Cooperative
Extension Master Gardeners at
(714) 708-1646
or visit these Web sites:
www.uccemg.org
www.ipm.ucdavis.edu

For instructions on collecting a specimen sample visit the Orange County Agriculture Commissioner's website at:
http://www.ocagcomm.com/ser_lab.asp

To report a spill, call the
Orange County 24-Hour
Water Pollution Problem
Reporting Hotline
at 1-877-89-SPILL (1-877-897-7455).

For emergencies, dial 911.

Information From:
Cheryl Wilen, Area IPM Advisor; Darren Haver, Watershed Management Advisor; Mary Louise Flint, IPM Education and Publication Director; Pamela M. Geisel, Environmental Horticulture Advisor; Carolyn L. Unruh, University of California Cooperative Extension staff writer. Photos courtesy of the UC Statewide IPM Program and Darren Haver.

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Help Prevent Ocean Pollution:

Responsible Pest Control



Tips for Pest Control

Key Steps to Follow:

Step 1: **Correctly identify the pest (insect, weed, rodent, or disease) and verify that it is actually causing the problem.**



Three life stages of the common lady beetle, a beneficial insect.

This is important because beneficial insects are often mistaken for pests and sprayed with pesticides needlessly.

Consult with a Certified Nursery Professional at a local nursery or garden center or send a sample of the pest to the Orange County Agricultural Commissioner's Office.

Determine if the pest is still present – even though you see damage, the pest may have left.

Step 2: **Determine how many pests are present and causing damage.**



Small pest populations may be controlled more safely using non-pesticide techniques. These include removing food sources, washing off leaves with a strong stream of water, blocking entry into the home using caulking and replacing problem plants with ones less susceptible to pests.

Integrated Pest Management (IPM) usually combines several least toxic pest control methods for long-term prevention and management of pest problems without harming you, your family, or the environment.

UC CE University of California Cooperative Extension

Step 3: **If a pesticide must be used, choose the least toxic chemical.**

Obtain information on the least toxic pesticides that are effective at controlling the target pest from the UC Statewide Integrated Pest Management (IPM) Program's Web site at www.ipm.ucdavis.edu.

Seek out the assistance of a Certified Nursery Professional at a local nursery or garden center when selecting a pesticide. Purchase the smallest amount of pesticide available.

Apply the pesticide to the pest during its most vulnerable life stage. This information can be found on the pesticide label.

Step 4: **Wear appropriate protective clothing.**

Follow pesticide labels regarding specific types of protective equipment you should wear. Protective clothing should always be washed separately from other clothing.

Step 5: **Continuously monitor external conditions when applying pesticides such as weather, irrigation, and the presence of children and animals.**

Never apply pesticides when rain is predicted within the next 48 hours. Also, do not water after applying pesticides unless the directions say it is necessary.

Apply pesticides when the air is still; breezy conditions may cause the spray or dust to drift away from your targeted area.

In case of an emergency call 911 and/or the regional poison control number at (714) 634-5988 or (800) 544-4404 (CA only).

For general questions you may also visit www.calpoison.org.

Step 6: **In the event of accidental spills, sweep up or use an absorbent agent to remove any excess pesticides. Avoid the use of water.**

Be prepared. Have a broom, dust pan, or dry absorbent material, such as cat litter, newspapers or paper towels, ready to assist in cleaning up spills.

Contain and clean up the spill right away. Place contaminated materials in a doubled plastic bag. All materials used to clean up the spill should be properly disposed of according to your local Household Hazardous Waste Disposal site.

Step 7: **Properly store and dispose of unused pesticides.**



Purchase Ready-To-Use (RTU) products to avoid storing large concentrated quantities of pesticides.

Store unused chemicals in a locked cabinet.

Unused pesticide chemicals may be disposed of at a Household Hazardous Waste Collection Center.

Empty pesticide containers should be triple rinsed prior to disposing of them in the trash.

Household Hazardous Waste Collection Center
(714) 834-6752
www.oclandfills.com

PROJECT Pollution PREVENTION

The Pollution Solution

Several residential activities can result in water pollution. Among these activities are car washing and hosing off driveways and sidewalks. Both activities can waste water and result in excess runoff. Water conservation methods described in this pamphlet can prevent considerable amounts of runoff and conserve water. By taking your car to a commercial car wash and by sweeping driveways and sidewalks, you can further prevent the transport of pollutants to Orange County waterways. Here are some of the common pollutants for which you can be part of the solution:

1 Pesticides and Fertilizer



- **Pollution:** The same pesticides that are designed to be toxic to pests can have an equally lethal impact on our marine life. The same fertilizer that promotes plant growth in lawns and gardens can also create nuisance algae blooms, which remove oxygen from the water and clog waterways when it decomposes.

- **Solution:** Never use pesticides or fertilizer within 48 hours of an anticipated rainstorm. Use only as much as is directed on the label and keep it off driveways and sidewalks.

2 Dirt and Sediment

- **Pollution:** Dirt or sediment can impede the flow of the stormwater and negatively impact stream habitat as it travels through waterways and deposits downstream. Pollutants can attach to sediment, which can then be transported through our waterways.

- **Solution:** Protect dirt stockpiles by covering them with tarps or secure plastic sheets to prevent wind or rain from allowing dirt or sediment to enter the storm drain system.

3 Metals

- **Pollution:** Metals and other toxins present in car wash water can harm important plankton, which forms the base of the aquatic food chain.

- **Solution:** Take your car to a commercial car wash where the wash water is captured and treated at a local wastewater treatment plant.

DID YOU KNOW?

Did you know that most of the pollution found in our waterways is not from a single source, but from a "non-point" source meaning the accumulation of pollution from residents and businesses throughout the community

4 Pet Waste

- **Pollution:** Pet waste carries bacteria through our watersheds and eventually will be washed out to the ocean. This can pose a health risk to swimmers and surfers.

- **Solution:** Pick up after your pets!

5 Trash and Debris



- **Pollution:** Trash and debris can enter waterways by wind, littering and careless maintenance of trash receptacles. Street sweeping collects some of this trash; however, much of what isn't captured ends up in our storm drain system where it flows untreated out to the ocean.

- **Solution:** Don't litter and make sure trash containers are properly covered. It is far more expensive to clean up the litter and trash that ends up in our waterways than it is to prevent it in the first place. Come out to one of Orange County's many locations for Coastal and Inner-Coastal Cleanup Day, which is held in September.

6 Motor Oil / Vehicle Fluids

- **Pollution:** Oil and petroleum products from our vehicles are toxic to people, wildlife and plants.



- **Solution:** Fix any leaks from your vehicle and keep the maintenance up on your car. Use absorbent material such as cat litter on oil spills, then sweep it up and dispose of it in the trash. Recycle used motor oil at a local Household Hazardous Waste Collection Center.



A TEAM EFFORT

The Orange County Stormwater Program has teamed with the Municipal Water District of Orange County (MWDOC) and the University of California Cooperative Extension Program (UCCE) to develop this pamphlet.

Low Impact Development (LID) and sustainable water use prevents water pollution and conserves water for drinking and reuse. Reducing your water use and the amount of water flowing from your home protects the environment and saves you money.

Thank you for making water protection a priority!

For more information, please visit www.ocwatersheds.com/publiced/

www.mwdoc.com

www.uccemg.com



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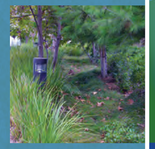
Special Thanks to
The City of Los Angeles Stormwater Program for the use of its artwork

The Metropolitan Water District of Southern California for the use of the California-Friendly Plant and Native Habitat photos



Homeowners Guide for Sustainable Water Use

Low Impact Development, Water Conservation & Pollution Prevention



The Ocean Begins at Your Front Door







RUNOFF, RAINWATER AND REUSE

Where Does Water Runoff Go?

Stormwater, or water from rainfall events, and runoff from outdoor water use such as sprinklers and hoses flows from homes directly into catch basins and the storm drain system. After entering the storm drain, the water flows untreated into streams, rivers, bays and ultimately the Pacific Ocean. Runoff can come from lawns, gardens, driveways, sidewalks and roofs. As it flows over hard, impervious surfaces, it picks up pollutants. Some pollutants carried by the water runoff include trash, pet waste, pesticides, fertilizer, motor oil and more.





Water Conservation

Pollution not only impairs the water quality for habitat and recreation, it can also reduce the water available for reuse. Runoff allowed to soak into the ground is cleaned as it percolates through the soil, replenishing depleted groundwater supplies. Groundwater provides at least 50% of the total water for drinking and other indoor household activities in north and central Orange County. When land is covered with roads, parking lots, homes, etc., there is less land to take in the water and more hard surfaces over which the water can flow.

In Orange County, 60-70% of water used by residents and businesses goes to irrigation and other outdoor uses. Reusing rainwater to irrigate our lawn not only reduces the impact of water pollution from runoff, but it also is a great way to conserve our precious water resources and replenish our groundwater basin.



What is Low Impact Development (LID)?

Low Impact Development (LID) is a method of development that seeks to maintain the natural hydrologic character of an area. LID provides a more sustainable and pollution-preventative approach to water management.

New water quality regulations require implementation of LID in larger new developments and encourage implementation of LID and other sustainable practices in existing residential areas. Implementing modifications to your lawn or garden can reduce pollution in our environment, conserve water and reduce your water bill.



Permeable pavement allows water runoff to infiltrate through the soil and prevents most pollutants from reaching the storm drain system.

OPTIONS FOR RAINWATER HARVESTING AND REUSE

Rainwater harvesting is a great way to save money, prevent pollution and reduce potable water use. To harvest your rainwater, simply redirect the runoff from roofs and downspouts to rain barrels. Rain gardens are another option; these reduce runoff as well as encourage infiltration.

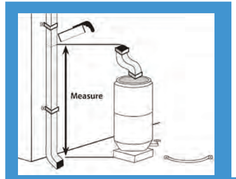
Downspout Disconnection/Redirection

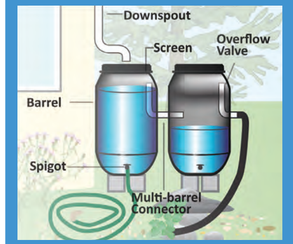
Disconnecting downspouts from pipes running to the gutter prevents runoff from transporting pollutants to the storm drain. Once disconnected, downspouts can be redirected to rain gardens or other vegetated areas, or be connected to a rain barrel.

Rain Barrels

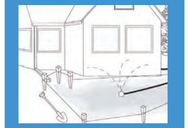
Rain barrels capture rainwater flow from roofs for reuse in landscape irrigation. Capacity of rain barrels needed for your home will depend on the amount of roof area and rainfall received. When purchasing your rain barrel, make sure it includes a screen, a spigot to siphon water for use, an overflow tube to allow for excess water to run out and a connector if you wish to connect multiple barrels to add capacity of water storage.

Mosquito growth prevention is very important when installing a rain barrel. The best way to prevent mosquito breeding is to eliminate entry points by ensuring all openings are sealed tightly. If these methods are unsuccessful, products are available to kill mosquito larvae, but that are harmless to animals and humans. Regular application of these products is essential. Please visit the Orange County Vector Control website for more information at www.ocvcd.org/mosquitoes3.php.





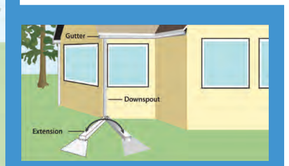




Rain Gardens

Rain gardens allow runoff to be directed from your roof downspout into a landscaped area. Vegetation and rocks in the garden will slow the flow of water to allow for infiltration into the soil. Plants and soil particles will absorb pollutants from the roof runoff. By utilizing a native plant palate, rain gardens can be maintained all year with minimal additional irrigation. These plants are adapted to the semi-arid climate of Southern California, require less water and can reduce your water bill.

Before modifying your yard to install a rain garden, please consult your local building and/or planning departments to ensure your garden plan follows pertinent building codes and ordinances. Besides codes and ordinances, some home owner associations also have guidelines for yard modifications. If your property is in hill areas or includes engineered slopes, please seek professional advice before proceeding with changes.



For information on how to disconnect a downspout or to install and maintain a rain barrel or rain garden at your home, please see the Los Angeles Rainwater Harvesting Program, A Homeowner's "How-To" Guide, November 2009 at www.larainwaterharvesting.org/

OTHER WATER CONSERVATION AND POLLUTION PREVENTION TECHNIQUES

Native Vegetation and Maintenance

"California Friendly" plants or native vegetation can significantly reduce water use. These plants often require far less fertilizers and pesticides, which are two significant pollutants found in Orange County waterways. Replacing water "thirsty" plants and grass types with water efficient natives is a great way to save water and reduce the need for potentially harmful pesticides and fertilizer.

Please see the California Friendly Garden Guide produced by the Metropolitan Water District of Southern California and associated Southern California Water Agencies for a catalog of California friendly plants and other garden resources at www.bewaterwise.com/Gardensoft.

Weed Free Yards

Weeds are water thieves. They often reproduce quickly and rob your yard of both water and nutrients. Weed your yard by hand if possible. If you use herbicides to control the weeds, use only the amount recommended on the label and never use it if rain is forecast within the next 48 hours.



Soil Amendments

Soil amendments such as green waste (e.g. grass clippings, compost, etc.) can be a significant source of nutrients and can help keep the soil near the roots of plants moist. However, they can cause algal booms if they get into our waterways, which reduces the amount of oxygen in the water and impacts most aquatic organisms. It is important to apply soil amendments more than 48 hours prior to predicted rainfall.

IRRIGATE EFFICIENTLY



Water runoff from sprinklers left on too long will carry pollutants into our waterways.

Smart Irrigation Controllers

Smart Irrigation Controllers have internal clocks as well as sensors that will turn off the sprinklers in response to environmental changes. If it is raining, too windy or too cold, the smart irrigation control sprinklers will automatically shut off.

Check with your local water agency for available rebates on irrigation controllers and smart timers.

- Aim your sprinklers at your lawn, not the sidewalk – By simply adjusting the direction of your sprinklers you can save water, prevent water pollution from runoff, keep your lawn healthy and save money.
- **Set a timer for your sprinklers** – lawns absorb the water they need to stay healthy within a few minutes of turning on the sprinklers. Time your sprinklers; when water begins running off your lawn, you can turn them off. Your timer can be set to water your lawn for this duration every time.
- **Water at Sunrise** – Watering early in the morning will reduce water loss due to evaporation. Additionally, winds tend to die down in the early morning so the water will get to the lawn as intended.
- **Water by hand** – Instead of using sprinklers, consider watering your yard by hand. Hand-watering ensures that all plants get the proper amount of water and you will prevent any water runoff, which wastes water and carries pollutants into our waterways.
- **Fix leaks** - Nationwide, households waste one trillion gallons of water a year to leaks – that is enough water to serve the entire state of Texas for a year. If your garden hose is leaking, replace the nylon or rubber hose washer and ensure a tight connection. Fix broken sprinklers immediately.

Attachment B: WQMP Worksheets & Fact Sheets

MISC-1: BIORETENTION SOIL MEDIA

Also known as:

- *Bioretention media*
- *Biofiltration media*



Street-end biofiltration with planting/storage media
Source: City of Portland

Bioretention soil media is a critical design element for bioretention BMPs, including INF-3, BIO-1, and BIO-6. It is also part of the design of some configurations of swales (BIO-2) and filter strips (BIO-3). Finally, it can be used as a filtering layer below infiltration systems to augment treatment and protect groundwater quality.

All bioretention soil media must provide appropriate properties for filtering stormwater and supporting vegetation.

In addition, for systems that filter water through BSM into an underdrain (BIO-1, BIO-6), additional criteria apply for media infiltration rate and chemical suitability to avoid pollutant leaching or premature clogging.

Applicability of BSM Specification Elements

The model specifications described in this fact sheet include elements that do not apply to all BMP types. The following table identifies the elements of the model specifications that apply to the different types of BMPs.

BMP Type	Composition and Material Specifications	Basic Testing of Combined Mix	Infiltration Testing of Combined Mix	Chemical Suitability Testing of Combined Mix (leaching potential)
Bioretention with Underdrains (BIO-1, BIO-6)	X	X	X	X
BIO-1 or BIO-6 draining to nutrient-sensitive water bodies	X	X	X	X
Bioretention without Underdrains (INF-3)	X	X		
Amended Soils as Treatment Layer in Other Infiltration BMPs	X	X		
Swales (BIO-2) with Amended Soil Layer	X	X		
Filter Strips (BIO-3)	X	X		

General Criteria and Composition

- BSM should consist of 70 to 80% fine sand and 20 to 30% stable, well aged compost **by volume**, each meeting the quality standards described in the following sections. Alternative mix designs may be developed and tested to demonstrate suitability. Deviations from these ranges and material types may also be needed to achieve low nutrient leaching designs, where necessary. [*Note: The unit weight of compost is typically less than half of the unit weight of sand. Therefore, the percentage by mass is different.]*
- BSM should be designed to achieve the long term hydraulic design requirements associated with the design of the facility (i.e., design infiltration rate).
    - For BIO-1 and BIO-6 (systems with underdrains), the hydraulic conductivity should be evaluated via testing and conform to an acceptable range due to the importance of this value in sizing and performance of systems. Selection of an appropriate infiltration rate and evaluation of mix acceptability is described in "Infiltration Rate Evaluation" section of this Fact Sheet.
    - For other applications of BSM, infiltration rate of media is not as critical in design and can be assured via simpler checks on particle size information obtained as part of "Basic Whole Mix Testing Recommendations" part of this Fact Sheet.
- BSM should support the growth of hardy native plants suited to a well drained sandy soil. However BSM should not be excessively enriched, which can lead to excessive weeds and leaching of nutrients. Agronomic suitability and avoidance of excessive nutrient leaching is evaluated as part of "Basic Whole Mix Testing Recommendations" part of this Fact Sheet.
- BSM for use in BIO-1 or BIO-6 (systems with underdrains) should be more carefully evaluated for nutrient and other pollutant leaching potential as described in "Chemical Suitability Evaluation" part of this Fact Sheet.
- Blending should be conducted at a soil blending facility using an appropriate mechanical method to achieve complete and uniform mixing, such as a drum mixer. Moving piles of material around with a loader and/or transferring back and forth between bins to mix components is typically not adequate to achieve uniform mixing.
- Testing of the actual whole BSM mix to be delivered to the project is strongly recommended; prior testing conducted by the manufacturer may be used in place of project-specific testing provided that it is recent (within 6 months) and represents the actual mix proportions and compontents that are proposed for the project.
- Procurement, handling, and placement of BSM should adhere to guidelines in "Construction Guidelines" part of this Fact Sheet.

Sand for Bioretention Soil Media

- Sand should be free of wood, waste, coating such as clay, stone dust, carbonate, etc., or any other deleterious material.
- Sand should be washed.
- All aggregate passing the No. 200 sieve size should be non-plastic.
- Sand for bioretention should be analyzed by an accredited lab using #200, #100, #40, #30, #16, #8, #4, and 3/8 sieves (ASTM D 422 or as approved by the local permitting authority) and meet

the following gradation (Note: all sands complying with ASTM C33 for "fine aggregate concrete sand" comply with the gradation requirements below):

Sieve Size (ASTM D422)	Sieve Size (mm)	% Passing (by weight)	
		Minimum	Maximum
3/8 inch	9.5	100	100
#4	4.8	90	100
#8	2.4	70	100
#16	1.2	40	95
#30	0.60	15	70
#40	0.42	5	55
#100	0.15	0	15
#200	0.075	0	5

- Coefficient of Uniformity (Cu = D60/D10) should be equal to or equal to or greater than 4
- Note: the gradation of the sand component of the media an important major factor in the infiltration rate of the media mix. If the desired infiltration rate of the media cannot be achieved within the specified proportions of sand and compost), then it may be necessary to utilize sand at the coarser end of the range specified in the table above ("minimum" column) with more uniform particle size (i.e., poorly graded). Sand products such as "filter sand" and "top dressing sand" tend to meet the C33 specification and support higher infiltration rates.

Compost for Bioretention Soil Media

Compost should be a well decomposed, stable, weed free organic matter source derived from waste materials including yard debris, wood wastes, or other organic materials not including manure or biosolids meeting standards developed by the US Composting Council (USCC). The product shall be certified through the USCC Seal of Testing Assurance (STA) Program (a compost testing and information disclosure program). **It is expected that only select compost products will meet this specification**. Compost quality should be verified via a lab analysis to be:

- Feedstock materials shall be specified and include one or more of the following: landscape/yard trimmings, grass clippings, food scraps, and agricultural crop residues.
- Organic matter: 35-75% dry weight basis.
- Carbon and Nitrogen Ratio: 15:1 < C:N < 40:1; preferably above 20:1 to reduce the potential for nitrogen leaching/washout.
- Nitrogen between 0.6 and 3% by dry weight.
- Physical contaminants (manmade inert materials) not exceeding 1% by dry weight.
- Maturity/Stability (qualitative):Compost shall have dark brown color and a soil-like odor. Compost exhibiting a sour or putrid smell, containing recognizable grass or leaves, or is hot (120 F) upon delivery or rewetting is not acceptable.
- Maturity (seed emergence and seedling vigor): greater than 80% relative to positive control (Method TMECC 5.05-A, USDA and U.S. Composting Council)

- Stability (Carbon Dioxide evolution rate): less than 2.5 mg CO2-C per g compost organic matter (OM) per day or less than 5 mg CO2-C per g compost carbon per day, whichever unit is reported. (Method TMECC 5.08-B, USDA and U.S. Composting Council). Alternatively a Solvita rating of 6 or higher is acceptable.
- Toxicity: any one of the following measures is sufficient to indicate non-toxicity:
    - NH4:NH3 < 3
    - Ammonium < 500 ppm, dry weight basis
    - Seed Germination > 80% of control
    - Plant trials > 80% of control
    - Total Boron should be <80 ppm, soluble boron < 2.5 ppm
- Salinity: < 6.0 mmhos/cm or Soluble Salt Concentration less than 10 dS/m (Method TMECC 4.10-A, USDA and U.S. Composting Council).
- pH between 6.5 and 7.5 (may vary with plant palette)
- Compost for bioretention should be analyzed by an accredited lab using #200, ¼ inch, ½ inch, and 1 inch sieves (ASTM D 422 or as approved by the local permitting authority) and meet the following gradation:

Sieve Size (ASTM D422)	% Passing (by weight)	
	Minimum	Maximum
1 inch	99	100
½ inch	90	100
¼ inch	40	90
#200	0	10

- Tests should be sufficiently recent to represent the actual material that is anticipated to be delivered to the site. If processes or sources used by the supplier have changed significantly since the most recent testing, new tests should be requested. Compost quality can vary significanly by season and by batch.
- Note: the gradation of compost used in bioretention media can have an important influence on the saturated hydraulic conductivity of the media. To achieve a higher saturated hydraulic conductivity, it may be necessary to utilize compost at the coarser end of this range (“minimum” column). The percent passing the #200 sieve (fines) is believed to be the most important factor in hydraulic conductivity. In addition, a coarser compost mix provides more heterogeneity of the bioretention media, which is believed to be advantageous for more rapid development of soil structure needed to support health biological processes. This may be an advantage for plant establishment with lower nutrient and water input.

Mulch for Bioretention Soil Media

- The bioretention panting area should generally be covered with 2 to 4 inches (average 3 inches) of well aged, double or triple shredded mulch at the time of construction and an additional placement of 1 to 2 inches of mulch should be added annually. Mulch should be stockpiled and stored at least 12 months prior to application to the BMP and must be non-

floating to avoid clogging of overflow structures.*The intention is to help sustain the nutrient levels, suppress weeds, retain moisture, and maintain infiltration capacity*.

- Inorganic mulch such as rock, may be used.

Basic Whole Mix Testing Recommendations

Basic whole mix testing should be done for any application of BSM in stormwater BMPs. The blended BSM should be submitted to an agronomic laboratory for a standard "Agronomic Soil Suitability Test" with texture class and organic matter analyses included (estimated $110 to $150).

- Organic Matter: between 2 and 5 percent by dry weight

  [Note: This range is not incompatible with the organic content requirements of compost. If compost is 20 percent of the mix by volume, this represents about 7.5 percent of the mix by dry weight. If compost has an organic fraction of 35 percent to 75 percent by dry weight, then the total mix organic content would be 2.5 to 5.5 percent]

- Total Nitrogen: 0.1 to 0.25% by dry weight (100 to 250 mg/kg)

  [Note: Similar to the explanation above, this is not incompatible with the compost nitrogen requirements]

- Plant Available Phosphorus (also known as "P Index") (based on weak acid extraction: ammonium Bicarbonate/DTPA soil analysis or similar): 10 to 50 mg/kg (P Index 10 to 50)
- Percent Sand/Silt/Clay: Less than 2 percent clay; 5 to 20 percent silt or infiltration testing showing greater than 10 inches per hour
- pH range: 6.0-7.5
- Salinity less than 3.0 millimho/cm (as measured by electrical conductivity)
- Sodium adsorption ration (SAR) less than 3.0
- Chloride less than 150 ppm
- An assessment of agricultural suitability for hearty, well-suited plants based on test results should be conducted, including recommendations for adding amendments, chemical corrections, or both.

Testing reports should include:

- Date of Testing
- Project Name
- The Contractor's Name
- Source of Materials and Supplier's Name
- Adequate information to demonstration conformance with the criteria above.

Rationale: A BSM that aheres to the general guidelines for mix composition, sand properties, and compost properties should provide acceptable properties for most applications. However, due to ranges of physical and chemcial properties that exist in sand and compost specifications and variability in supply stocks, basic testing of the specific whole BSM proposed for the project is strongly recommended. The ranges of criteria are intended to avoid mixes that have clear material quality issues.

Infiltration Rate Evaluation

This section appiles to BIO-1 or BIO-6 where a specific range of media infiltration rates is established in design and is critical for sizing.

- The saturated hydraulic conductivity or infiltration rate of the whole BSM shall be measured by one of the following methods:
    - Measurement of hydraulic conductivity (USDA Handbook 60, method 34b) (commonly available as part of standard agronomic soil evaluation – estimated $30 to 50 per sample), or
    - ASTM D2434 Permeability of Granular Soils (at approximately 85 percent relative compaction Standard Proctor, ASTM D698)
- BSM should conform to hydraulic criteria associated with the BMP design configuration that best applies to the facility where the BSM will be installed (options describe below).
    - **Systems with hydraulic control on the outlet of the underdrain system** (i.e., outlet control). For systems in which the flowrate of water through the media is controlled via an outlet control device (e.g., orifice or valve) affixed to the outlet of the underdrain system, the infiltration rate or hydraulic conductivity of the media should be at least 20 inches per hour and not more than 40 inches per hour. The outlet control device should control the flowrate to between 5 and 12 inches per hour. This configuration reduces the sensitivity of system performance to the permeability of the material, reduces the likelihood of short circuiting through media, and allows more precise design and control of system flow rates. For these reasons, outlet control should be considered the preferred design option.
    - **Systems with free-flowing underdrain system** (i.e., flowrate is controlled by the permeability of the BSM). For systems with underdrains that are not restricted, the BSM should have minimum measured hydraulic conductivity of 8 inches per hour to ensure adequate flow rate through the BMP and longevity of the system. This results in a recommended design infiltration rate of 2 to 4 inches per hour to account for potential compaction and clogging. The BSM should have a maximum measured hydraulic conductivity of no more than 20 inches per hour to provide adequate contact time and treatment. Where this limit cannot be achieved, an outlet controlled configuration should be considered. In all cases, an upturned elbow system on the underdrain, measuring 6 to 12 inches above the invert of the underdrain, should be used to control velocities in the underdrain pipe and reduce potential for solid migration through the system.

Rationale: The media infiltration rate is a critical parameter in sizing and design of BIO-1 and BIO-6. It is necessary to confirm that the infiltration rate is reasonably consistent with what has been used in sizing and design and is capable of providing adequate treatment. Infiltration rates that are too slow may not provide long term capture performance adequate to meet sizing criteria. Infiltration rates that are too high may not provide adequate treatment or can be susceptible to short-circuiting unless used in an outlet controlled configuration.

Chemical Suitability Evaluation

This section appiles to BIO-1 or BIO-6 (systems with underdrains). In these systems, it is more critical to ensure that significant increases in pollutants will not occur as a result of filtration of water through the media (i.e., pollutant leaching). Nutrients are the most common form of leached pollutants. However, metals have also been observed.

The basic testing described above is adequate where nutrients or metals are not identified as impairments or TMDLs.

Where nutrients or metals are identified as impairments or TMDLs in any receiving water, the standard “Agronomic Soil Suitability Test” should be augmented with Saturated Media Extract Method (aka “saturation extract”) testing that covers at least the following parameters.

- Nitrate as N: < 3 mg/L

- Plant Available Phosphorus (P Index): 10 to 30 mg/kg (this is a tighter range than specified for basic evaluation above)
- Zinc < 0.1 mg/L (100 ppb)
- Copper < 0.025 mg/L (25 ppb)
- Lead < 0.025 mg/L
- Arsenic < 0.02 mg/L
- Cadmium < 0.01 mg/L
- Mercury < 0.01 mg/L
- Selenium < 0.01 mg/L

The Synthetic Precipitation Leaching Procedure (SPLP) (EPA SW-846, Method 1312) may also be used.

Criteria should be met as stated where a pollutant is associated with a water quality impairment or Total Maximum Daily Load (TMDL) in any downstream receiving water. Criteria may be waived or modified, at the discretion of the reviewer, where a pollutant does not have a nexus to a water quality impairment or TMDL of downstream receiving water(s).

Note that Saturation Extract and SPLP tests are expected to result in somewhat more leaching than would be experienced with real stormwater; therefore a direct comparison to water quality standards or effluent limitations is not appropriate.

Alternative Mix Components and Proportions

Alternative mix components and proportions may be utilized, provided that the whole blended mix conforms to the criteria identified in the Basic Whole Mix Testing, Infiltration Rate Evaluation, and Chemical Suitability Evaluation, as applicable. Alternative mix designs may include alternative proportions, alternative organic amendments (e.g., peat, coco coir pith) and/or use of natural soils. Alternative mixes are subject to approval by the reviewer. Alternative mixtures may be particularly applicable for systems with underdrains in areas where phosphorus is associated with a water quality impairment or a Total Maximum Daily Load (TMDL) in a downstream receiving water.

Construction Guidelines

- The Contractor should not deliver or place soils in wet or muddy conditions. The Contractor should protect soils and mixes from absorbing excess water and from erosion at all times. The Contractor should not store materials unprotected from rainfall events (>0.25 inches). If water is introduced into the material while it is stockpiled, the Contractor should allow material to drain prior to placement
- BSM should be thoroughly mixed prior to delivery using mechanical mixing methods such as a drum mixer.
- BSM should be lightly compacted and placed in loose lifts approximately 12 inches (300 mm) to ensure reasonable settlement without excessive compaction, such as via a rolling landscaping compaction drum (hand operated). Compaction within the BSM area should not exceed 75 to 85% standard proctor within the designed depth of the BSM. Machinery shouldl not be used in the bioretention facility to place the BSM. A conveyor or spray system should be used for media placement in large facilities. Low ground pressure equipment may be authorized for large facilities at the discretion of the reviewer.

- Placement methods and BSM quantities should account for approximately 10 percent reduction in media volume due to settling. Planting methods and timing should account for settling of media without exposing plant root systems.
- The Permittee construction inspector may request up to three double ring infiltrometer tests (ASTM D3385) or approved alternate tests to confirm that the placed material meets applicable infiltration rate range. In the event that the infiltration rate of placed material does not meet applicable criteria, the Permittee may require replacement and/or decompaction of materials.
- Close adherence to the material quality controls herein are necessary in order to assure sufficient permeability to infiltrate/filter runoff during the life of the facility, support healthy vegetation, and minimize pollutant leaching.
- Acceptance of the material should be based on test results conducted no more than 120 days prior to delivery of the blended BSM to the project site and certified to be representative of the mix composition that is actually used. For projects installing more than 100 cubic yards of BSM, batch-specific tests of the blended mix should be provided to the Permittee inspector for every 100 cubic yards of BSM along with a site plan showing the placement locations of each BSM batch within the facility.

Integration with Other Specifications

BSM specifications are related to, and may depend or have dependency on other specifications, including but not limited to:

- Filter course and drainage layer (See MISC-3)
- Plantings and Hydroseed (See MISC-4)
- Underdrains (See BIO-1)
- Outlet control structures (See BIO-1)

Narrative Guidance for Balancing Plant Growth with Nutrient Leaching

Where the BMP discharges to receiving waters with nutrient impairments or nutrient TMDLs, there is a particular balance that needs to be maintained between providing enough nutrients for plant growth while avoiding chronic leaching of nutrients from the media.

- In general, the potential for leaching of nutrients can be minimized by:
  - Utilizing stable, aged compost (as required of media mixes under all conditions).
  - Utilizing other sources of organic matter, as appropriate, that are safe, non-toxic, and have lower potential for nutrient leaching than compost (e.g., wood compost, peat, coco coir pith).
  - Reducing the content of compost or other organic material in the media mix to the minimum amount necessary to support plant growth and healthy biological processes.
- A botanist, agronomist, and/or landscape architect can be consulted to assist in balancing the interests of plant establishment, water retention capacity (irrigation demand), and the potential for nutrient leaching. The following practices should be considered in developing the media mix design:
  - The actual nutrient content and organic content of the selected compost source should be considered when specifying the proportions of compost and sand. The compost specification allows a range of organic content over approximately a factor of 2 and nutrient content may vary more widely. Therefore determining the actual organic content

and nutrient content of the compost expected to be supplied is important in determining the proportion to be used for amendment.

- A commitment to periodic soil testing for nutrient content and a commitment to adaptive management of nutrient levels can help reduce the amount of organic amendment that must be provided initially. Generally, nutrients can be added planting areas through the addition of organic mulch, but cannot be removed.
- Plant palettes and the associated planting mix should be designed with native plants where possible. Native plants generally have a broader tolerance for nutrient content, and can be longer lived in leaner/lower nutrient soils. An additional benefit of lower nutrient levels is that native plants will generally have less competition from weeds.
- Nutrients are better retained in soils with higher cation exchange capacity (CEC). CEC can be increased through selection of organic material with naturally high CEC, such as peat, and/or selection of inorganic material with high CEC such as some sands or engineered minerals (e.g., low P-index sands, zeolites, rhyolites, etc). Including higher CEC materials would tend to reduce the net leaching of nutrients.
- Soil structure can be more important than nutrient content in plant survival and biologic health of the system. If a good soil structure can be created with very low amounts of compost, plants survivability should still be provided. Soil structure is loosely defined as the ability of the soil to conduct and store water and nutrients as well as the degree of aeration of the soil. While soil structure generally develops with time, planting/storage media can be designed to promote earlier development of soil structure. Soil structure is enhanced by the use of amendments with high hummus content (as found in well-aged organic material). In addition, soil structure can be enhanced through the use of compost/organic material with a distribution of particle sizes (i.e., a more heterogeneous mix).
- Younger plants are generally more tolerant of lower nutrient levels and tend to help develop soil structure as they grow. Starting plants from smaller transplants can help reduce the need for organic amendments and improve soil structure. The project should be able to accept a plant mortality rate that is somewhat higher than starting from larger plants and providing high organic content.

- With these considerations, it is anticipated that less than 20 percent compost amendment could be used, while still balancing plant survivability and water retention.

We wish to express our gratitude to following individuals for their feedback on the design of planting/storage media for nutrient sensitive receiving waters in Southern California.

Deborah Deets, City of Los Angeles Bureau of Sanitation

Drew Ready, LA and San Gabriel Rivers Watershed Council

Rick Fisher, ASLA, City of Los Angeles Bureau of Engineering

Dr. Garn Wallace, Wallace Laboratories

Glen Dake, GDML

Jason Schmidt, Tree People

The guidance provided herein does not reflect the individual opinions of any individual listed above and should not be cited or otherwise attributed to those listed.

MISC-3: FILTER COURSE AND UNDERDRAIN PIPE DESIGN

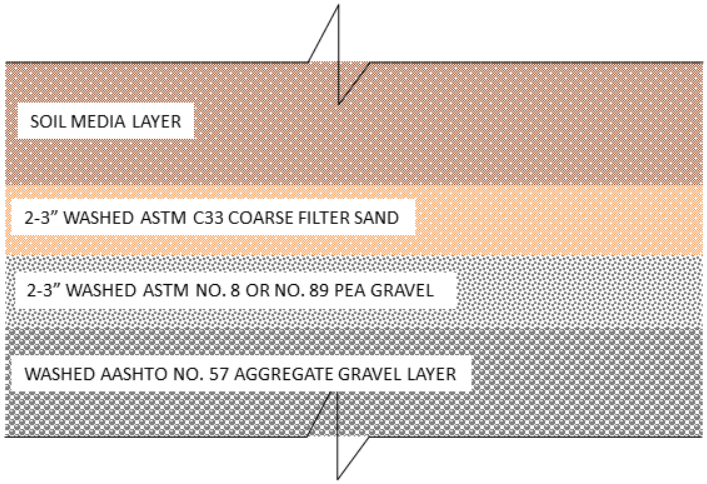
Many LID BMPs include a soil media layer underlain by an aggregate gravel layer that may or may not include an underdrain. To keep the media particles from migrating into the aggregate gravel layer, a filter course is used. While geotextile filter fabrics have been used in the past at the interface of the soil media and gravel aggregate layers, experience has shown that filter fabric is a common point of failure in stormwater BMPs, either by clogging, or by allowing media to migrate into the underdrain system. A 'bridging' or 'choking' layer is preferred to separate the gravel aggregate layer and the soil media. This approach consists of progressively graded layers that progress from finer to coarser materials moving from top to bottom.

This fact sheet provides a recommended filter course that has been estimated to provide appropriate bridging and permeability for typical soil media and aggregate gravel used in LID BMPs. This filter course consists of a coarse sand layer, underlain by pea gravel, underlain by the aggregate gravel. As long as the recommendations below are used for the filter course and aggregate gravel, then no calculations are needed to demonstrate the adequacy of the filter course.

This fact sheet also provides recommended design criteria for slotted underdrain pipe.

Recommended Filter Course and Aggregate Gravel Layer Design

The recommended design for the filter course is shown below. It consists of 2 to 3 inches of ASTM C33 coarse sand at the bottom of the media layer, underlain by 2 to 3 inches of ASTM No. 8 or No. 89 gravel. The design assumes that the aggregate gravel layer consists of AASHTO No. 57 gravel. The gradation limits to meet the standard classifications are shown in the tables below. If the project proposes significantly different gradations of any layer, then calculations showing that the filter course is adequate are required as references in the "Calculations to Support Custom Filter Course" section of this Fact Sheet.



Gradation Limits for ASTM C33 Concrete Sand

Sieve Size	Percent of Particles Smaller than Sieve Size
0.375 inches	100
No. 4 (0.187 inches)	95-100
No. 8 (0.093 inches)	80-100
No. 16 (0.046 inches)	50-85
No. 30 (0.024 inches)	25-60
No. 50 (0.012 inches)	5-30
No. 100 (0.006 inches)	0-10
No. 200 (0.003 inches)	0 [fines should not be present in washed stone]

Gradation Limits for ASTM No. 8 Pea Gravel (aka 3/8" stone)

Sieve Size	Percent of Particles Smaller than Sieve Size
0.5 inches	100
0.375 inches	85-100
No. 4 (0.187 inches)	10-30
No. 8 (0.093 inches)	0-10
No. 16 (0.046 inches)	0-5

Gradation Limits for ASTM No. 89 Pea Gravel (aka 1/4 to 3/8" stone)

Sieve Size	Percent of Particles Smaller than Sieve Size
0.5 inches	100
0.375 inches	90-100
No. 4 (0.187 inches)	20-55
No. 8 (0.093 inches)	5-30
No. 16 (0.046 inches)	0-5
No. 50 (0.046 inches)	0-5

Gradation Limits for AASHTO No. 57 Aggregate Gravel (aka 3/4" open graded base)

Sieve Size	Percent of Particles Smaller than Sieve Size
1.5 inches	100
1 inch	95-100
0.5 inches	25-60
No. 4 (0.187 inches)	0-10
No. 8 (0.093 inches)	0-5

For systems with deeper reservoirs, it is acceptable to utilize another layer of stone below the No. 57 stone, such as 1 ½" inch base or larger.

Custom Filter Course Layer

Other filter course configurations are also acceptable, but thorough descriptions of each of the materials used as well as supporting calculations showing their adequacy to maintain permeability and prevent migration of media particles is required. Methods of completing these calculations can be obtained from:

- Chapter 26 of the Natural Resources Conservation Service Part 633 National Engineering Handbook (**https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=18397.wba**) or
- Table 2 of the United States Golf Association Recommendations for a Method of Putting Green Construction **https://www.usga.org/content/dam/usga/images/course-care/2004%20USGA%20Recommendations%20For%20a%20Method%20of%20Putting%20Green%20Cons.pdf**.

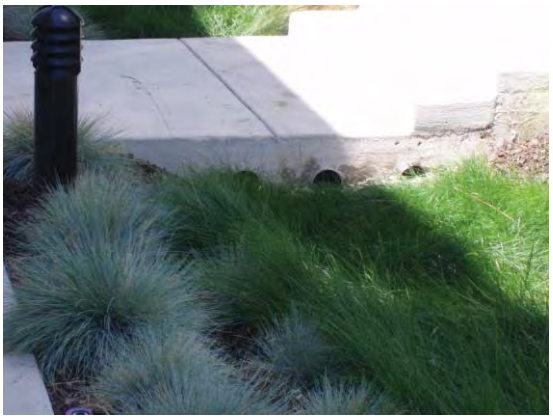
Calculations need to be completed for each interface between media or gravel of different sizes to show adequate choking and permeability. For example, the recommended filter course design included calculations between the coarse sand layer and the pea gravel and between the pea gravel and the aggregate gravel layers.

Slotted Underdrain Pipe

- Underdrains should be slotted, PVC pipe conforming to ASTM D 3034 or equivalent or corrugated, HDPE pipe conforming to AASHTO 252M or equivalent.
- Slots should be 4-6 rows cut perpendicular to the axis of the pipe or right angles to the pitch of corrugations.
- Slots should be 0.04 to 0.1 inches wide and 1 to 1.25 inches long.
- Slots should be longitudinally spaced such that the pipe has a minimum of 2 square inches of "slot open area" in each lineal foot of pipe.
- Slot space is computed as the product of the length, width, number of rows, and number of slots per row in 1 foot of pipe. For example, a pipe containing 6 rows of 1"x 0.067" slots with 12 slots per lineal foot of pipe would have an open area of 6x12x1"x0.067" = 4.8 sq-inch open area per lineal foot of pipe.

MISC-4: RECOMMENDED PLANT LIST

Vegetation is an integral element of biotreatment BMPs in order to help remove pollutants, stabilize soils, support soil microbial communities, and resist clogging. However, not all vegetation will be effective for each BMP type, so selecting a suitable type of vegetation is very important to BMP performance. A recommended plant list is provided in this fact sheet along with general guidelines.



Source: Geosyntec Consultants

General Guidelines for Plant Selection

- Plants should be native or climate-appropriate non-invasive species.
- Multiple species per BMP are recommended to provide diversity. A mix of grasses, bunch grasses, and shrubs should be considered.
- Species should be suited to the conditions the BMP will encounter (periodic inundation, sustained dry periods, relatively course-grained soils, etc. The climate and conditions vary by location within Orange County, by BMP type, by application type, and even within a BMP. For example, within a bioinfiltration BMP, the vegetation at the bottom of the BMP will be regularly inundated, while the vegetation on the side slopes will only rarely be inundated, so different vegetation types may be necessary.
- Species selected should not require regular use of fertilizers and pesticides. Augmentation of surface soils with a stable, well-aged, certified compost is acceptable from time to time. Slow release organic fertilizers applied at a minimum necessary rate may be acceptable.
- Plants should be compatible with the irrigation proposed. Permanent irrigation may be necessary to sustain plants. However, plants should not be dependent on frequent irrigation. Additionally, plants that require or tolerate periodic irrigation should be planted in separate areas from those that do not tolerate seasonal irrigation.
- In any case, the vegetation selected should be suited to the climate and conditions of the BMP, must not cause or contribute to contamination of runoff or invasion of habitat, and, should be selected to remove pollutants and support biological communities that remove pollutants to the extent possible.
- This is not meant to be an exhaustive list of all compatible plant species. Other plant types may be used as long as they are compatible with the purposes of vegetation in the BMP as discussed above.

A qualified landscape architect or agronomist familiar with the stormwater BMPs may be consulted to select a plant palette that fits the needs of the project. Plant selection should fit the constraints and media selected for the BMP.

RECOMMENDED PLANT NAMES, IRRIGATION REQUIREMENTS, BMP LOCATION, AND BMP APPLICABILITY

Plant Name		Irrigation Requirements		Preferred Location in Basin		LID BMP Applicability[3]				
Latin Name	Common Name	Temporary Irrigation during Plant Establishment Period	Permanent Irrigation (Drip / Spray)[1]	Basin Bottom	Basin Side Slopes	Biofiltration (BIO-1/BIO-5/ BIO-6/BIO-7/INF-3)	Vegetated Swale (BIO-2) [2]	Vegetated Filter Strip (BIO-3) [2]	Dry Extended Detention Basin (BIO-4)	Infiltration Basin (INF-1)
SHRUBS / BUNCH GRASSES										
Achillea millefolium	Yarrow[2]	X			X	X	X		X	X
Anemopsis californica	Yerba Manza	X			X	X	X		X	X
Baccharis douglasii	Marsh Baccahris	X	Optional	X		X	X		X	X
Carex praegracillis	California Field Sedge	X	Optional	X		X	X		X	X
Carex spissa	San Diego Sedge	X	Optional	X		X	X		X	X
Carex subfusca	Rusty Sedge	X	Optional	X	X	X	X		X	X
Eleocharis macrostachya	Pale Spike Rush	X	Optional	X		X	X		X	X
Iva hayesiana	Hayes Iva[2]	X			X	X	X		X	X
Juncus Mexicana	Mexican Rush	X	Optional	X	X	X	X		X	X
Jucus patens	California Gray Rush	X	Optional	X	X	X	X		X	X
Mahonia nevinii	Nevin's Barberry	X			X	X	X		X	X
Mimulus cardinalis	Scarlet Monkeyflower[2]	X		X	X	X	X		X	X
Ribes speciosum	Fushia Flowering Goose. [2]	X			X	X	X		X	X
Rosa californica	California Wild Rose[2]	X	Optional		X	X	X		X	X
Scirpus cernuus	Low Bullrush	X	Optional	X		X	X		X	X
Sisyrinchium bellum	Blue-eyed Grass[2]	X			X	X	X		X	X
GRASSES/GROUNDCOVER										
Agrostis pallens	Thingrass	X			X	X	X	X	X	X
Distichlis spicata	Salt Grass	X	Optional	X		X	X	X	X	X
Festuca californica	California Fescue[2]	X	Optional		X	X	X	X	X	X
Festuca rubra	Red Fescue[2]	X	Optional	X	X	X	X	X	X	X
Leymus condensatus	Canyon Prince Wild Rye	X	Optional	X	X	X	X	X	X	X
Muhlenburgia rigens	Deergrass	X	Optional	X	X	X	X	X	X	X

1. Some plants will benefit from supplemental irrigation, particularly those on basin side slopes and further inland. However, the irrigation regime should be sparse and allow for complete drying. Excessive watering during the summer can be problematic for native plants. Plants that could benefit from or tolerate periodic irrigation are identified as "optional" in this column.
2. Bunching grasses should be avoided entirely in filter strips as the desire is to provide a very uniform stem structure. Bunching grasses can be used in swales but should be augmented with non-bunching grasses and ground covers.
3. Many of these plants could be applicable to many different BMP types. In general, BMPs such as biofiltration that have mulch on the basin bottom will use shrubs/bunchgrasses on the basin bottom and grasses/groundcover on the side slopes. BMPs that do not use mulch require denser groundcover, so they typically use grasses, but may also incorporate shrubs/bunchgrasses, as needed.

BIO-1: BIOINFILTRATION

Category: Biotreatment with Partial Infiltration

[This fact sheet also serves as the base fact sheet for INF-3 and BIO-6.]

Also known as:
- Rain Gardens
- Bioretention with Internal Water Storage
- Bioretention with Elevated Underdrain



Source: Geosyntec Consultants

Bioinfiltration facilities are designed for biotreatment with partial infiltration of runoff. Water is biotreated via filtering through a vegetated bed of engineered media. Water is infiltrated via an aggregate storage layer that is designed to discharge only when the storage layer is full. Bioinfiltration facilities are commonly incorporated into parking lot islands, cul-de-sacs, traffic circles, road shoulders, and road medians. These facilities can be used in areas where there are no hazards associated with partial infiltration but infiltrating the full DCV is infeasible. These facilities may not result in retention of the full DCV, but they can be used to achieve the maximum feasible volume reduction through infiltration and ET while providing biotreatment of the remaining portion of the required treatment volume.

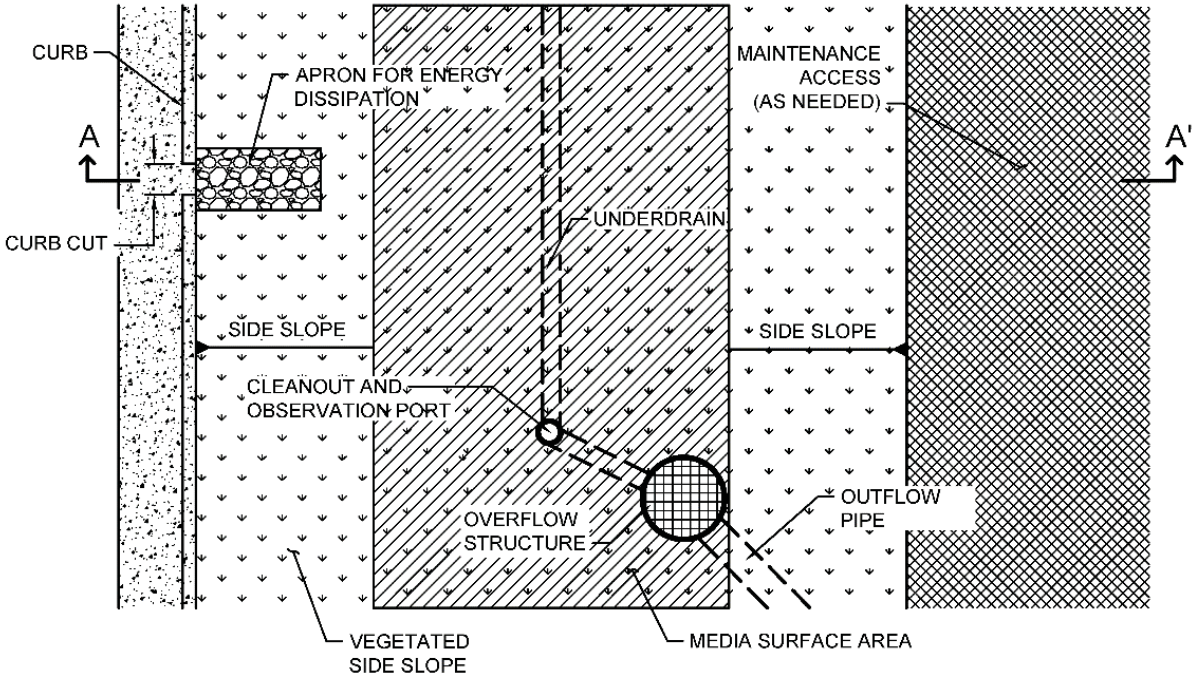
Pollutant Removal Considerations

TSS	Phosphorus	Nitrogen	Metals	Bacteria	Oil & Grease	Organics	Trash
H	M	M	H	M	H	M	H

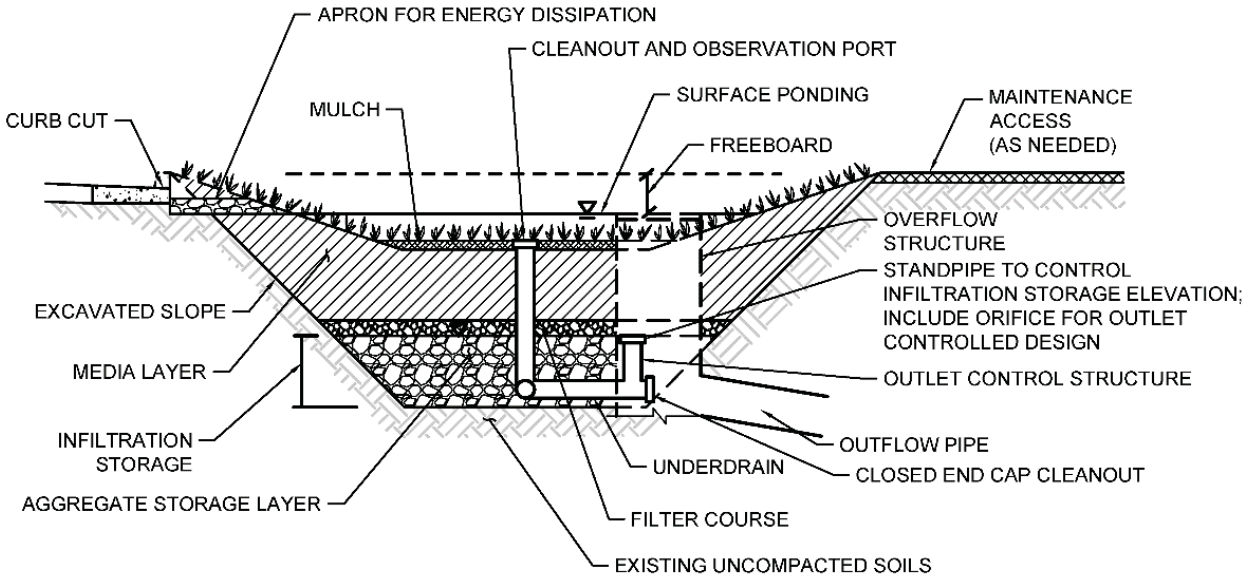
Recommended Siting Criteria

	Siting Criteria	Intent/Rationale
☐	BMP placement adheres to geotechnical recommendations with respect to geological hazards and setbacks.	Must not negatively impact existing site geotechnical concerns.
☐	BMP is located in an area of the site most suitable for partial infiltration.	To the extent practicable, BMPs must be sited to take advantage of areas where infiltration is likely to be highest.
☐	Tributary area is ≤ 5 acres, preferably ≤ 1 acre.	Larger biofiltration facilities have a higher potential for scour and short circuiting and may require more specific construction methods. **Section 4.4.7** provides specific design considerations for larger facilities.
☐	Sediment sources are controlled prior to operation of the system.	Facility should not be used in areas that will continue to receive elevated sediment loading following construction, such as from open space area.

Example Schematic Design - Plan and Section View



PLAN
NOT TO SCALE



SECTION A-A'
NOT TO SCALE

Recommended BMP Component Dimensions

BMP Component	Dimension	Intent/Rationale
Freeboard	≥ 6 inches if system has internal overflow Freeboard not required if offline with acceptable bypass	Freeboard provides for water to enter overflow structures and minimizes risk of uncontrolled surface discharge. Lower freeboard (or no freeboard) is allowable if there is an acceptable bypass pathway when the WQ storage is full, such as flow along the curb line to a storm inlet downstream.
Surface Ponding	≥ 3 inches	A lower limit is needed to provide enough surface storage for water to be able to enter the media. Also, very shallow depths are more susceptible to construction error and change over time with O&M activities.
Surface Ponding	≤ 18 inches	Deeper surface ponding depths may require demonstration that premature clogging is not likely and may require fencing.
Ponding Area Side Slopes	3H:1V or shallower	Gentler side slopes are safer, less prone to erosion, able to establish vegetation more quickly and easier to maintain. Vertical walls may be acceptable with appropriate considerations for safety.
Mulch	2-4 inches (average 3 inches)	Mulch is intended to suppress weeds and maintain moisture for plant growth. Mulch also retains sediment and allows sediment to be removed before it clogs the media bed.
Media Layer	≥ 18 inches (24 to 36 inches preferred)	A deeper media layer provides additional filtration and supports plants with deeper roots. The media layer must extend across the BMP to the waterline to ensure no infiltrated water bypasses the media.
Filter Course	4-6 inches	Typically made up of 2 to 3 inches of coarse sand and 2 to 3 inches of pea gravel, both washed. Thinner layers are less effective and may be more challenging to accurately construct.
Infiltration Storage	≥ 18 inches	Provides enhanced volume control. May include the pea gravel portion of the filter course and the full depth of the aggregate storage layer, depending on the outlet control elevation and design.
Underdrain Diameter	≥ 6 inches	Facilitates simpler cleaning.
Cleanout Diameter	≥ 6 inches	Facilitates simpler cleaning.

Recommended Design Criteria and Considerations

Design Criteria	Intent/Rationale
Pretreatment	
☐ Select pretreatment to provide acceptable clogging timeframe per guidance in Fact Sheet MISC-5 and **Appendix E.4.1**.	BMP performance and longevity is increased. Premature clogging is avoided.
Surface Ponding	
☐ Finish grade of the facility has ≤3 inches of elevation difference across the bottom of the facility.	Flatter surfaces reduce erosion and channelization within the facility and reduce the potential for development of preferential pathways.
☐ Surface ponding is limited to a 24-hour drawdown time.	24-hour drawdown time is recommended for plant health.
Vegetation	
☐ An irrigation system with a connection to water supply should be provided, as needed.	Seasonal irrigation may be needed to ensure robust vegetative processes in relatively coarse-grained media material.
☐ Plant materials should be tolerant of summer drought (unless irrigated), ponding fluctuations, and saturated soil conditions for up to 48 hours; native plant species and/or hardy cultivars that are not invasive and do not require chemical fertilizers or pesticides should be used to the maximum extent feasible. See recommended plant list in **Fact Sheet MISC-4.**	Plants suited to the climate and ponding depth are more likely to survive.
☐ In right of way areas, plant selection should not impair traffic sightlines or vehicle access.	Vegetation should be selected to be compatible with operation of the system and support adjacent uses.
Mulch	
☐ Well-aged, double or triple shredded hardwood mulch that has been stockpiled or stored for at least 12 months. Mulch must be non-floating to avoid clogging of overflow structure.	Mulch provides moisture retention and captures some sediment before it enters the media. Aged hardwood mulch will not rob the soil of nitrogen needed for new plants and will decompose slowly.
Media Layer	
☐ Planting/storage media shall conform to the criteria in **Fact Sheet MISC-1.**	Media is one of the most critical elements of the system and must be specified carefully to avoid pollutant export issues, plant health issues, or premature clogging.
Filter Course Layer	
☐ A filter course is used to prevent migration of fines through layers of the facility. Filter fabric is not used.	Migration of media can cause clogging of the aggregate storage layer void spaces or subgrade. Filter fabric is more likely to clog.
☐ Filter course is washed and free of fines.	Washing aggregate will help eliminate fines that could clog the facility and produce turbidity

Design Criteria	Intent/Rationale
	washout events. For infiltration and partial infiltration systems, washing shall not occur in situ as it could clog the underlying infiltration surface.
☐ Filter course should adhere to guidance provided in **Fact Sheet MISC-3.**	Gradation relationship between layers can evaluate factors (e.g., bridging, permeability, and uniformity) to determine if particle sizing is appropriate or if an intermediate layer is needed.
Aggregate Storage Layer	
☐ The aggregate storage layer depth below the underdrain invert is determined based on a minimum of 18 inches of stone or the depth, which can include the pea gravel portion of the filter course, that will drain within 48 hours at the design infiltration rate of the underlying soil.	The intent of this layer is to maximize incidental volume reduction.
☐ Washed river rock or open-graded, crushed rock.	Washing aggregate will help eliminate fines that could clog the aggregate storage layer void spaces or subgrade.
Inflow, Underdrain and Outflow Structures	
☐ Inflow, underdrains and outflow structures are accessible for inspection and maintenance.	Maintenance access is essential to ensure long-term performance.
☐ Inflow velocities are held to less than 1 ft/s. Dispersed flow or energy dissipation (e.g., riprap, level spreader, curb cut drop and apron) for piped inlets should be provided at inlet to prevent erosion.	High inflow velocities can cause erosion, scour and/or channeling.
☐ An underdrain cleanout with a lockable cap is placed every 100 to 200 feet as required based on underdrain length.	Properly spaced cleanouts will facilitate underdrain maintenance.
☐ At least one observation port is provided in each cell to allow inspection of subsurface water level.	This feature is necessary to facilitate inspection and performance confirmation (i.e., the infiltration storage is draining and providing the volume reduction anticipated).
☐ Underdrain is placed 3 inches above the bottom elevation of the aggregate storage layer.	Separation from subgrade or the liner lessens the risk of fines entering the underdrain and can improve hydraulic performance by allowing perforations to remain unblocked. This configuration allows the system to be fully drained, if needed. Under normal conditions, the water level is controlled via an elbow or standpipe configuration such that the sump storage depth can be adjusted without excavation of the media bed, if needed.
☐ An outlet control approach to maintain subsurface water level and manage flow rates through the media is strongly preferred. To maintain the subsurface water level, an upturned	Outlet control helps prevent preferential pathways and media loss. It also reduces the sensitivity of system performance on the hydraulic conductivity of the media, allowing

	Design Criteria	Intent/Rationale
	elbow/standpipe system or equivalent is used in the receiving outlet structure. To control flow rates through the media, an orifice is used, if possible. Orifice size should not be less than 0.5 inches.	media to be specified with a greater factor of safety against clogging.
☐	The outlet control is provided in the catch basin or manhole where the underdrain connects and is accessible for observation and maintenance.	Using outlet control in the receiving catch basin or manhole allows the system to be adapted without requiring excavation.
☐	Underdrains made of are slotted pipe per **MISC-3**.	Slotted underdrains provide greater intake capacity, clog resistant drainage, and reduced entrance velocity into the pipe, thereby reducing the chances of solids migration.
☐	An overflow device is required at the top of the ponding depth to safely convey overflow to the downstream receiving system unless the system is offline and will bypass externally to the facility.	Planning for controlled overflow lessens the risk of property damage due to flooding.

Calculations and Sizing Method

See **Appendix E** for acceptable sizing methods. Checks on footprints associated with clogging risk and volume reduction should be conducted as part of sizing. Retention volume is the volume within the stone reservoir below the underdrain elevation and up to 0.1 inch per inch of pores within the soil (suction/ET storage). Biotreatment volume is the volume in ponded water and soil pores.

Construction Guidance

	Construction Guidance	Intent/Rationale
☐	Plans should include a construction sequence for the BMP. Revisions proposed by the contractor should be reviewed by the engineer. The construction sequence should address erosion control, utilities, BMP installation, inspections, testing and certifications, final grading, vegetation, stabilization, and post-construction monitoring.	Construction sequencing is critical to avoid issues/damage and allow appropriate inspections, testing, and certifications to be performed.
☐	Excavate and place media in dry weather, or at least 48 hours after the end of rainfall.	Wetter soil is typically more susceptible to compaction.
☐	Avoid compaction of the base and sidewalls of facilities. Alleviate compaction as needed using mechanical tilling equipment (e.g., rototiller).	Infiltration rates are typically very susceptible to compaction. Infiltration should be maximized.
☐	Keep sediment out of the facility during construction as much as practicable using sediment and erosion control measures (e.g., silt fence, filter logs, check dams). Remove any confining layer that accumulates as a result of sedimentation. If the location of BMP is used as a temporary erosion and sediment control facility, it	Sediment accumulation can impair infiltration rates.

	Construction Guidance	Intent/Rationale
	should be completely rehabilitated via over excavation, before being placed into service as a post-construction BMP.	
☐	Traffic within the BMP should be avoided unless impractical. If traffic within the system is allowed, only wide track and low-ground pressure equipment is allowed.	Compaction of the system must be avoided as much as possible.
☐	Account for settlement of media when setting finished grades and planting depths.	Media will tend to settle approximately 10 percent. Failure to account for this can result in dimensions different than intended and/or exposure of plant roots.
☐	Use staking, surveying, or other methods to confirm thickness of filter course and media layers.	A uniform thickness of layers is important for effectiveness and to reduce preferential pathways.
☐	Establish the construction sequence to allow for inspection of buried infrastructure (e.g., underdrain, filter course) before it is buried.	It is impractical to inspect buried elements once they are covered.
☐	Fully stabilize sources of sediment within the tributary area (i.e., no exposed soil) prior to placing the finished BMP into service.	Erosion and sedimentation can seriously impair the hydraulic conductivity of the media bed and require restoration and revegetation of the surface of the media bed.
☐	Allow plants and mulch to stabilize for as long as practicable (preferably several months) prior to placing the finished BMP into service.	Stabilization of the system allows plants to mature and mulch to settle and "knit" before stressing the system with stormwater loading.

Adaptability Considerations

This type of BMP provides a high degree of adaptability. Adjustments to the design and/or operation of the system may be needed if observations from more detailed investigation, construction, or operation are different than what was estimated in design and permitting.

Adjust standpipe elevation and/or uncap lower underdrain (pre- or post-construction) – this can be done to reduce the amount of infiltrated volume and make the system act as bioretention with underdrains (BIO-6). This adaptation could take place between the Preliminary/Conceptual WQMP and the Final Project WQMP should issues with infiltration be identified or following construction should infiltration rates be determined to be lower than estimated.

Add a liner as part of detailed design (prior to construction) – this can be done to further limit infiltration if issues with any level of infiltration are identified as part of detailed design. This adaptation could take place between the Preliminary/Conceptual WQMP and the Final Project WQMP.

To allow for these adaptations, calculations in the WQMP should demonstrate that the system will still be adequately sized if the retention compartment is converted to biofiltration.

O&M Activities and Frequencies

Activity	Frequency
GENERAL INSPECTIONS	
Remove trash and debris	Four times per year during wet season, including inspection just before the wet season and within 24 hours after at least two storm events ≥ 0.5 inches.
Repair eroded facility areas	
Inspect and maintain access roads	
Inspect and resolve areas of standing water	
Remove minor sediment in facility bottom	
Provide vector control if needed	
Identify any needed corrective maintenance that will require site-specific planning or design	
ROUTINE MAINTENANCE	
Vegetation	
Irrigate as recommended by a landscape professional, typically for the first 3 years to establish vegetation	As needed
Remove undesirable vegetation	Four times per year during wet season, including inspection just before the wet season.
Reseed or replant areas of thin or missing vegetation	Annually
Mulch	
Remove and replace mulch in areas where significant sediment (>1 inch) has accumulated	Annually
Add an additional 1-2 inches of mulch; replace any mulch that is removed	Annually
Media Layer	
Scarify media to promote infiltration while removing mulch	Annually
Replace top 3-6 inches of media layer and replace vegetation	Estimated every 10 years (highly site specific)
Replace full depth of media and replace vegetation	Estimated every 30 years (highly site specific)
Inflow, Underdrain and Outflow Structures	
Check energy dissipation function and add riprap	Four times per year during wet season, including inspection just before the wet season.
Inspect inlets and outlets and remove accumulated sediment	Four times per year during wet season, including

Activity	Frequency
	inspection just before the wet season.
Flush underdrain	As needed
Repair structural damage to inlets, outlets, and underdrain	As needed
CORRECTIVE (MAJOR) MAINTENANCE	
Prepare documentation of issues and resolutions for review by appropriate parties; modify WQMP if needed.	Before major maintenance
Document major maintenance activities; record modified WQMP and as-built plan set if needed	After major maintenance
Take photographs before and after from the same vantage point	Before and after

BIO-6: BIORETENTION WITH UNDERDRAIN

Category: Biotreatment

Also known as:
Biofiltration
Planter Box

This BMP is very similar to BIO-1, but is tailored to be located in conditions that do not support a significant level of infiltration or where infiltration must be avoided.


Source: Geosyntec Consultants

Fact Sheet BIO-1 should be the primary resource for guidelines about this BMP. Fact Sheet BIO-6 does not repeat this guidance; it only presents the specific differences that should be considered in design, construction, and O&M in cases where there is not appreciable infiltration.

There are three primary options for adapting the guidance from BIO-1 to serve in conditions where no appreciable level of infiltration is feasible.

No changes to BIO-1 - Where minor incidental infiltration is permissible from the perspective of risks, but does not occur in a significant rate, it is acceptable to simply design the system following the guidance in BIO-1. Standing water in the underdrains for an extended period is an acceptable design variation known as "Internal Water Storage." This configuration improves nutrient and bacteria removal. It can also result in minor volume reduction even in very tight soils.

Add liner to BIO-1 – Where infiltration must be avoided due to risk of impacts, an impermeable liner of some sort should be used. Continuing to provide aggregate storage layer and internal water storage, as included in BIO-1 is preferred due to pollutant removal benefits.

Eliminate internal water storage – In conditions not suitable for partial infiltration and that do not have nutrients as a pollutant of concern, is is acceptable to eliminate the internal water storage zone. This can reduce the thickness of the gravel storage layer compared to BIO-1. It reduces the effectiveness of the BMP to remove nutrients (from M to L) and bacteria (from H to M).

Pollutant Removal Considerations

Config	Sediment	Phosphorus	Nitrogen	Metals	Bacteria	Oil & Grease	Organics	Trash
With Internal Water Storage	H	M	M	H	H	H	M	H

Without Internal Water Storage	H	L	L	H	M	H	M	H

Recommended Design Criteria and Considerations (only differences from BIO-1 are listed)

Aggregate Storage Layer – Internal Water Storage Configuration Only	
☐ The aggregate storage layer depth below the underdrain invert is a minimum of 18 inches of stone.	The intent of this layer is to provide treatment processes associated with an internal water storage zone.
Underdrain Aggregate Layer –No Internal Water Storage Configuration Only	
☐ The aggregate underdrain layer must provide at least 6 inches of cover on the top and sides of the underdrain pipe and 3 inches below the pipe	The intent of this layer is to provide treatment processes associated with an internal water storage zone.
☐ Underdrains, aggregate, and filter course material maybe located in trenches rather than over the entire bottom of the BMP.	Because volume reduction and/or internal water storage is not a goal, it is not necessary to provide a storage layer.
Impermeable Liner	
☐ Liner has a minimum thickness of 30 mils.	Minimizes tearing and penetration by aggregate or other protrusions.
☐ Liner is free of holes, blisters, undispersed raw materials, contamination by foreign matter, and other defects.	Minimizes facility stormwater loss and contamination.
☐ Liner withstands the range of temperature encountered by open exposure at the site without degradation or deterioration of the lining system.	Minimizes liner deterioration.
☐ Liner, and all other parts of the lining system in contact with liquid is resistant to stormwater pollutants including small concentrations of floating hydrocarbons such as hydraulic oil, diesel fuel, and gasoline.	Minimizes liner deterioration.
☐ Liner is bedded between appropriate material at least 6 inches above and below liner, or greater subject to manufacturer recommendations.	Appropriate bedding materials should be free of sharp objects and any objects larger than 1 inch in dimension. Sand, clean soil, and/or rounded pea gravel are typically appropriate bedding materials.
Observation Port	
☐ An observation port is not necessary for BIO-6.	It is not necessary to inspect the rate of drawdown of infiltration storage.

Calculations and Sizing Method

See **Appendix E** for acceptable sizing methods. Sizing calculations should not take credit for any amount of infiltration. The internal water storage zone should be assumed to be full and not included in sizing calculations.

Construction Guidance (only differences from BIO-1 are listed)

Construction Guidance	Intent/Rationale
☐ Same as BIO-1, except it is not necessary to protect the BMP location from compaction or construction-phase sedimentation. All other provisions from BIO-1 apply.	It is not necessary preserve infiltration capacity of underlying soils.

O&M Activities and Frequencies

No differences in O&M activities compared to BIO-1.

TRT-2: PROPRIETARY TREATMENT CONTROL BMPS

Category: Treatment Control BMP

Proprietary treatment controls BMPs are proprietary devices that are manufactured to treat stormwater. They do not meet the criteria to be biotreatment. These BMPs can take many different forms depending on the manufacturer, but usually include filtration through engineered, proprietary media mixes and/or filtration through cartridge filters. **Acceptance criteria for proprietary treatment control BMPs are defined in Appendix J**. Proprietary BMPs that do not meet these acceptance criteria are not permitted.

Treatment control BMPs can be used to fulfill pollutant removal requirements and can be used as pretreatment for LID BMPs, but cannot, alone, be used to meet LID requirements. Section 3 of the Model WQMPs provides further details.

Because there are so many different potential types of proprietary treatment control BMPs, this fact sheet provides only general guidance. Specific guidance including pollutant removal, design considerations, construction guidance, and O&M activities is provided by the manufacturer.

Pollutant Removal Considerations

BMPs that meet the acceptance criteria in **Appendix J** are considered to provide adequate treatment for pollutants of concern. According to these critera, there are different levels of treatment certification needed for different pollutants of concern.

Recommended Design Criteria and Considerations

	Design Criteria	Intent/Rationale
☐	Sediment sources should be controlled prior to operation of the system.	Proprietary systems are susceptible to clogging similar to other BMPs. Systems should not be used in areas that will continue to receive elevated sediment loading following construction, such as from open space area.
☐	Proprietary treatment control systems typically do not require separate pretreatment	These BMPs typically include integrated mechanisms for pretreatment.
☐	Proprietary treatment control BMPs must be designed in a manner consistent with manufacturer recommendations and consistent with the design configuration that was tested as part of the BMP certification	Proprietary devices have device-specific design, installation, and maintenance details which must be followed for proper treatment results.

Calculations and Sizing Method

Proprietary Treatment Control BMPs are flow-based BMPs with specific sizing requirements separate from biofiltration BMPs. See **Appendix E** for acceptable sizing methods.

Construction Guidance

Construction Guidance	Intent/Rationale
☐ Plans should include a construction sequence for the BMP. Revisions proposed by the contractor should be reviewed by the engineer. The construction sequence should address erosion control, utilities, BMP installation, inspections, testing and certifications, stabilization, and post-construction monitoring.	Construction sequencing is critical to avoid issues/damage and allow appropriate inspections, testing, and certifications to be performed.
☐ Provide for inspection of buried infrastructure (e.g., underdrain, filter course) before it is buried.	It is impractical to inspect buried elements once they are covered.
☐ Fully stabilize sources of sediment within the tributary area (i.e., no exposed soil) prior to placing the finished BMP into service.	Sediment loading can seriously impair the capacity of the BMP.

O&M Activities and Frequencies

Activity	Frequency
GENERAL INSPECTIONS	
Remove trash and debris	Four times per year during wet season, including inspection just before the wet season and within 24 hours after at least two storm events ≥ 0.5 inches
Identify excess erosion or scour	
Identify sediment accumulation that requires maintenance	
Inspect during storm event, when possible, to estimate treatment capacity and determine if premature bypass is occurring	
Identify any needed corrective maintenance that will require site-specific planning or design	
OPERATION AND MAINTENANCE	
O&M of proprietary treatment control BMPs must follow established manufacturer guidelines	

Worksheet 7: Biofiltration Routing Method for Sizing Bioretention BMPs with Underdrains

DMA-1, PLANTER BOX 1

Part 1: Calculate Design Storm Volume				
1	Enter design capture storm depth, *d* (inches)	d=	0.75	inches
2a	Enter the combined effect of provided HSCs, d_{HSC} (inches) (based on Worksheet 4)	d_{HSC}=	0	inches
2b	Calculate the remainder of the design capture storm depth, dremainder = d - d_{HSC}	$d_{remainder}$=	0.75	inches
3a	Enter DMA area tributary to BMP(s), A (acres) excluding any self-retaining areas	A=	0.355	acres
3b	Enter DMA Imperviousness, imp (unitless) after removal of self-retaining areas	imp=	0.480	
3c	Calculate runoff coefficient, C= (0.75 x imp) + 0.15	C=	0.51	
3d	Calculate runoff volume, DCV = (C x $d_{remainder}$ x A x 43560 x (1/12)) (See Section E.2.2)	DCV=	493	cu-ft
Part 2: Select Initial BMP Effective Footprint Area (can be iterative)				
4a	Calculate minimum area required for BMP to avoid premature clogging from Section E.4.1 (as percent of impervious tributary area)	$\%A_{min,clog}$=	2	%
4b	Calculate minimum area required for BMP to meet volume reduction requirements (Partial Infiltration category only) using Section E.4.2	$\%A_{min,vol}$=	1.75	%
4c	Effective footprint of BMP as percent of tributary impervious area, must be equal to or greater than both $\%A_{min,clog}$ and $\%A_{min,vol}$ (as applicable)	$\%A_{BMP\_EFF}$	2.8	%
4d	Effective footprint of BMP ($\%A_{BMP\_EFF}$ * A * imp)	A_{BMP_EFF}	309	sq-ft
Part 3: Calculate Retention Volume in BMP				
5a	Determine gravel layer depth (18 inches or an alternative depth that will infiltrate within 48 hours)	D_{gravel}	12	inches
5b	Calculate effective retention storage depth of gravel layer $D_{eff,gravel}$ = 0.4 porosity * D_{gravel} (Partial Infiltration Category only)	$D_{eff,gravel}$	-	inches
6	Calculate volume retained in gravel layer (Partial Infiltration Category only) V_{gravel} = $D_{eff,gravel}$ * A_{BMP_EFF} * (1 ft/12 inches)	V_{gravel_retain}	-	cu-ft
7a	Media depth D_{media} (24 inches typical) See BMP fact sheet (Appendix G)	D_{media}	24	inches
8b	Calculate volume retained in soil media layer, V_{media} =0.1*D_{media}*A_{BMP_EFF} * (1 ft/12 inches)	V_{media_retain}	61.9	cu-ft
Part 4: Calculate Required and Provided Biofiltered Volume				
9	Calculate the remaining DCV by subtracting the retained volume in the gravel layer and media layer from the initial design volume, DCV_{remain}= DCV-V_{media}	DCV_{remain}	431.1	cu-ft
10	Calculate the required volume to be biofiltered by multiplying the remaining DCV by 1.5, V_{treat_req} = 1.5 * DCV_{remain}	V_{treat_req}	646.6	cu-ft
11a	Surface storage ponding depth (6-12 inches typical) See BMP fact sheet (Appendix G)	$D_{ponding}$	6	inches

11b	Calculate effective depth of the biofiltration storage above the underdrain, $D_{biofilter\_effective} = 0.2 * D_{media} + D_{ponding} + 0.4*D_{gravel}$	$D_{biofilter\_effective}$	15.6	in
12a	Routing period (5 hours is default, proponent must justify any other value), T_{rout}	T_{rout}	5.0	hours
12b	Media infiltration rate (2.5 inches/hour default, proponent must justify any other value)	K_{media}	2.5	in/hr
12c	Calculate biofiltered volume, $V_{treated} = (D_{biofilter\_effective} + K_{media} * T_{rout}) * A_{BMP\_EFF} * (1\ ft/12\ in)$	$V_{treated}$	724.2	cu-ft
13	Verify that Vtreated > Vtreat_req.	**724.2**	>	**646.6**

Attachment C: Geotechnical Report (will be provided with final WQMP report)

Attachment D: Operation & Maintenance

Operations and Maintenance (O&M) Plan

Water Quality Management Plan
for
Tony Reyna
31451 South Coast Highway,
Laguna Beach, CA
APN : 056-032-26

Parcel 1, LLA 08-05

Overall Responsible Party/Owner:
Mr. Tony Reyna
718 The Strand,
Hermosa Beach, CA
Tel: (310) 376-0057

Exhibit B, Operations and Maintenance Plan

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Non-Structural Source Control BMPs			
Yes	N1. Education for Property Owners, Tenants and Occupants Practical information materials will be provided to the first residents/occupants/tenants on general housekeeping practices that contribute to the protection of stormwater quality. These materials will be initially developed and provided to first residents/occupants/tenants by the developer.	Owner shall keep up to date with BMP requirements, and be responsible for educating maintenance personnel; As required.	*Owner*
No	N2. Activity Restrictions		
Yes	N3. Common Area Landscape Management Identify on-going landscape maintenance requirements that are consistent with those in the County Water Conservation Resolution (or city equivalent) that include fertilizer and/or pesticide usage consistent with Management Guidelines for Use of Fertilizers (DAMP Section 5.5). Statements regarding the specific applicable guidelines must be included in the project WQMP.	Keep garden areas clean, planted, and weed free. Weekly.	*Owner or contracted maintenance personnel*
Yes	N4. BMP Maintenance The project WQMP shall identify responsibility for implementation of each non-structural BMP and scheduled cleaning and/or maintenance of all structural BMP facilities.	Visual Inspection, perform more thorough inspection if ponding water sits for more than 48 hours. Twice yearly and immediately following each storm event.	*Owner or contracted maintenance personnel*
No	N5. Title 22 CCR Compliance		
No	N6. Local Water Quality Permit Compliance		
No	N7. Spill Contingency Plan		
Yes	N8. Underground Storage Tank Compliance	Visual Inspection	*Owner or contracted maintenance personnel*
No	N9. Hazardous Materials Disclosure Compliance		
No	N10. Uniform Fire Code Implementation		

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Yes	N11. Common Area Litter Control The owner may contract with their landscape maintenance firms to provide this service during regularly scheduled maintenance, which should consist of litter patrol, emptying of trash receptacles in common areas, and noting trash disposal violations by tenants/homeowners or businesses and reporting the violations to the owner/POA for investigation.	Keep site clean of litter. Weekly.	*Owner or contracted maintenance personnel*
Yes	N12. Employee Training	The landscape and maintenance personnel shall read and be familiar with this WQMP.	*Owner or contracted maintenance personnel*
No	N13. Housekeeping of Loading Docks		
Yes	N14. Common Area Catch Basin Inspection The owner is required to have at least 80 percent of drainage facilities inspected, cleaned and maintained on an annual basis with 100 percent of the facilities included in a two year period. Cleaning should take place in the late summer/early fall prior to the start of the rainy season. Drainage facilities include catch basins (storm drain inlets), detention basins, retention basins, sediment basins, open drainage channels and lift stations. Records should be kept to document the annual maintenance.	Inspect drain inlets and catch basins. Keep inlet covers clean. Weekly.	*Owner or contracted maintenance personnel*
No	N15. Street Sweeping Private Streets and Parking Lots		
Structural Source Control BMPs			
No	S1. Provide Storm Drain System Stenciling and Signage		
No	S2. Design Outdoor Hazardous Material Storage Areas to Reduce Pollutant Introduction		

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Yes	S3. Design Trash Enclosures to Reduce Pollutant Introduction Design trash storage areas to reduce pollutant introduction. All trash container areas shall be paved with an impervious surface, designed not to allow run-on, screened or walled to prevent off-site transport of trash, and be provided with a roof or awning to prevent direct precipitation.	Keep trash storage areas clean and orderly. Weekly.	*Owner or contracted maintenance personnel*
Yes	S4. Use Efficient Irrigation Systems and Landscape Design Projects shall design the timing and application methods of irrigation water to minimize the runoff of excessive irrigation water into the municipal storm drain system. Additionally, permittee shall: Employ rain shutoff devices, design irrigation systems to each landscape areas specific requirements, use flow reducers, group plants with similar water requirements together.	Ensure that sprinklers are working properly and minimize unnecessary irrigation. Weekly.	*Owner or contracted maintenance personnel*
No	S5. Protect Slopes and Channels		
No	S6. Loading Dock Areas		
No	S7. Maintenance Bays and Docks		
No	S8. Vehicle Wash Areas		
No	S9. Outdoor Processing Areas		
No	S10. Equipment Wash Areas		
No	S11. Fueling Areas		
No	S12. Site Design and Landscape Planning	The sloped areas within the limits of this project shall be revegetated with native, drought-tolerant plant material. Temporary irrigation will be used until the vegetation on the slope has been established, at which point the irrigation system will be turned off.	*Owner or contracted maintenance personnel*

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
No	S13. Wash Water Controls for Food Preparation Areas		
No	S14. Community Car Wash Racks		

BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Low Impact Development BMPs		
Enclosed Planter Box (Bioretention with underdrain). • Media (gravel, soil mixtures, etc.) replacement • Confirm that the planter box is infiltrating water by checking the ground surface 48 hours after major storm events. • Add 1" – 2" of Mulch	• Every 5 – 10 years • On-going, during the rainy season; and, periodically during the summer months • Annually	*Owner via maintenance contractors*

Required Permits

This section must list any permits required for the implementation, operation, and maintenance of the BMPs. Possible examples are:

- Permits for connection to sanitary sewer
- Permits from California Department of Fish and Game
- Encroachment permits

If no permits are required, a statement to that effect should be made.

Forms to Record BMP Implementation, Maintenance, and Inspection

The form that will be used to record implementation, maintenance, and inspection of BMPs is attached.

Recordkeeping

All records must be maintained for at least five (5) years and must be made available for review upon request.

RECORD OF BMP IMPLEMENTATION, MAINTENANCE, AND INSPECTION

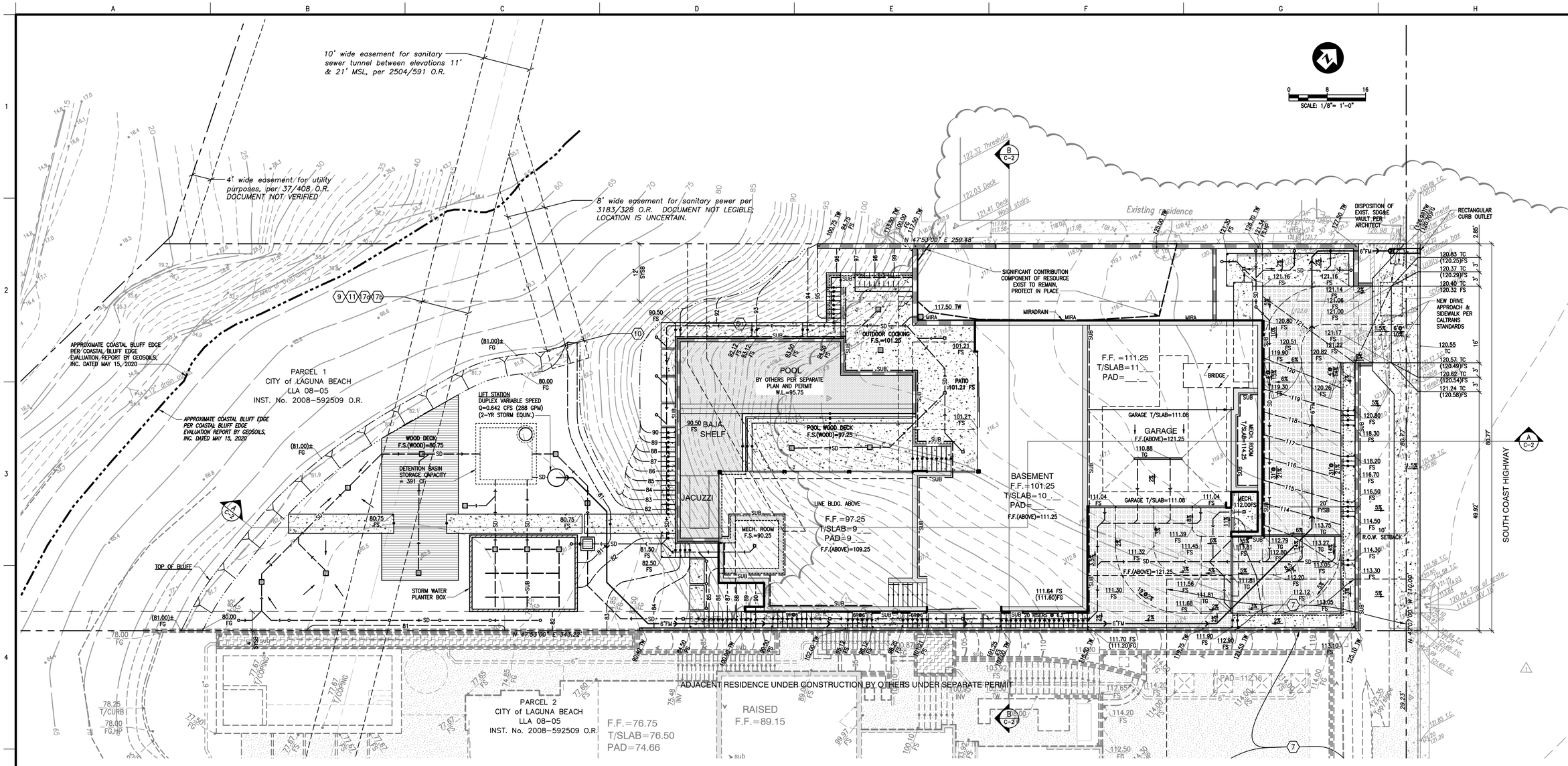
Today's Date: _____

Name of Person Performing Activity (Printed): _____

Signature: _____

BMP Name (As Shown in O&M Plan)	Brief Description of Implementation, Maintenance, and Inspection Activity Performed

Attachment E: Preliminary grading plan



DEVELOPMENT STATISTICS

SITE AREA	0.559 AC	24,339 S.F.
DISTURBED AREA	0.385 AC	16,824 S.F.
IMPERVIOUS AREA		
PRE-PROJECT	0 AC	0 S.F.
NEW OR REPLACEMENT	0.180 AC	7,841 S.F.
POST-PROJECT	0.180 AC	7,841 S.F.

EASEMENT NOTE:
ALL EASEMENTS SHOWN ON THIS TOPOGRAPHIC SURVEY ARE PER A PRELIMINARY TITLE REPORT PREPARED BY LAWYERS TITLE COMPANY, FILE NO. 220571757 DATED JUN3 8, 2020 UNLESS NOTED OTHERWISE.

(6a) A 4' WIDE EASEMENT FOR UTILITY PURPOSES RECORDED IN BOOK 72, PAGE 152 O.R. IS PLOTTED HEREON

(7) AN EASEMENT FOR EMBANKMENT SLOPE AND DRAINAGE PURPOSES RECORDED IN BOOK 351, PAGE 91 O.R. IS PLOTTED HEREON

(8) AN EASEMENT FOR WATERLINE PURPOSES RECORDED IN BOOK 661, PAGE 164 O.R. DOES NOT AFFECT THE SUBJECT PROPERTY AND IS NOT PLOTTED HEREON.

(9) A 10' WIDE EASEMENT FOR SANITARY SEWER PURPOSES RECORDED IN BOOK 2592, PAGE 70 O.R. IS PLOTTED HEREON

(10) AN 8' WIDE EASEMENT FOR SANITARY SEWER PURPOSES RECORDED IN BOOK 3183, PAGE 326 O.R. IS PLOTTED HEREON.

(11) A 10' WIDE EASEMENT FOR SANITARY SEWER PURPOSES RECORDED IN BOOK 3699, PAGE 214 O.R. IS PLOTTED HEREON

(14) A JOINT USE AGREEMENT RECORDED AS INSTRUMENT NO. 20100000063134 O.R. DOES NOT AFFECT THE SUBJECT PROPERTY AND IS NOT PLOTTED HEREON.

(15) A JOINT USE AGREEMENT RECORDED AS INSTRUMENT NO. 2010000431304 O.R. DOES NOT AFFECT THE SUBJECT PROPERTY AND IS NOT PLOTTED HEREON.

(16) A JOINT USE AGREEMENT RECORDED AS INSTRUMENT NO. 2010000421305 O.R. DOES NOT AFFECT THE SUBJECT PROPERTY AND IS NOT PLOTTED HEREON.

(17a) A MODIFICATION TO AN EASEMENT FOR SANITARY SEWER PURPOSES RECORDED AS INSTRUMENT NO 2011000370897 O.R. IS PLOTTED HEREON.

(17b) A MODIFICATION TO AN EASEMENT FOR SANITARY SEWER PURPOSES RECORDED AS INSTRUMENT NO 2014000208284 O.R. IS PLOTTED HEREON.

NOT FOR CONSTRUCTION

PRELIMINARY PLAN

PLANS PREPARED BY:
TOAL ENGINEERING, INC.
CIVIL ENGINEERING
LAND SURVEYING
STORMWATER QUALITY
139 Avenida Navarro
San Clemente, CA 92672
949.492.8586
www.toalengineering.com

REGISTERED PROFESSIONAL ENGINEER
ADAM L. TOAL
No. 59275
CIVIL
STATE OF CALIFORNIA

ADAM L. TOAL
R.C.E. 59275
DATE:

PREPARED FOR:
MR. TONY REYNA
718 THE STRAND
HERMOSA BEACH, CA
(310) 376-0057

REVISIONS	BY	DATE	APVD.	DATE

THE REYNA RESIDENCE

PRELIMINARY GRADING PLAN

PARCEL 1, LLA 08-05
31451 SOUTH COAST HIGHWAY, LAGUNA BEACH, CA

DATE: 1/26/22	H. SCALE: 1"=10'
SURVEY DATE: 5/20	V. SCALE: N/A
DRN.: A.A.	DWG. NO. C-1
CHD.: A.L.T.	
APPD.: A.L.T.	
JOB NO. 19099	SHEET 1 OF 2

1/28/2022 12:06:20 PM N:\19xxx\19099\Drawings\Civil\19099-prelimgr-01.dwg

Attachment F: Hydrologic soil group – Natural Resources Conservation Services

Hydrologic Soil Group—Orange County and Part of Riverside County, California
(31451 South Coast Highway)



Map Scale: 1:726 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 10 20 40 60

Feet
0 35 70 140 210

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Lines

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Points

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Orange County and Part of Riverside County, California
Survey Area Data: Version 14, May 27, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 11, 2018—May 5, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
126	Bosanko clay, 9 to 15 percent slopes	D	0.1	15.8%
142	Cieneba sandy loam, 30 to 75 percent slopes, eroded	D	0.3	52.3%
170	Modjeska gravelly loam, 9 to 15 percent slopes	A	0.2	31.9%
Totals for Area of Interest			**0.6**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX I.1: General Plan Consistency Table

Table I.1
Applicable Goals, Policies, and Actions of the General Plan

Policy/Action	Would the Project Conflict?
Land Use Element	
Goal 1: Create a community that is sustainable, resilient, and regenerative.	**No conflict.** The project would include sustainability features such as energy efficient lighting, green roof, and HVAC. As described in Section 6, Energy, and Section 8, Greenhouse Gas Emissions, the project would not result in the wasteful use of energy resources, nor would it result in GHG emissions that would exceed the applicable impact thresholds.
Policy 1.1: Reduce greenhouse gas (GHG) emissions 80% below 1990 levels by 2050.	**No conflict.** The project would include sustainability features such as EnergyStar appliances, durable building materials, and low-flow fixtures that would reduce resource consumption and GHG emissions.
Policy 1.2: Support design strategies and construction standards that maximize use of alternative energy sources and passive solar architecture in buildings.	**No conflict.** The single-family residential use would minimize the adverse effects on the environment through compliance with energy efficiency requirements, such as reducing indoor and outdoor water demand, installing energy-efficient appliances and equipment, and complying with California Title 24 Building Energy Efficiency Standards.
Action 1.2.7: Ensure that all development projects and major remodels implement sustainable landscaping strategies such as use of low or ultra-low water use plants and non-invasive plants.	**No conflict.** Landscaping would include revegetation of the sloped area and vegetation of the landscaped areas with native, drought-tolerant plants. Furthermore, the irrigation system would be designed and constructed to facilitate irrigation and avoid over-watering. The use of an automated timer system would control valve run times, and low precipitation heads would minimize the amount of water entering the landscape areas. The system would be equipped with a moisture detection system and/or rain shut-off trigger(s) to avoid unnecessary irrigation.
Policy 1.3: Support planning and design solutions that reduce water consumption and implement water conservation practices.	**No conflict.** The single-family residential use would reduce indoor and outdoor water demand by installing energy-efficient appliances and equipment and using an automated timer system that would control valve run times, and low precipitation heads would minimize the amount of water entering the landscape areas.
Action 1.3.2: Encourage or require the use of xeriscape in new construction and major remodels.	**No conflict.** Landscaping would include revegetation of the sloped area and vegetation of the landscaped areas with native, drought-tolerant plants, such as agave americana and aloe medusa, along with bluff native perennials, and would utilize a water-saving irrigation system.
Goal 2: Preserve, enhance and respect the unique character and identity of Laguna's residential neighborhoods.	**No conflict.** The project is located in the Village Low Density District and R-1, Residential Low Density Zone. The project would enhance the character of the project site and its vicinity by upgrading the existing vacant lot through thoughtful development, landscaping, and lighting to create a visually cohesive, high quality residential development. Additionally, the project area maintains a distinct residential community. Furthermore, the project has been designed to focus activity within the interior of the property and maximize physical

Table I.1
Applicable Goals, Policies, and Actions of the General Plan

Policy/Action	Would the Project Conflict?
	separations from the adjacent single-family residences and Coast Highway. The development has been setback 20 feet from Coast Highway.
Policy 2.1: Maintain the diversity and uniqueness of individual neighborhoods. Development standards and design review guidelines shall minimize the scale and bulk of new construction and/or renovation and require development to be compatible with the surrounding residences.	**No conflict.** The project would be a maximum of 30 feet (three stories) and built in a split-level style and maintain a 25-foot buffer from the bluff top that would contain only native groundcover and set the building back from direct views from the Pacific Ocean shoreline. Furthermore, the project's façade would be comprised of high quality, contemporary, and neutral colored building materials that are compatible with the surrounding low density residential uses and the native vegetation and views of the Pacific Ocean.
Policy 2.3: Preserve and enhance the qualities that contribute to the character of the residential community, including quiet neighborhoods, pedestrian use of streets, and appropriate levels of illumination and nighttime activity and seek to mitigate the effects of high volume thru-traffic.	**No conflict.** The project is located in the Village Low Density District and R-1, Residential Low Density Zone. The project area maintains a distinct residential orientation. The project's façade would be comprised of high quality, contemporary, and neutral colored building materials that are compatible with the surrounding low density residential uses and the native vegetation and views of the Pacific Ocean. The project would be a maximum of 30 feet (three stories) and built in a split-level style and setback 20 feet from Coast Highway.
Action 2.3.1. Continue to evaluate construction-related impacts upon residential neighborhoods through the Design Review process and mitigate such impacts using methods such as, but not necessarily limited to, the adoption of staging plans and noise and dust mitigation.	**No conflict.** As described in Section 17, Transportation, construction staging would be limited to the project site and would not impact nearby residential buildings. In addition, as discussed in Section 3, Air Quality, the project would comply with the requirements of SCAQMD Rule 403 and would reduce construction dust through standard BMPs such as daily site watering, covering of inactive stockpiles, and reducing vehicle speeds in unpaved areas. Furthermore, construction related dust (PM) emissions would not exceed the SCAQMD thresholds. Construction would take place during the hours permitted in the LBMC.
Policy 2.5: Encourage the use of variable setbacks and building heights and innovative construction techniques, such as green building technology.	**No conflict.** Based on an average lot slope of over 20-percent, the building envelope is limited to a height of 30 feet. The project would be a maximum of 30 feet (three stories) and built in a split-level style and maintain a 25-foot buffer from the bluff top that would set the building back from direct views from the Pacific Ocean shoreline. In addition, the project would incorporate energy-efficient appliances and equipment and complying with California Title 24 Building Energy Efficiency Standards.
Policy 2.8: Require building design and siting to be compatible and integrated with natural topographic features, minimize significant alteration of natural topography and/or other significant onsite resources, and protect public views as specified in the *Design Guidelines and the*	**No conflict.** As discussed below, under subheading, *Laguna Beach Design Guidelines – A Guide to Residential Development*, the project would be consistent with the required building design guidelines.

Table I.1
Applicable Goals, Policies, and Actions of the General Plan

Policy/Action	Would the Project Conflict?
Landscape and Scenic Highways Resource Document.	
Policy 2.9: Require the use of appropriate landscaping, special architectural treatments, and/or siting considerations to protect public views for projects visible from major highways and arterial streets.	**No conflict.** The project's façade would be comprised of high quality, contemporary, and neutral colored building materials that are compatible with the surrounding low density residential uses and the native vegetation and views of the Pacific Ocean. The project would be a maximum of 30 feet (three stories) and built in a split-level style and setback 20 feet from Coast Highway.
Policy 2.10: Maximize the preservation of coastal and canyon views (consistent with the principle of view equity) from existing properties and minimize blockage of existing public and private views. Best efforts should be made to site new development in locations that minimize adverse impacts on views from public locations (e.g., roads, bluff top trails, visitor-serving facilities, etc.).	**No conflict.** As discussed in more detail in Section 1, Aesthetics, views of Aliso Peak, the San Joaquin Hills, and the Pacific Ocean would still be available via street corridors, as are currently available. The proposed single-family residential use would be a maximum of 30 feet, which is in line with existing residential development in the vicinity and does not exceed the City's building height standards. Furthermore, the project has been designed in a split-level style and setback 20 feet from Coast Highway, further reducing view impacts.
Policy 3.9. Maintain the landscape guidelines set forth in the City's Landscape and Scenic Highways Resource Document (LSHRD).	**No conflict.** As discussed in more detail in Section 1, Aesthetics, the project would incorporate the design and landscaping recommendations of the LSHRD for Zone J of the Coast Highway to the extent feasible. Furthermore, the Design review by the City would ensure that the project would align with regulations governing scenic quality.
Goal 5: Promote compatibility among land uses in the community.	**No conflict.** The project site is in a residential area of the City and is currently undeveloped. The project would develop a single-family residential use, which would maintain compatibility with the residential uses that abut the project site.
Policy 5.1. Establish standards and review procedures to ensure that infill development and/or redevelopment is neighborhood-compatible.	**No conflict.** The project site is in a residential area of the City and is undeveloped. Implementation of the project would create a single-family residential use. The City's standards and review procedures appropriately require a discretionary review process in this instance involving public hearings before the Planning Commission and City Council to thoroughly consider neighborhood compatibility.
Policy 5.2: Ensure that all new development, including subdivisions and the creation of new building sites and remodels that involve building additions, is adequately evaluated to ascertain potential negative impacts on natural resources and adjacent development, emphasizing impact avoidance over impact mitigation. Required mitigation should be located on-site rather than off-site. Any off-site mitigation should be located within the City's boundaries and in close proximity to the project.	**No conflict.** As determined by the City this project is subject to CEQA, and that the preparation of an Initial Study is required. The following document evaluates the potential environmental effects that could result from the construction, implementation, and operation of the project. Any potentially significant effects have been mitigated to a point where clearly no significant effects would occur (refer to MM-BIO-1 through MM-BIO-4, and MM-CUL-1 through MM-CUL-7).

Table I.1
Applicable Goals, Policies, and Actions of the General Plan

Policy/Action	Would the Project Conflict?
Goal 7: Protect, preserve, and enhance the community's natural resources.	**No conflict.**. As discussed in more detail in Section 4, Biological Resources, the project construction activities would result in permanent direct impacts to coastal bluff scrub, disturbed encelia scrub, disturbed sage scrub-grassland, and ruderal habitats. However, because of the degraded and fragmented nature of the coastal bluff scrub existing on the project site, this habitat is considered low-quality habitat for most native wildlife species. However, in such cases the temporarily impacted areas should be restored in place to predisturbance conditions of equal or greater quality in order to avoid adverse impacts to these resources.
Policy 7.3: Design and site new development to protect natural and environmentally sensitive resources, such as areas of unique scenic quality, public views, and visual compatibility with surrounding uses and to minimize natural landform alterations.	**No conflict**. As discussed in more detail in Section 1, Aesthetics, the project would incorporate the design and landscaping recommendations of the LSHRD for Zone J of the Coast Highway to the extent feasible. Furthermore, the Design review by the City would ensure that the project would align with regulations governing scenic quality.
Action 7.3.3: Design and site new development to avoid hazardous areas and minimize risks to life and property from coastal and other hazards.	**No conflict**. As discussed in more detail in Section 7, Geology and Soils, the project site is bounded by an area considered susceptible to seismically induced landsliding (seacliff). Also, as identified in the General Plan's Safety Element the project site is located on a Seismic Hazard Landslide Area. Periodic maintenance of the portion of seacliff not modified by development may be necessary during the life of the residence. Conformance with current CBC requirements and site-specific design recommendations in the Geotechnical Report would minimize the risk of earthquake-induced landslides at the project site.
Action 7.3.4: Require new development to assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.	**No conflict**. As discussed in more detail in Section 7, Geology and Soils, the Coastal Hazards Report determined that it would be unlikely that wave runup would reach the bluff top development. The beach fronting the site is relatively stable and the project is, therefore, reasonably safe from shoreline erosion due to the erosion resistant bedrock material at the beach elevation.[1]
Action 7.3.6: Require new development on oceanfront Blufftop lots to incorporate drainage improvements, removal of and/or revisions to irrigation systems, and/or use of native or drought-tolerant vegetation into the design to minimize threats to oceanfront bluff recession.	**No conflict**. As discussed in more detail in Section 10, Hydrology and Water Quality, the project would include a biofiltration raised planter box that would receive excess runoff in site hardscape and landscape areas, which would then be treated and pumped into the Coast Highway. Further, on-site slopes beyond the project limits would remain untouched in their natural, non-irrigated condition. The bulk of the pervious area within the project limits consist of reconstructed slopes, which would be planted

[1] Discussion of Coastal Hazards (Coastal Hazards) for 31451 Coast Highway, City of Laguna Beach, Orange County, California, prepared by GeoSoils, Inc., dated April 23, 2020 (Available in Appendix D.3 of this document).

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Policy/Action	Would the Project Conflict?
	with native, drought-tolerant species and then temporarily irrigated until the vegetation is established.
Action 7.3.7: Require swimming pools located on oceanfront bluff properties to incorporate leak prevention and detection measures.	**No conflict**. The project includes a pool and spa, which would incorporate leak prevention and detection measures.
Action 7.3.11: Require all coastal development permit applications for new development on an oceanfront or on an oceanfront bluff property subject to wave action to assess the potential for flooding or damage from waves, storm surge, or seiches, through a wave uprush and impact report prepared by a licensed civil engineer with expertise in coastal processes. The conditions that shall be considered in a wave uprush study are: a seasonally eroded beach combined with long-term (75 years) erosion; high tide conditions, combined with long-term (75 year) projections for sea level rise; storm waves from a 100-year event or a storm that compares to the 1982/83 El Niño event.	**No conflict:** A coastal hazards report was prepared for the project site and utilized to evaluate on-site coastal conditions and coastal hazard constraints. The Coastal Hazard Report evaluates potential coastal hazards over a 75-year timeframe period and concluded that the project would not be significantly impacted by coastal erosion, coastal flood or wave runup impacts.[2]
Action 7.3.12: Site and design new structures to avoid the need for shoreline and/or oceanfront bluff protective devices during the economic life of the structure (75 years).	**No conflict**: A coastal hazards report used to evaluate coastal hazards identified that no shoreline protective devices would be required.[3]
Action 7.3.18: Site and design new oceanfront and oceanfront bluff development and bluff/shoreline protective devices where that siting/design takes into account predicted future changes in sea level. In particular, an acceleration of the historic rate of sea level rise shall be considered and based upon up-to-date scientific papers and studies, agency guidance (such as the 2010 Sea Level Guidance from the California Ocean Protection Council), and reports by national and international groups such as the National Research Council and the Intergovernmental Panel on Climate Change. Consistent with all provisions of the LCP, new structures shall be set back a sufficient distance landward to eliminate or minimize, to the maximum extent feasible, hazards associated with anticipated sea level rise over the expected economic life of the structure.	**No conflict:** A coastal hazards report was prepared for the project site and utilized to evaluate on-site coastal conditions and coastal hazard constraints. The Coastal Hazard Report evaluates potential coastal hazards over a 75-year timeframe period and concluded that the project would not be significantly impacted by coastal erosion, coastal flood or wave runup impacts.[4]
Policy 7.4: Ensure that development, including subdivisions, new building sites and remodels with	**No conflict.** As determined by the City this project is subject to CEQA, and that the preparation of an Initial Study is

[2] Discussion of Coastal Hazards (Coastal Hazards) for 31451 Coast Highway, City of Laguna Beach, Orange County, California, prepared by GeoSoils, Inc., dated April 23, 2020 (Available in Appendix D.3 of this document).

[3] Discussion of Coastal Hazards (Coastal Hazards) for 31451 Coast Highway, City of Laguna Beach, Orange County, California, prepared by GeoSoils, Inc., dated April 23, 2020 (Available in Appendix D.3 of this document).

[4] Discussion of Coastal Hazards (Coastal Hazards) for 31451 Coast Highway, City of Laguna Beach, Orange County, California, prepared by GeoSoils, Inc., dated April 23, 2020 (Available in Appendix D.3 of this document).

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Policy/Action	Would the Project Conflict?
building additions, is evaluated to ascertain potential negative impacts on natural resources. Proposed development shall emphasize impact avoidance over impact mitigation. Any mitigation required due to an unavoidable negative impact should be located on-site, where feasible. Any off-site mitigation should be located within the City's boundaries close to the project, where feasible.	required. The following document evaluates the potential environmental effects that could result from the construction, implementation, and operation of the project. Any potentially significant effects on natural resources have been mitigated to a point where clearly no significant effects would occur (refer to MM-BIO-1 through MM-BIO-4).
Policy 7.7: Protect marine resources by implementing methods to minimize runoff from building sites and streets to the City's storm drain system (e.g., on-site water retention).	**No conflict**. As discussed in more detail in Section 7, Geology and Soils, during construction, the project would be required to prevent the transport of sediments from the site by stormwater runoff and winds through the required compliance of LBMC Section 22.17.010, Construction Project Erosion and Sediment Control Maintenance Requirements, as well as adherence to requirements provided in the NPDES permit, and MM-Bio-2, Construction Site Housekeeping. As discussed in more detail in Section 10, Hydrology and Water Quality, the project would include a biofiltration raised planter box that would receive excess runoff in site hardscape and landscape areas, which would then be treated and pumped into the Coast Highway.
Policy 7.10: Require new construction and grading to be located in close proximity to preexisting development to minimize environmental impacts and growth-inducing potential.	**No conflict**. The project site is located within an urbanized setting in the City. Property in the surrounding area is characterized by low-density neighborhoods, which are comprised of single-family residential land uses, similar to the project.
Policy 8.5: Require the construction of sidewalks and pathways and/or sidewalk widening on streets that carry significant pedestrian traffic.	**No conflict**. The project would include a new sidewalk and drive approach on Coast Highway.
Policy 10.2: Design and site new development to protect natural and environmentally sensitive resources such as areas of unique scenic quality, public views, and visual compatibility with surrounding uses and to minimize landform alterations.	**No conflict.** As discussed in more detail in Section 1, Aesthetics, views of Aliso Peak, the San Joaquin Hills, and the Pacific Ocean would still be available via street corridors, as are currently available. The proposed single-family residential use would be a maximum of 30 feet, which is in line with existing residential development in the vicinity and does not exceed the City's building height standards. Furthermore, the project has been designed in a split-level style and setback 20 feet from Coast Highway, further reducing view impacts.
Action 10.2.5: On bluff sites, require applications where applicable, to include a geologic/soils/geotechnical study that identifies	**No conflict.** As discussed in more detail in Section 7, Geology and Soils, a geotechnical,[5] coastal hazards,[6] and coastal bluff edge reports[7] were all prepared. Conformance with current

[5] Preliminary Geotechnical Investigation Proposed Single-Family Residence for 31451 South Coast Highway, Laguna Beach, California, prepared by Coastal Geotechnical, September 16, 2004 (Available in Appendix D.1 of this document).

[6] Discussion of Coastal Hazards (Coastal Hazards) for 31451 Coast Highway, City of Laguna Beach, Orange County, California, prepared by GeoSoils, Inc., dated April 23, 2020 (Available in Appendix D.3 of this document).

[7] Coastal Bluff Edge Evaluation, Proposed Single-Family Development, 31451 S. Coast Highway, Laguna Beach, Orange County, California 92651, Assessor's Parcel Number (APN) 056-032-26, prepared by GeoSoils, Inc., May 15, 2020. Refer to Appendix A of this document.

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Policy/Action	Would the Project Conflict?
any geologic hazards affecting the proposed project site, any necessary mitigation measures, and contains statements that the project site is suitable for the proposed development and that the development will be safe from geologic hazard for its economic life. For development on oceanfront bluffs, such reports shall include slope stability analyses and estimates of the long-term average bluff retreat/erosion rate over the expected life of the development. Reports are to be prepared/signed by a licensed professional Engineering Geologist or Geotechnical Engineer.	CBC requirements and site-specific design recommendations in the geotechnical reports would make the site suitable for development.
Action 10.2.6: Require all new development located on an oceanfront bluff top to be setback from the oceanfront bluff edge a sufficient distance to ensure stability, ensure that it will not be endangered by erosion, and to avoid the need for protective devices during the economic life of the structure (75 years). Such setbacks must take into consideration expected long-term bluff retreat over the next 75 years, as well as slope stability. The predicted bluff retreat shall be evaluated considering not only historical bluff retreat data, but also acceleration of bluff retreat made possible by continued and accelerated sea level rise, future increase in storm or El Niño events, and any known site-specific conditions. To assure stability, the development must maintain a minimum factor of safety against landsliding of 1.5 (static) or 1.2 (pseudostatic, k=0.15 or determined through analysis by the geotechnical engineer) for the economic life of the structure.	**No conflict:** A coastal hazards report was prepared for the project site and utilized to evaluate on-site coastal conditions and coastal hazard constraints. The Coastal Hazard Report evaluates potential coastal hazards over a 75-year timeframe period and concluded that the project would not be significantly impacted by coastal erosion, coastal flood or wave runup impacts.[8] Furthermore, the project has been designed to be setback 25 feet from the blufftop.
Action 10.2.7: Require all new development located on oceanfront bluffs to be sited in accordance with the stringline but not less than 25 feet from the bluff edge. This requirement shall apply to the principal structure and major accessory structures such as guesthouses and pools that require a structural foundation. The setback shall be increased where necessary to ensure geologic safety and stability of the development.	**No conflict:** The project has been designed to be setback 25 feet from the blufftop.
Action 10.2.8: On oceanfront bluffs, require new minor accessory structures such as decks, patios and walkways that do not require structural foundations to be sited in accordance with stringline but not less than 10 feet from the bluff	**No conflict:** The project has been designed to be setback 25 feet from the blufftop.

[8] Discussion of Coastal Hazards (Coastal Hazards) for 31451 Coast Highway, City of Laguna Beach, Orange County, California, prepared by GeoSoils, Inc., dated April 23, 2020 (Available in Appendix D.3 of this document).

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edge. Require accessory structures to be removed or relocated landward when threatened by erosion, geologic instability or other coastal hazards.	
Action 10.3.1: Continue preparation of initial studies, pursuant to the CEQA, for any proposed development, including single-family residences, located within environmentally sensitive areas.	**No conflict.** As determined by the City this project is subject to CEQA, and that the preparation of an Initial Study is required. The following document evaluates the potential environmental effects that could result from the construction, implementation, and operation of the project.
Action 10.3.2: Continue to require in-depth analysis of constraint issues for properties, especially those designated on the City's hazard maps so that the nature of the constraint and the best options for mitigation or avoidance will be considered at all stages of the approval process since these constraints may affect what development is appropriate for the property.	**No conflict.** The project site is classified as VHFHSZ. As discussed further in Section 20, Wildfire, the project be developed in conformance with LBMC Chapter 15.01, California Fire Code, which adopts the 2019 California Fire Code and establishes provisions for fire safety related to construction, maintenance and design of buildings and land use. Furthermore, with the implementation of MM-PUB-1, prescribed, the project is at least equivalent to, if not better than, what is prescribed in the 2019 California Fire Code in terms of quality, effectiveness, fire resistance, durability, and safety.
Policy 10.4: Implement and define "lot area" as the total area of the lot minus the area/property located westerly of the building setback lines as described in Section 25.50.004(B)(1)(2)(3) or the oceanfront bluff ("oceanfront bluff edge" as defined in LCP Glossary), whichever is more restrictive.	**No conflict.** The project site is approximately 24,338 gross square feet and approximately 21,182 net square feet after taking into account setback requirements.
Policy 10.7: Protect marine resources by implementing methods to minimize runoff from building sites and streets to the City's storm drain system (e.g., on-site water retention).	**No conflict.** As discussed in more detail in Section 10, Hydrology and Water Quality, potential indirect effects to during construction would be avoided or substantially minimized through the implementation of BMPs, project design features, and a water quality management plan (refer to MM-Bio-2). Furthermore, the project would include a biofiltration raised planter box that would receive excess runoff in site hardscape and landscape areas, which would then be treated and pumped into the Coast Highway.
Policy 10.8: Avoid creation of building sites that will result in significant adverse impacts on the community.	**No conflict**. The project is an infill development within an urbanized area of the City on Coast Highway. Furthermore, the project would be consistent with the land use designation as the project's single-family residential land use and is allowed in the Village Low Density land use designation and the corresponding R-1 zone designation.
Transportation, Circulation, and Growth Management Element	
Policy 2A: Discourage the creation of new building sites where access and traffic conditions create an unacceptable level of traffic.	**No conflict.** As discussed in more detail in Section 17, Transportation, project-related traffic impacts would be less than significant.
Policy 2B: Discourage driveway access on Pacific Coast Highway and Laguna Canyon Road so interruptions to traffic flow are minimized.	**No conflict.** The project site is comprised of a single lot only accessible via Coast Highway. The project includes a new

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Policy/Action	Would the Project Conflict?
	drive approach per CALTRANS standards, which would minimize interruptions to traffic flow.
Policy 2S: Require right-of-way dedications for all developments located adjacent to Laguna Canyon Road and Coast Highway as specified in Section 25.53 of the Municipal Code.	**No conflict.** The project, which is adjacent to Coast Highway, has been designed in compliance with LBMC 25.53.
Policy 4G: Ensure that new development is phased to be concurrent with the needed infrastructure.	**No conflict.** As discussed in Section 6, Energy and Section 19, Utility and Service Systems of this document, the agencies that provide infrastructure, services, and utilities to the project site would have capacity to serve the project.
Policy 4J: Promote land uses (residential, non-residential and public) which are appropriately balanced.	**No conflict**. The project site is located within an urbanized setting in the City. Property in the surrounding area is characterized by low-density neighborhoods, which are comprised of single-family residential land uses, similar to the project.
Policy 11C: Preserve the scenic qualities of all highways, including views of both ocean and hillsides.	**No conflict.** As discussed in more detail in Section 1, Aesthetics, views of Aliso Peak, the San Joaquin Hills, and the Pacific Ocean would still be available via street corridors, as are currently available. The proposed single-family residential use would be a maximum of 30 feet, which is in line with existing residential development in the vicinity and does not exceed the City's building height standards. Furthermore, the project has been designed in a split-level style and setback 20 feet from Coast Highway, further reducing view impacts.
Policy 11E: Require the use of landscaping, special architectural treatments and siting considerations for projects visible from major highways and arterial streets.	**No conflict**. As discussed in more detail in Section 1, Aesthetics, the project would incorporate the design and landscaping recommendations of the LSHRD for Zone J of the Coast Highway to the extent feasible. Furthermore, the Design review by the City would ensure that the project would align with regulations governing scenic quality.
Housing Element	
Policy 1.11: Ensure that new housing will be aesthetically compatible with the surrounding environment and consistent with the size, scale and character of development in the neighborhood in which it is located.	**No conflict.** The project's façade would be comprised of high quality, contemporary, and neutral colored building materials that are compatible with the surrounding low density residential uses and the native vegetation and views of the Pacific Ocean. The project would be a maximum of 30 feet (three stories) and built in a split-level style and setback 20 feet from Coast Highway.
Policy 1.12: Encourage the utilization of energy conservation in the construction of new housing and in the rehabilitation of existing housing.	**No conflict.** The single-family residential use would minimize the adverse effects on the environment through compliance with energy efficiency requirements, such as reducing indoor and outdoor water demand, installing energy-efficient appliances and equipment, and complying with California Title 24 Building Energy Efficiency Standards.
Open Space Conservation Element	
Policy 1B: Require the use of drought-resistant plantings and natural vegetation to reduce irrigation practices.	**No conflict.** Landscaping would include revegetation of the sloped area and vegetation of the landscaped areas with native, drought-tolerant plants. Furthermore, the irrigation

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Policy/Action	Would the Project Conflict?
	system would be designed and constructed to facilitate irrigation and avoid over-watering. The use of an automated timer system would control valve run times, and low precipitation heads would minimize the amount of water entering the landscape areas. The system would be equipped with a moisture detection system and/or rain shut-off trigger(s) to avoid unnecessary irrigation.
Policy 1C: Require the installation of rain gutters and other water transport devices as a condition of approval on blufftop development, in order to convey water to the street (away from the bluff side). When this is impractical, all water shall be piped to the base of the bluff.	**No conflict.** As discussed in more detail in Section 10, Hydrology and Water Quality, site drainage would be collected by a series of roof gutters and drain inlets in site hardscape and landscape areas to collect excess runoff and not allow surface water to accumulate and result in standing water/ponding situation, the collected runoff would then be conveyed to a storm water lift station and pumped into the Coast Highway via rectangular curb outlet. Furthermore, the on-site slopes outside of the project area (but within the property) would remain untouched.
Policy 1D: Develop measures to control and limit irrigation of coastal bluff properties in a consistent manner and institute procedures to adopt these measures by ordinance.	**No conflict.** As discussed in more detail in Section 10, Hydrology and Water Quality, the irrigation system would be designed and constructed to facilitate irrigation and avoid over-watering. The use of an automated timer system would control valve run times, and low precipitation heads would minimize the amount of water entering the landscape areas. The system would be equipped with a moisture detection system and/or rain shut-off trigger(s) to avoid unnecessary irrigation, which could lead to erosion.
Policy 1I: The City shall impose a 25-foot minimum setback or a distance ascertained by stringline measurements for all blufftop development, notwithstanding the fact that ecological and environmental constraints may require an additional setback.	**No conflict:** The project has been designed to be setback 25 feet from the blufftop.
Policy 4A: Ensure that development plans and designs incorporate appropriate Site Design, Source Control and Structural Treatment Control Best Management Practices (BMPs), where feasible, to reduce to the maximum extent practicable, pollutants and runoff from the proposed development. Structural Treatment Control BMPs shall be implemented when a combination of Site Design and Source Control BMPs are not sufficient to protect water quality.	**No conflict.** As discussed in more detail in Section 7, Geology and Soils, during construction, the project would be required to prevent the transport of sediments from the site by stormwater runoff and winds through the required compliance of LBMC Section 22.17.010, Construction Project Erosion and Sediment Control Maintenance Requirements, as well as adherence to requirements provided in the NPDES permit, and MM-Bio-2, Construction Site Housekeeping. As discussed in more detail in Section 10, Hydrology and Water Quality, the project would include a biofiltration raised planter box that would receive excess runoff in site hardscape and landscape areas, which would then be treated and pumped into the Coast Highway.
Policy 4B: Ensure that development minimizes the creation of impervious surfaces, especially contiguously connected impervious areas, or	**No conflict.** As discussed in more detail in Section 10, Hydrology and Water Quality, currently, 100 percent of the project site is covered in impervious surface, which would be reduced to 48 percent. However, the project would not

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minimizes the area of existing impervious surfaces where feasible.	substantially create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff during construction or operation.
Policy 4C: Ensure that development is designed and managed to minimize the volume and velocity of runoff (including both stormwater and dry weather runoff) to the maximum extent practicable, to avoid excessive erosion and sedimentation.	**No conflict.** As discussed in more detail in Section 10, Hydrology and Water Quality, all stormwater flows would be directed to storm drainage features and would be discharged to Coast Highway. The proposed structure, pavement, and landscaping, which would include revegetation of the sloped areas with native, drought-tolerant plants, would prevent substantial erosion. Furthermore, the irrigation system would be designed and constructed to facilitate irrigation and avoid over-watering, thereby avoid excessive erosion.
Policy 4D: Ensure that development and existing land uses and associated operational practices minimize the introduction of pollutants into coastal waters (including the ocean, estuaries, wetlands, rivers and lakes) to the maximum extent practicable.	**No conflict.** As discussed in more detail in Section 10, Hydrology and Water Quality, the project would include a biofiltration raised planter box that would receive excess runoff in site hardscape and landscape areas, which would then be treated and pumped into the Coast Highway.
Policy 4G: Ensure that all development minimizes erosion, sedimentation and other pollutants in runoff from construction-related activities to the maximum extent practicable. Ensure that development minimizes land disturbance activities during construction (e.g., clearing, grading and cut-and-fill), especially in erosive areas (including steep slopes, unstable areas and erosive soils), to minimize the impacts on water quality.	**No conflict.** As discussed in more detail in Section 7, Geology and Soils, during construction, the project would be required to prevent the transport of sediments from the site by stormwater runoff and winds through the required compliance of LBMC Section 22.17.010, Construction Project Erosion and Sediment Control Maintenance Requirements, as well as adherence to requirements provided in the NPDES permit, and MM-Bio-2, Construction Site Housekeeping.
Policy 4H: Require the property owner, homeowner's association or local government, as applicable, to continue the application and maintenance of Source Control and/or Structural Treatment Control BMPs as necessary to reduce runoff pollution, including appropriate construction related erosion and sediment control measures.	**No conflict.** As discussed in more detail in Section 10, Hydrology and Water Quality, potential indirect effects to during construction would be avoided or substantially minimized through the implementation of BMPs, project design features, and a water quality management plan (refer to MM-Bio-2). Furthermore, the project would include a biofiltration raised planter box that would receive excess runoff in site hardscape and landscape areas, which would then be treated and pumped into the Coast Highway.
Policy 4J: Promote infiltration of both storm water and dry weather runoff, as feasible, to protect natural hydrologic conditions.	**No conflict.** As discussed in more detail in Section 10, Hydrology and Water Quality, the project would include a biofiltration raised planter box that would receive excess runoff in site hardscape and landscape areas, which would then be treated and pumped into the Coast Highway.
Policy 7A: Preserve to the maximum extent feasible the quality of public views from the hillsides and along the City's shoreline.	**No conflict.** As discussed in more detail in Section 1, Aesthetics, views of Aliso Peak, the San Joaquin Hills, and the Pacific Ocean would still be available via street corridors, as are currently available. The proposed single-family residential use would be a maximum of 30 feet, which is in line with existing residential development in the vicinity and

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Policy/Action	Would the Project Conflict?
	does not exceed the City's building height standards. Furthermore, the project has been designed in a split-level style and setback 20 feet from Coast Highway, further reducing view impacts.
Policy 7M: New development along Pacific Coast Highway shall preserve existing views where feasible and, where topography allows, new development shall be terraced below the grade of Pacific Coast Highway.	**No conflict.** As discussed in more detail in Section 1, Aesthetics, views of Aliso Peak, the San Joaquin Hills, and the Pacific Ocean would still be available via street corridors, as are currently available. The proposed single-family residential use would be a maximum of 30 feet, which is in line with existing residential development in the vicinity and does not exceed the City's building height standards. Furthermore, the project has been designed in a split-level style and setback 20 feet from Coast Highway, further reducing view impacts.
Policy 8K: As a condition of new development in South Laguna, require the identification of environmentally sensitive areas, including chaparral and coastal sage scrub. Intrusion into these areas for wildlands fuel modification programs should not be permitted.	**No conflict.** As discussed in more detail in Section 4, Biological Resources, the project construction activities would result in permanent direct impacts to coastal bluff scrub, disturbed encelia scrub, disturbed sage scrub-grassland, and ruderal habitats. However, because of the degraded and fragmented nature of the coastal bluff scrub existing on the project site, this habitat is considered low-quality habitat for most native wildlife species. However, in such cases the temporarily impacted areas should be restored in place to predisturbance conditions of equal or greater quality in order to avoid adverse impacts to these resources.
Policy 8N: Encourage the preservation of existing drought-resistant, native vegetation and encourage the use of such vegetation in landscape plans.	**No conflict.** Landscaping would include revegetation of the sloped area and vegetation of the landscaped areas with native, drought-tolerant plants.
Policy 9I: Require new development projects to control the increase in the volume, velocity and sediment load of runoff from the greatest development areas at or near the source of increase to the greatest extent feasible.	**No conflict.** As discussed in more detail in Section 10, Hydrology and Water Quality, all stormwater flows would be directed to storm drainage features and would be discharged to Coast Highway. The proposed structure, pavement, and landscaping, which would include revegetation of the sloped areas with native, drought-tolerant plants, would prevent substantial erosion. Furthermore, the irrigation system would be designed and constructed to facilitate irrigation and avoid over-watering, thereby avoid excessive erosion.
Policy 9J: Require new developments to maintain runoff characteristics as near as possible to natural discharge characteristics by maintaining the natural conditions of the watershed.	**No conflict.** Site drainage would be collected by drain inlets and channel drains in site hardscape and landscape areas to collect excess runoff and not allow surface water to accumulate and result in standing water/ponding situation, the collected runoff would then be conveyed to a storm water lift station and pumped into the Coast Highway via rectangular curb outlet. Furthermore, the on-site slopes outside of the project area (but within the property) would remain untouched. Therefore, the project would not

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	substantially alter the existing drainage pattern of the site or area in a manner that would result in flooding on- or offsite.
Policy 9T: All graded areas shall be planted and maintained for erosion control and visual enhancement purposes. Use of native plant species shall be emphasized.	**No conflict.** The project would include vegetation clearing, grading, and construction of a single-family residential use, retaining walls, driveway, deck, pool, and other site finishes (e.g., landscaping). The on-site slopes outside of the project area (but within the property) would remain untouched with their current vegetative state.
Policy 12D: Preserve cultural/scientific sites, including geologically unique formations having archaeological significance.	**No conflict.** As discussed in more detail in Section 5, Cultural Resources, given the presence of CA-ORA-842 (West Locus) within the project site, the identification of several prehistoric archaeological resources in the immediate vicinity, and the presence of favorable natural conditions that would have attracted prehistoric inhabitants to the area, there is a high potential to encounter previously unknown archaeological resources during construction of the project. Based on these results, it is recommended that archaeological and Native American monitoring occur during project-related ground disturbing activities. Mitigation measures MM-CULT-1 through MM-CULT-7.
Noise Element	
Action 4.3: During the environmental review of all projects requiring extensive construction, determine the proximity of the site to the established residential areas. If the project will involve pile driving, night time truck hauling, blasting, 24 hour pumping (important in coastal excavations), or any other very high noise equipment, the environmental review shall include a construction noise alternative analysis. From this analysis specific mitigation measures shall be developed to mitigate potential noise impacts. This may include but not be limited to: • Requirements to use quieter potentially costlier construction techniques. • notification of adjacent residents (homeowner and renters) of time, duration, and location of construction. • relocation of residents to hotels during noisy construction period. • developer reimbursement to City for 24 hour on-site inspection to verify compliance with required mitigation. • limit hours of operation of equipment 15 dB above noise ordinance limits to the hours of 10am to 4pm.	**No conflict.** As described in Section 13, Noise, a construction noise analysis was completed to determine potential noise impacts to nearby residences. Construction would not involve pile driving, nighttime truck hauling, blasting, 24-hour pumping, or other very high noise equipment. As discussed in Section 13, Noise, project construction would not result in significant noise impacts to nearby residences.

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Policy/Action	Would the Project Conflict?
Landscape and Scenic Highway Element	
Action 2.3.3: For all new development on private property that includes landscape plan approval, ensure the landscaping is consistent with the goals and criteria of the View Preservation and Restoration Ordinance. For all City projects, landscaping should be placed to maintain and enhance scenic vistas.	**No conflict**. As discussed in more detail in Section 1, Aesthetics, the project would incorporate the design and landscaping recommendations of the LSHRD for Zone J of the Coast Highway to the extent feasible. Furthermore, the Design review by the City would ensure that the project would align with regulations governing scenic quality.
Policy 6.3: Promote implementation of defensible space and firefighter access in fuel modification or VHFHSZ areas within existing developments. Require defensible space and firefighter access for all new developments or major remodels in fuel modification or VHFHSZ areas. Ensure fire department apparatus access and water supplies are accessible for firefighting. Encourage fuel modification on existing private development to provide for effective fire prevention.	**No conflict.** The project site is classified as VHFHSZ. As discussed further in Section 20, Wildfire, the project be developed in conformance with LBMC Chapter 15.01, California Fire Code, which adopts the 2019 California Fire Code and establishes provisions for fire safety related to construction, maintenance and design of buildings and land use. Furthermore, with the implementation of MM-PUB-1, prescribed, the project is at least equivalent to, if not better than, what is prescribed in the 2019 California Fire Code in terms of quality, effectiveness, fire resistance, durability, and safety.
Action 6.3.1: As part of permit review, continue to require new development to comply with defensible space and firefighter access requirements through landscaped areas and fire-resistant plant materials with a maintenance program.	**No conflict.** As discussed further in Section 20, Wildfire, the project would provide a minimum 3-foot-wide firefighter access around the perimeter of the structure, all vegetation would be pruned to reduce fuel loads, an automatic irrigation system would maintain healthy vegetation, and no trees or tree-form shrubs would extend beyond the property line.
Policy 7.1: Encourage landscape and development planning and management strategies to avoid slope instability and debris flow problems. Select the best management practices for proposed vegetation and landscape maintenance to maintain and improve landform stability as cited in FEMA Publication 182 "Landslide Loss Reduction: A Guide to State and Local Government Planning," or updated/successor publications from Federal and State public safety authorities.	**No conflict.** As discussed in more detail in Section 10, Hydrology and Water Quality, potential indirect effects to during construction would be avoided or substantially minimized through the implementation of BMPs, project design features, and a water quality management plan (refer to MM-Bio-2). The proposed structure, pavement, and landscaping, which would include revegetation of the sloped areas with native, drought-tolerant plants, would prevent substantial erosion.
Policy 8.3: Minimize impervious surfaces and maximize drainage infiltration in new streetscapes and other new development, taking into account the recommendations of the geotechnical consultant.	**No conflict.** As discussed in more detail in Section 10, Hydrology and Water Quality, currently, 100 percent of the project site is covered in impervious surface, which would be reduced to 48 percent. The WQMP outlined the post-development drainage plan that is designed to treat and partially retain runoff via an enclosed planter box (biofiltration raised planter box) prior to discharge in order to eliminate direct discharge into the Pacific Ocean.
Policy 8.6: Encourage drought-resistant and native landscape plant use that considers plant groupings, fire safety, slope stability, salt tolerance, location for view preservation, and the long term health of the ecosystem.	**No conflict.** Landscaping would include revegetation of the sloped area and vegetation of the landscaped areas with native, drought-tolerant plants, which would increase slope stability.

Table I.1
Applicable Goals, Policies, and Actions of the General Plan

Policy/Action	Would the Project Conflict?
Policy 8.8: Encourage landscape plan material selection that minimizes water, fertilizer, and pesticide use, that are low-maintenance, fire safe, and that create plant communities with compatible habitat opportunities.	**No conflict.** Landscaping would include revegetation of the sloped area and vegetation of the landscaped areas with native, drought-tolerant plants.
Policy 8.9: Encourage appropriate plant material selection and placement to minimize the potential deleterious effects of pests and diseases, as well as impacts from salt spray and wind in coastal influence zones.	**No conflict.** Landscaping would include revegetation of the sloped area and vegetation of the landscaped areas with native, drought-tolerant plants.
Policy 8.10: Prohibit planting of invasive plant species as determined by the City.	**No conflict.** Landscaping would include revegetation of the sloped area and vegetation of the landscaped areas with native, drought-tolerant plants.
Policy 8.13: Continue to promote minimizing unnecessary light and glare. Promote landscape design to shade and shield absorptive dark colors, expanses of glass, and extensive hardscape.	**No conflict.** Project security and landscape lighting would be used throughout the project site, but would be designed to prevent light spillover onto adjacent properties.
Safety Element	
Policy S-2.5: Require development within the VHFHSZ's to incorporate fire-resistive construction and defensible space management strategies consistent with State requirements, municipal regulations, and requirements identified in Policy S-2.3	**No conflict.** The project site is classified as VHFHSZ. As discussed further in Section 20, Wildfire, the project be developed in conformance with LBMC Chapter 15.01, California Fire Code, which adopts the 2019 California Fire Code and establishes provisions for fire safety related to construction, maintenance and design of buildings and land use. Furthermore, with the implementation of MM-PUB-1, prescribed, the project is at least equivalent to, if not better than, what is prescribed in the 2019 California Fire Code in terms of quality, effectiveness, fire resistance, durability, and safety.
Policy S-2.5a: All new development and major remodels, in applicable areas, will be responsible for preparation of a Fire Protection Plan, the creation, maintenance, and rehabilitation of fuel modification zones, which will include a recorded deed restriction acknowledging the fire hazard potential and maintenance responsibility by the developer or his successors and assigns.	**No conflict.** The project will prepare a Fire Protection Plan and will worked with LBFD to receive clearance.
Policy S-2.5b: Require property owners within the VHFHSZ to create defensible space surrounding their homes, including providing access for firefighters, maintaining plantings and outdoor areas, and minimizing combustible structures.	**No conflict**. As discussed further in Section 20, Wildfire, the project would provide a minimum 3-foot-wide firefighter access around the perimeter of the structure, all vegetation would be pruned to reduce fuel loads, an automatic irrigation system would maintain healthy vegetation, and no trees or tree-form shrubs would extend beyond the property line.
Policy S-2.5c: Require the use of fire-safe planting, especially in landscaped areas located within the VHFHSZ.	**No conflict**. Landscaping would include revegetation of the sloped area and vegetation of the landscaped areas with native, drought-tolerant plants. Fire-safe planting would be taken into account.

Table I.1
Applicable Goals, Policies, and Actions of the General Plan

Policy/Action	Would the Project Conflict?
Policy S-2.7: Ensure that existing and new developments have adequate water supplies and conveyance capacity to meet daily demands and firefighting requirements.	**No conflict**. As discussed in Section 19, Utility and Service Systems of this document, the agencies that provide infrastructure, services, and utilities to the project site would have capacity to serve the project.
Policy S-3.1: Require the preparation of a geotechnical investigation for applicable development projects as specified in the Municipal Code.	**No conflict.** As discussed in more detail in Section 7, Geology and Soils, a geotechnical,[9] coastal hazards,[10] and coastal bluff edge reports[11] were all prepared. Conformance with current CBC requirements and site-specific design recommendations in the geotechnical reports would make the site suitable for development.
Policy S-3.1a: Require onsite borings or subsurface investigations for (applicable) proposed developments in areas of the City where geologic hazards may be a concern.	**No conflict.** The geotechnical report included evaluation of on-site borings.[12] Conformance with current CBC requirements and site-specific design recommendations in the geotechnical reports would make the site suitable for development.
Policy S-3.1c: As above, require that applicable grading activities be monitored by qualified geotechnical personnel.	**No conflict:** All construction grading would be monitored by qualified geotechnical personnel.
Policy S-4.2: Require new developments and major remodels to retain onsite storm flows at or below existing conditions.	**No conflict.** As discussed in more detail in Section 10, Hydrology and Water Quality, all stormwater flows would be directed to storm drainage features and would be discharged to Coast Highway. The proposed structure, pavement, and landscaping, which would include revegetation of the sloped areas with native, drought-tolerant plants, would prevent substantial erosion. Furthermore, the irrigation system would be designed and constructed to facilitate irrigation and avoid over-watering, thereby avoid excessive erosion.
Policy S-4.2a: Onsite drainage improvements shall be consistent with the requirements of the Laguna Beach Municipal Code.	**No conflict.** All on-site drainage will be compliant with the LBMC.
Policy S-4.3: Design drainage infrastructure to meet 100-year flood protection at a minimum.	**No conflict:** A coastal hazards report was prepared for the project site and utilized to evaluate on-site coastal conditions and coastal hazard constraints. The Coastal Hazard Report evaluates potential coastal hazards over a 75-year timeframe period and concluded that the project would not be significantly impacted by coastal erosion, coastal flood or wave runup impacts.[13]

[9] Preliminary Geotechnical Investigation Proposed Single-Family Residence for 31451 South Coast Highway, Laguna Beach, California, prepared by Coastal Geotechnical, September 16, 2004 (Available in Appendix D.1 of this document).

[10] Discussion of Coastal Hazards (Coastal Hazards) for 31451 Coast Highway, City of Laguna Beach, Orange County, California, prepared by GeoSoils, Inc., dated April 23, 2020 (Available in Appendix D.3 of this document).

[11] Coastal Bluff Edge Evaluation, Proposed Single-Family Development, 31451 S. Coast Highway, Laguna Beach, Orange County, California 92651, Assessor's Parcel Number (APN) 056-032-26, prepared by GeoSoils, Inc., May 15, 2020. Refer to Appendix A of this document.

[12] Preliminary Geotechnical Investigation Proposed Single-Family Residence for 31451 South Coast Highway, Laguna Beach, California, prepared by Coastal Geotechnical, September 16, 2004 (Available in Appendix D.1 of this document).

[13] Discussion of Coastal Hazards (Coastal Hazards) for 31451 Coast Highway, City of Laguna Beach, Orange County, California, prepared by GeoSoils, Inc., dated April 23, 2020 (Available in Appendix D.3 of this document).

Table I.1
Applicable Goals, Policies, and Actions of the General Plan

Policy/Action	Would the Project Conflict?
Policy S-6.4: Prevent shoreline development that exposes structures to wave attack or degrades natural means of shoreline protection.	**No conflict:** A coastal hazards report was prepared for the project site and utilized to evaluate on-site coastal conditions and coastal hazard constraints. The Coastal Hazard Report evaluates potential coastal hazards over a 75-year timeframe period and concluded that the project would not be significantly impacted by coastal erosion, coastal flood or wave runup impacts.[14] Furthermore, the project has been designed to be setback 25 feet from the blufftop.
Policy S-6.5: Require that stormwater and drainage are contained, controlled, and discharged appropriately within coastal areas.	**No conflict.** As discussed in more detail in Section 10, Hydrology and Water Quality, the post-development drainage plan is designed to treat and partially retain runoff via an enclosed planter box (biofiltration raised planter box) prior to discharge in order to eliminate direct discharge into the Pacific Ocean.
Policy S-6.6: Require shoreline developments to conduct a sea-level rise analysis and mapping to identify areas where potential inundation may occur consistent with prevailing zoning regulations and general plan policies.	**No conflict:** A coastal hazards report was prepared for the project site and utilized to evaluate on-site coastal conditions and coastal hazard constraints. The Coastal Hazard Report evaluates potential coastal hazards over a 75-year timeframe period and concluded that the project would not be significantly impacted by coastal erosion, coastal flood or wave runup impacts.[15] Furthermore, the project has been designed to be setback 25 feet from the blufftop.
Source: City of Laguna Beach General Plan; EcoTierra Consulting, 2022.	

[14] Discussion of Coastal Hazards (Coastal Hazards) for 31451 Coast Highway, City of Laguna Beach, Orange County, California, prepared by GeoSoils, Inc., dated April 23, 2020 (Available in Appendix D.3 of this document).

[15] Discussion of Coastal Hazards (Coastal Hazards) for 31451 Coast Highway, City of Laguna Beach, Orange County, California, prepared by GeoSoils, Inc., dated April 23, 2020 (Available in Appendix D.3 of this document).

APPENDIX I.2: Residential Design Guidelines

Table I.2
City of Laguna Beach Residential Design Guidelines

Guideline	Would the Project Conflict?
Access	
3.1: Design safe and adequate site access.	**No conflict.** The project would include a new sidewalk along the frontage of the project site. The project would also include a new drive approach per CALTRANS standards, which would minimize interruptions to traffic flow. The driveway placement and location has been designed in accordance with Caltrans standards.
3.4: Ensure adequate site visibility over vehicular traffic and pedestrian safety.	
3.5: Follow the City's engineering standards *(*see Municipal Code Title 21).	
3.6: Improve pedestrian circulation by providing sidewalks and public trails where appropriate.	
Design Articulation	
4.1: Step a retaining wall to follow the natural topography.	**No conflict.** The proposed retaining walls on the north and south sides of the property would follow the natural topography and would be no more than a maximum of four feet above grade. The retaining walls would be partially screened by the structure and would be composed of earth-tones, faux-rock, and landscaping that would be implemented to soften the wall appearance. The project's overall façade, including the retaining walls, would be comprised of high quality, contemporary, and neutral earth toned building materials that are compatible with the surrounding low density residential uses and the native vegetation and views of the Pacific Ocean beachfront. The outdoor area would be comprised of 1,425 square feet of elevated decks, pool, spa, BBQ, reflecting pond, and landscaping. The project has been designed to maintain a 25-foot buffer from the bluff top that would set the overall development back from direct views from the Pacific Ocean shoreline. Furthermore, the outdoor uses would be buffered from the existing adjacent residential uses by greenery, hedging, and fencing. The project would be a maximum of 30 feet (three stories) and built in a split-level style and setback 20 feet from Coast Highway. The project would ascend away from Coast Highway at approximately the natural grade of the slope and be comprised of a flat integrally colored smooth trowel stucco roof. The single-family residential use would be similar in size and mass to several existing residential buildings across the street and adjacent to the project site. The three-car parking garage, which has been designed to be setback 20 feet from Coast Highway, would be partially screened from public view through the use of frontage landscaping and overall building design.
4.2: Minimize visible retaining wall height.	
4.3: Use materials that complement the natural setting and help walls blend into their surroundings.	
4.4: Plant trees, shrubs, or vines to soften the appearance of a retaining wall.	
4.5: Give as much design consideration to outdoor area as to indoor areas, considering existing development and neighboring properties.	
4.7: Use building volumes efficiently.	
4.8: Step a building with the site slope.	
4.9: Use articulation techniques that are consistent with the architectural style of the residence.	
4.10: Choose appropriate roof forms.	
4.11: Vary wall plane lengths and wall heights.	
4.12: Design a roof to follow site contours.	
4.13: Use architectural elements and details to provide variation in building form and help achieve an appropriate scale.	
4.15: Articulate building form through variation in materials, color and/or texture.	
4.16: Locate the garage to minimize its impact on the perceived mass of the building.	
4.17: Consider alternative garage configurations to reduce the perceived mass of the building.	
Design Integrity	
5.1: Building forms, materials and details should be integrated in character and style.	**No conflict.** The architectural style and treatment would be consistent throughout the project site. Primarily, the

Table I.2
City of Laguna Beach Residential Design Guidelines

Guideline	Would the Project Conflict?
5.2: Building form should be consistent with the chosen architectural theme and overall design concept.	building façade would be treated with a combination of stone wall cladding, stucco, and glass. The design of the project would incorporate many of the architectural elements that are present in the surrounding residential uses, as well as in the community in general, such as the use of cultured stone and earth tone colors. The project has been designed to be setback 25 feet from the blufftop, thereby reducing the overall visibility of the decks and pool/spa areas from the Pacific Ocean beachfront. The three-car parking garage, which has been designed to be setback 20 feet from Coast Highway, would be partially screened from public view through the use of frontage landscaping and overall building design.
5.3: A building should be distinctive but also contribute to the character of the neighborhood.	
5.4: Select distinctive architectural details that are consistent with the chosen architectural style.	
5.5: Use architectural details to provide a sense of scale and interest.	
5.7: Minimize the impacts of a deck or balcony.	
5.8: Use building materials in a consistent manner.	
5.10: Design an attached garage to be an integral element of the architectural composition of the building.	
Environmental Context	
6.2: Maintain natural slopes to the extent feasible.	**No conflict.** The project has been designed to follow the natural topography of the site to the maximum extent feasible. The project would include up to 4,340 CY of soil cut, 1,070 CY of soil fill, for a total of 3,270 CY of net soil export.
6.5: Minimize grading.	
Landscaping	
9.2: Use plant materials that thrive in the natural setting.	**No conflict.** Landscaping would include revegetation of the sloped area and vegetation of the landscaped areas with native, drought-tolerant plants that are described in detail in the Fuel Modification Plan.[1] As discussed in more detail in Section 7, Geology and Soils, a geotechnical,[2] coastal hazards,[3] and coastal bluff edge reports[4] were all prepared. Conformance with current CBC requirements and site-specific design recommendations in the geotechnical reports would make the site suitable for development. Furthermore, the Coastal Hazard Report evaluates potential coastal hazards over a 75-year timeframe period and concluded that the project would not be significantly impacted by coastal erosion, coastal flood or wave runup impacts. As discussed in more detail in Section 10, Hydrology and Water Quality, the project would include a biofiltration
9.3: Design with view equity in mind.	
9.4: Consider visual contributions to street and neighborhood.	
9.5: Use planting to soften, integrate or otherwise enhance the building in its setting.	
9.6: Choose and locate plants for fire safety.	
9.7: Be aware of site geotechnical and erosion issues.	
9.8: Consider hardscape elements that complement the site design	
9.9: Locate outdoor use areas to avoid unreasonable impacts to neighbors.	
9.10: Design with consideration for proper management of stormwater and irrigation.	
9.11: Design planting and irrigation systems to conserve water.	

1 AM&M Request for Joe Reyna, 718 The Strand, Hermosa Beach, CA 90254, prepared by FIREWISE 2000, LLC, January 27, 2022. Refer to **Appendix B** of this document.

2 Preliminary Geotechnical Investigation Proposed Single-Family Residence for 31451 South Coast Highway, Laguna Beach, California, prepared by Coastal Geotechnical, September 16, 2004 (Available in **Appendix D.1** of this document).

3 Discussion of Coastal Hazards (Coastal Hazards) for 31451 Coast Highway, City of Laguna Beach, Orange County, California, prepared by GeoSoils, Inc., dated April 23, 2020 (Available in **Appendix D.3** of this document).

4 Coastal Bluff Edge Evaluation, Proposed Single-Family Development, 31451 S. Coast Highway, Laguna Beach, Orange County, California 92651, Assessor's Parcel Number (APN) 056-032-26, prepared by GeoSoils, Inc., May 15, 2020. Refer to **Appendix A** of this document.

Table I.2
City of Laguna Beach Residential Design Guidelines

Guideline	Would the Project Conflict?
9.12: Design planting and irrigation systems to preserve water quality.	raised planter box that would receive excess runoff in site hardscape and landscape areas, which would then be treated and pumped into the Coast Highway. Further, on-site slopes beyond the project limits would remain untouched in their natural, non-irrigated condition. The bulk of the pervious area within the project limits consist of reconstructed slopes, which would be planted with native, drought-tolerant species and then temporarily irrigated until the vegetation is established. The irrigation system would be designed and constructed to facilitate irrigation and avoid over-watering. The use of an automated timer system would control valve run times, and low precipitation heads would minimize the amount of water entering the landscape areas. The system would be equipped with a moisture detection system and/or rain shut-off trigger(s) to avoid unnecessary irrigation, which could lead to erosion.
9.13: Engineer site drainage to retain water on-site.	
9.14: Locate utility elements or mechanical equipment to minimize visual and noise impacts.	
9.15: Minimize glare and light trespass onto other properties.	
Lighting and Glare	
10.1: Minimize glare.	**No conflict.** Project security and landscape lighting would be used throughout the project site, but would be designed to prevent light spillover onto adjacent properties.
10.2: Minimize visual impacts of exterior lighting.	
10.3: Prevent light trespass.	
Neighborhood Compatibility	
11.1: Prior to beginning design, make a thorough reconnaissance of the area surrounding the site noting the particular characteristics that make the neighborhood special.	**No conflict.** The project has been designed to comply with the development standards for the R-1 zone and would meet the required setbacks, building height, and lot coverage requirements. The project has been designed to be consistent with, and implement a broad range of, the community planning goals (from both the General Plan, LBMC, and the Design Guidelines) that provide guidance as to how new development should be integrated within established neighborhoods and communities. The project's overall façade, including the retaining walls, would be comprised of high quality, contemporary, and neutral earth toned building materials that are compatible with the surrounding low density residential uses and the native vegetation and views of the Pacific Ocean. Landscaping would include revegetation of the sloped area and vegetation of the landscaped areas with native, drought-tolerant plants. As discussed in more detail in Section 1, Aesthetics, the project would incorporate the design and landscaping recommendations of the LSHRD for Zone J of the Coast Highway to the extent feasible. The three-car parking garage, which has been designed to be setback 20 feet from Coast Highway, has been designed to preserve the existing scale of the neighborhood.
11.2: Check to see if the site is important to public views or visible from areas outside of the immediate neighborhood.	
11.3: Contact affected neighbors early to receive input about neighborhood values and issues.	
11.4: Design a unique building that reflects the best qualities of the surrounding neighborhood.	
11.8: Design new development in such a way that visible mass conforms to the scale of the neighborhood.	
11.9: Maintain building heights that are appropriate to the neighborhood.	
11.10: Consider the existing setback pattern in the neighborhood.	
11.11: Maintain the predominant spacing pattern of side yards.	
11.12: Avoid long, uninterrupted wall planes and provide open space.	
11.13: Incorporate landscaping into required setback areas.	
11.14: Choose planting that complements the scale and height of the landscaping in the neighborhood and avoid sharp variations in vegetation types between properties.	

Table I.2
City of Laguna Beach Residential Design Guidelines

Guideline	Would the Project Conflict?
11.15: Design hardscape to complement the neighborhood's character and scale.	
11.16: Locate garages and driveways in a manner compatible with the established neighborhood pattern.	
11.17: Design garages to preserve the existing scale of the neighborhood.	
Privacy	
12.1: Site a building with maximum consideration for privacy issues.	**No conflict.** The project has been designed to comply with the development standards for the R-1 zone and would meet the required setbacks, building height, and lot coverage requirements. The General Plan considers appropriate land use patterns for the project area. For example, the General Plan identifies lands where only single-family residential development is permitted and it protects these areas. The project, although consistent with the residential patterns already established in the area, would not physically encroach on surrounding residential areas because it would remain buffered from single-family residential uses to the north and south by the required setbacks. The outdoor area would be comprised of 1,425 square feet of elevated decks, pool, spa, BBQ, reflecting pond, and landscaping. The project has been designed to maintain a 25-foot buffer from the bluff top that would set the overall development back from direct views from the Pacific Ocean shoreline. Furthermore, the outdoor uses would be buffered from the existing adjacent residential uses by greenery, hedging, and fencing.
12.2: Consider the floor plans of the subject property and adjacent residences.	
12.3: Give thoughtful consideration to the siting and design of outdoor spaces.	
12.4: Design landscape to mitigate noise and privacy impacts.	
Sustainability	
14.1: Select materials with relatively low levels of embodied energy.	**No conflict.** The project would include sustainability features such as energy efficient lighting, a green roof, and HVAC. As described in Section 6, Energy, and Section 8, Greenhouse Gas Emissions, the project would not result in the wasteful use of energy resources, nor would it result in GHG emissions that would exceed the applicable impact thresholds. As discussed in more detail in Section 10, Hydrology and Water Quality, the project would include a biofiltration raised planter box that would receive excess runoff in site hardscape and landscape areas, which would then be treated and pumped into the Coast Highway.
14.2: Select building materials that will withstand local environmental conditions.	
14.3: Incorporate passive solar orientation and design.	
14.4: Capture natural daylight.	
14.5: Use natural cooling techniques in place of air conditioning.	
14.6: Install cool roof systems or green roofs.	
14.7: Maximize the use of energy-efficient products and systems.	
14.8 Minimize visual impacts of solar or wind devices as seen from the public right-of-way and adjacent properties.	
14.9: Maintain solar access for neighboring properties.	

Table I.2
City of Laguna Beach Residential Design Guidelines

Guideline	Would the Project Conflict?
14.10: Design the site with consideration for stormwater management.	
14.11: Minimize the use of irrigation water, pesticides, and fertilizer.	
14.16: Select building materials containing low-levels of volatile organic compounds (VOCs).	
Swimming Pools, Spas and Water Features	
15.1: Design pools and spas to relate closely to the topography of the site.	The outdoor area would be comprised of 1,425 square feet of elevated decks, pool, spa, BBQ, reflecting pond, and landscaping. The project has been designed to maintain a 25-foot buffer from the bluff top that would set the overall development back from direct views from the Pacific Ocean shoreline. Furthermore, the outdoor uses would be buffered from the existing adjacent residential uses by greenery, hedging, and fencing.
15.2: Minimize acoustic impacts of water features on other properties.	
15.3: Screen pools, spas and water features from adjacent properties.	
View Equity	
16.2: Avoid blocking neighbors' primary views.	**No conflict.** As discussed in more detail in Section 1, Aesthetics, views of Aliso Peak, the San Joaquin Hills, and the Pacific Ocean would still be available via street corridors, as are currently available. The proposed single-family residential use would be a maximum of 30 feet, which is in line with existing residential development in the vicinity and does not exceed the City's building height standards. Furthermore, the project has been designed in a split-level style and setback 20 feet from Coast Highway, further reducing view impacts and it has been setback 25 feet from the blufftop, thereby reducing the overall visibility from the Pacific Ocean beachfront.
16.3: Organize buildings to maximize views.	
16.4: Minimize mass to maintain neighborhood views.	
16.5: Design landscaping to maintain views**.**	
16.6: Maintain view corridors when feasible.	
16.7: Design balconies and decks to balance view interests.	
Source: City of Laguna Beach Residential Design Guidelines, December 7, 2010. EcoTierra Consulting, 2022.	

31451 Coast Highway
Mitigation Monitoring Program

Impact	Mitigation Measure	Responsible Party	Monitoring Party
Biological Resources			
Impact BIO-a: *Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*	**MM-BIO-1: Invasive Species Control**: Prior to ground disturbance and during construction activities, measures should be included to ensure that invasive plant material is not spread to areas outside the proposed project limits by tracking seed on equipment, clothing, and/or shoes. Equipment/material imported from an area where invasive plants exist must be identified, and measures (e.g., equipment cleaning) must be implemented to prevent importation and spreading of nonnative plant material within and outside the proposed project limits. All construction equipment accessing unpaved areas would be cleaned with water to remove dirt, seeds, vegetative material, or other debris that could contain or hold seeds of noxious weeds before arriving at and leaving the proposed project limits. Only certified weed-free straw, mulch, and/or fiber rolls would be used for erosion control. **MM-BIO-2: Construction Site Housekeeping**: A. Prior to ground disturbance, the project Contractor should install adequate erosion and sedimentation barriers (e.g., silt fencing) at the project site boundaries to prevent any sediment-laden runoff or debris from	Applicant/Construction Contractor	City of Laguna Beach Community Development Department

Impact	Mitigation Measure	Responsible Party	Monitoring Party
	reaching the coastal bluffs and Pacific Ocean located to the west of the project site. B. The project disturbance limits should be clearly marked with construction fencing (or other highly visible material), and vehicle/equipment maintenance and fueling areas should be located at least 100 ft away from the western project site boundaries. C. To prevent inadvertent entrapment of animals during the construction phase of the proposed project, all excavated, steep-walled holes or trenches more than 2 ft deep should be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen fill or wooden planks should be installed. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals. In the case of trapped animals, escape ramps or structures should be installed immediately to allow the animal(s) to escape. D. For the duration of construction activities, all food-related trash items such as wrappers, cans, bottles, and food scraps should be disposed of in securely closed containers and removed at least daily from the construction site.		

Impact	Mitigation Measure	Responsible Party	Monitoring Party
	E. Use of rodenticides and herbicides in project sites should be restricted. This is necessary to prevent primary or secondary poisoning of predators and the depletion of prey populations on which they depend. All uses of such compounds should observe label and other restrictions mandated by the United States Environmental Protection Agency, California Department of Food and Agriculture, and other State and federal legislation. Construction site housekeeping measures would effectively minimize temporary construction effects on biological resources by limiting construction equipment and personnel from entering areas where wildlife may be impacted; limiting the potential for erosion, fuel, or chemical spills that could adversely impact water quality and adjacent aquatic habitats; reducing the likelihood of attracting or introducing predators of special-status species; and preventing the primary or secondary poisoning of wildlife in the project vicinity. **MM BIO-3: Preconstruction Nesting Bird Surveys and Active Nest Avoidance Buffers**: If vegetation removal, construction, or grading activities are planned to occur within the active nesting bird season (February 15 through August		

Impact	Mitigation Measure	Responsible Party	Monitoring Party
	31), a qualified biologist should conduct a preconstruction nesting bird survey no more than 3 days prior to the start of such activities. The nesting bird survey should include the project site and areas immediately adjacent to the site that could potentially be affected by project-related activities such as noise, vibration, increased human activity, and dust. If active bird nests are found within areas that could be directly or indirectly impacted by project-related activities, the qualified biologist should establish an appropriate buffer zone around the active nest(s). The appropriate buffer should be determined by the qualified biologist based on species, location, and the nature of the proposed activities. Project activities should be avoided within the buffer zone until the nest is deemed no longer active by the qualified biologist. **MM-BIO-4: Restoration of Temporary Impact Areas**: Where construction activities on site would result in temporary impacts to biological resources/habitats adjacent to permanent impact areas, the temporarily impacted areas, which correspond to non-irrigated landscape areas, would be restored in place to predisturbance conditions of equal or greater quality in order to avoid adverse impacts to these resources. This includes the restoration of 0.02 acre of ruderal		

Impact	Mitigation Measure	Responsible Party	Monitoring Party
	habitat to coastal bluff scrub and the enhancement, or improvement, of 0.04 acre of coastal bluff scrub by augmenting the existing conditions with a variety of native species that occur on site, including cliff spurge, California box-thorn, bushrue, and other native species identified on the Landscape and Planting Plans. The restoration plan shall include cliff spurge individuals be replaced on site at a 3:1 ratio. **MM-BIO-5: Add Select Plants to Landscape and Planting Plans:** To offset any potential impacts to cliff spurge, California box-thorn, and bushrue, these three species would be added to the plant palette identified on the Landscape and Planting Plans for the project.		
Impact BIO-d: *Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*	**MM BIO-3: Preconstruction Nesting Bird Surveys and Active Nest Avoidance Buffers**: If vegetation removal, construction, or grading activities are planned to occur within the active nesting bird season (February 15 through August 31), a qualified biologist should conduct a preconstruction nesting bird survey no more than 3 days prior to the start of such activities. The nesting bird survey should include the project site and areas immediately adjacent to the site that could potentially be affected by project-related activities such as noise, vibration, increased human activity, and dust. If active bird nests are	Applicant/Construction Contractor	City of Laguna Beach Community Development Department

Impact	Mitigation Measure	Responsible Party	Monitoring Party
	found within areas that could be directly or indirectly impacted by project-related activities, the qualified biologist should establish an appropriate buffer zone around the active nest(s). The appropriate buffer should be determined by the qualified biologist based on species, location, and the nature of the proposed activities. Project activities should be avoided within the buffer zone until the nest is deemed no longer active by the qualified biologist.		
Cultural Resources			
Impact CUL-a and b: *Cause a substantial adverse change in the significance of a historical resource pursuant to State CEQA Guidelines §15064.5?*	**MM-CULT-1 Retain Qualified Archaeologist**: Prior to the issuance of a demolition or grading permit, the Applicant shall retain a qualified Archaeologist who meets the Secretary of the Interior's Professional Qualifications Standards for professional archaeology (Qualified Archaeologist) to carry out and ensure proper implementation of mitigation measures that address archaeological resources. The Applicant shall submit a letter of retention to the City of Laguna Beach (City) no fewer than 60 days before construction activities commence to demonstrate to the City that the Applicant has retained a Qualified Archaeologist who meets the Secretary of the Interior's Professional Qualifications Standards. The letter shall include a resume for the Qualified Archaeologist. The letter shall also	Applicant/Construction Contractor	City of Laguna Beach Community Development Department

Impact	Mitigation Measure	Responsible Party	Monitoring Party
	demonstrate that a Native American Monitor has been retained. **MM-CULT-2 Training Session for Construction Personnel.** Prior to the commencement of ground-disturbing activities, a Sensitivity Training shall be given by the Qualified Archaeologist and Native American Monitor for construction personnel. The training session will include a brief review of the cultural sensitivity of the project site and the surrounding area, what resources could potentially be identified during ground-disturbing activities, and the procedures to follow in the event of discovery during construction. A sign in sheet for attendees of this training shall be included in the monitoring technical report as described in MM-CULT-6. **MM-CULT-3 Archaeological Construction Monitoring.** The Qualified Archaeologist shall oversee an archaeological monitor who has a bachelor's degree in a relevant field of study and either two months of archaeological construction monitoring experience or two months of supervised training with prehistoric archaeological materials in a field or laboratory setting. The archaeological monitor shall be present during construction activities on the project Site deemed by the Qualified Archeologist		

Impact	Mitigation Measure	Responsible Party	Monitoring Party
	to have the potential for encountering archeological resources, such as demolition, clearing/grubbing, drilling/auguring, grading, trenching, excavation, or other ground- disturbing activity associated with the project. The activities to be monitored may also include off-site improvements in the vicinity of the project site, such as utilities, sidewalks, or road improvements. The archeological monitor and Native American Monitor (as required under MM-CULT-4) shall have the authority to direct the pace of construction equipment activity in areas of higher sensitivity and to temporarily divert, redirect or halt ground disturbance activities to allow identification, evaluation, and potential recovery of archaeological resources in coordination with the Qualified Archaeologist. Full-time monitoring may be reduced to part-time inspections, or ceased entirely, if determined appropriate by the Qualified Archaeologist. **MM-CULT-4 Native American Construction Monitoring**: Prior to issuance of a demolition permit or grading permit, the Applicant shall retain a Native American Monitor. The appropriate Native American Monitor shall be selected based on ongoing consultation under AB 52 and shall be identified on the most recent contact list provided by the Native American		

Impact	Mitigation Measure	Responsible Party	Monitoring Party
	Heritage Commission. The Native American Monitor shall be present during construction activities on the project site deemed by them to have the potential for encountering archeological resources, such as demolition, clearing/grubbing, drilling/auguring, grading, trenching, excavation, or other ground- disturbing activity associated with the project. The activities to be monitored may also include off-site improvements in the vicinity of the project site, such as utilities, sidewalks, or road improvements. The Native American Monitor, in coordination with the Qualified Archaeologist and archaeological monitor as identified in Mitigation Measure CULT-3, shall have the authority to direct the pace of construction equipment activity in areas of higher sensitivity and to temporarily divert, redirect or halt ground disturbance activities to allow identification, evaluation, and potential recovery of tribal cultural resources. Full-time monitoring may be reduced to part-time inspections, or ceased entirely, if determined appropriate by the Native American Monitor in the event there appears to be little to no potential for impacting tribal cultural resources **MM-CULT-5 Inadvertent Discovery of Resources:** In the event that historic (e.g., bottles, foundations, refuse dumps/privies, railroads, etc.)		

Impact	Mitigation Measure	Responsible Party	Monitoring Party
	or prehistoric (e.g., hearths, stone tools, shell and faunal bone remains, etc.) resource are encountered, ground-disturbing activities shall be halted or diverted away from the vicinity of the find so that the find can be evaluated. An appropriate buffer area shall be established by the Qualified Archaeologist around the find where construction activities shall not be allowed to continue. Work shall be allowed to continue outside of the buffer area. All archaeological resources unearthed by project construction activities shall be evaluated by the Qualified Archaeologist and the Native American tribal monitor. If the resources are prehistoric or Native American in origin, the Native American Monitor shall consult with the City and Qualified Archaeologist regarding the treatment and curation of any prehistoric archaeological resources. If a resource is determined by the Qualified Archaeologist to constitute a "historical resource" pursuant to CEQA Guidelines Section 15064.5(a) or a "unique archaeological resource" pursuant to Public Resources Code Section 21083.2(g), the Qualified Archaeologist shall coordinate with the Applicant and the City to develop a formal treatment plan that would serve to reduce impacts to the resources. The treatment plan established for the resources shall be in accordance with CEQA Guidelines Section		

Impact	Mitigation Measure	Responsible Party	Monitoring Party
	15064.5(f) for historical resources and Public Resources Code Sections 21083.2(b) for unique archaeological resources. The treatment plan shall incorporate the Native American tribal monitor's treatment and curation recommendations. Preservation in place (i.e., avoidance) is the preferred manner of treatment. If preservation in place is not feasible, treatment may include implementation of archaeological data recovery excavations to remove the resource along with subsequent laboratory processing and analysis. The treatment plan shall include measures regarding the curation of the recovered resources. The prehistoric or Native American resources may be placed in the custody of the Native American Tribe who may choose to use them for educational purposes or they may be curated at a public, non-profit institution with a research interest in the materials, such as the Cooper Center. If the Native American Tribe or an institution does not accept the resources, they may be donated to a local school or historical society in the area (such as the Laguna Beach Historical Society) for educational purposes. **MM-CULT-6 Prepare Memo and Monitoring Technical Report**: Within 14 days of concluding the archaeological monitoring, the Qualified Archaeologist shall prepare a memorandum		

Impact	Mitigation Measure	Responsible Party	Monitoring Party
	stating that the archaeological monitoring requirement of the mitigation measure has been fulfilled and summarize the results of any archaeological finds. The memorandum shall be submitted to the Applicant and City. Following submittal of the memorandum, the Qualified Archaeologist shall prepare a technical report the follows the format and content guidelines provided in California Office of Historic Preservation's Archaeological Resource Management Reports (ARMR). The technical report shall include a description of resources encountered during construction monitoring, if any, treatment of the resources, results of the artifact processing, analysis, and research, and evaluation of the resources with respect to the California Register of Historical Resources and CEQA. Appropriate California Department of Parks and Recreation Site Forms (Site Forms) shall also be prepared and provided in an appendix to the report. The technical report shall be prepared under the supervision of the qualified Archaeologist and submitted to the City within 150 days of completion of the monitoring. The final draft of the report shall be submitted to the South Central Coastal Information Center. **MM-CULT-7 Inadvertent Discovery of Human Remains**: If human remains are encountered		

Impact	Mitigation Measure	Responsible Party	Monitoring Party
	unexpectedly during implementation of the project, State Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the Native American Heritage Commission (NAHC). The NAHC shall then identify the person(s) thought to be the Most Likely Descendent (MLD). The MLD may, with the permission of the land owner, or his or her authorized representative, inspect the site of the discovery of the Native American remains and may recommend to the owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The MLD shall complete their inspection and make their recommendation within 48 hours of being granted access by the land owner to inspect the discovery. The recommendation may include the scientific removal and nondestructive analysis of human remains and items associated with Native American burials. Upon the discovery of the Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the		

Impact	Mitigation Measure	Responsible Party	Monitoring Party
	Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred, as prescribed in this mitigation measure, with the MLD regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment. If the NAHC is unable to identify a MLD, or the MLD identified fails to make a recommendation, or the landowner rejects the recommendation of the MLD and the mediation provided for in subdivision (k) of Section 5097.94, if invoked, fails to provide measures acceptable to the landowner, the landowner or his or her authorized representative shall inter the human remains and items associated with Native American human remains with appropriate dignity on the facility property in a location not subject to further and future subsurface disturbance.		
Impact CUL-c: *Disturb any human remains, including those interred outside of dedicated cemeteries?*	**MM-CULT-7 Inadvertent Discovery of Human Remains**: If human remains are encountered unexpectedly during implementation of the project, State Health and Safety Code Section 7050.5 requires that no further disturbance shall	Applicant/Construction Contractor	City of Laguna Beach Community Development Department

Impact	Mitigation Measure	Responsible Party	Monitoring Party
	occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the Native American Heritage Commission (NAHC). The NAHC shall then identify the person(s) thought to be the Most Likely Descendent (MLD). The MLD may, with the permission of the land owner, or his or her authorized representative, inspect the site of the discovery of the Native American remains and may recommend to the owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The MLD shall complete their inspection and make their recommendation within 48 hours of being granted access by the land owner to inspect the discovery. The recommendation may include the scientific removal and nondestructive analysis of human remains and items associated with Native American burials. Upon the discovery of the Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and		

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	conferred, as prescribed in this mitigation measure, with the MLD regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment. If the NAHC is unable to identify a MLD, or the MLD identified fails to make a recommendation, or the landowner rejects the recommendation of the MLD and the mediation provided for in subdivision (k) of Section 5097.94, if invoked, fails to provide measures acceptable to the landowner, the landowner or his or her authorized representative shall inter the human remains and items associated with Native American human remains with appropriate dignity on the facility property in a location not subject to further and future subsurface disturbance.		
Geology and Soils			
Impact GEO-b: *Result in substantial soil erosion or the loss of topsoil?*	**MM-BIO-2: Construction Site Housekeeping**: A. Prior to ground disturbance, the project Contractor should install adequate erosion and sedimentation barriers (e.g., silt fencing) at the project site boundaries to prevent any sediment-laden runoff or debris from reaching the coastal bluffs and Pacific Ocean located to the west of the project site.	Applicant/Construction Contractor	City of Laguna Beach Community Development Department

Impact	Mitigation Measure	Responsible Party	Monitoring Party
	B. The project disturbance limits should be clearly marked with construction fencing (or other highly visible material), and vehicle/equipment maintenance and fueling areas should be located at least 100 ft away from the western project site boundaries. C. To prevent inadvertent entrapment of animals during the construction phase of the proposed project, all excavated, steep-walled holes or trenches more than 2 ft deep should be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen fill or wooden planks should be installed. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals. In the case of trapped animals, escape ramps or structures should be installed immediately to allow the animal(s) to escape. D. For the duration of construction activities, all food-related trash items such as wrappers, cans, bottles, and food scraps should be disposed of in securely closed containers and removed at least daily from the construction site. E. Use of rodenticides and herbicides in project sites should be restricted. This is necessary to prevent primary or secondary poisoning of		

Impact	Mitigation Measure	Responsible Party	Monitoring Party
	predators and the depletion of prey populations on which they depend. All uses of such compounds should observe label and other restrictions mandated by the United States Environmental Protection Agency, California Department of Food and Agriculture, and other State and federal legislation. Construction site housekeeping measures would effectively minimize temporary construction effects on biological resources by limiting construction equipment and personnel from entering areas where wildlife may be impacted; limiting the potential for erosion, fuel, or chemical spills that could adversely impact water quality and adjacent aquatic habitats; reducing the likelihood of attracting or introducing predators of special-status species; and preventing the primary or secondary poisoning of wildlife in the project vicinity.		
Hydrology and Water Quality			
Impact HYD-c(i): *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?*	**MM-BIO-2: Construction Site Housekeeping**: A. Prior to ground disturbance, the project Contractor should install adequate erosion and sedimentation barriers (e.g., silt fencing) at the project site boundaries to prevent any sediment-laden runoff or debris from reaching the coastal bluffs and Pacific Ocean located to the west of the project site.	Applicant/Construction Contractor	City of Laguna Beach Community Development Department

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	B. The project disturbance limits should be clearly marked with construction fencing (or other highly visible material), and vehicle/equipment maintenance and fueling areas should be located at least 100 ft away from the western project site boundaries. C. To prevent inadvertent entrapment of animals during the construction phase of the proposed project, all excavated, steep-walled holes or trenches more than 2 ft deep should be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen fill or wooden planks should be installed. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals. In the case of trapped animals, escape ramps or structures should be installed immediately to allow the animal(s) to escape. D. For the duration of construction activities, all food-related trash items such as wrappers, cans, bottles, and food scraps should be disposed of in securely closed containers and removed at least daily from the construction site. E. Use of rodenticides and herbicides in project sites should be restricted. This is necessary to prevent primary or secondary poisoning of		

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	predators and the depletion of prey populations on which they depend. All uses of such compounds should observe label and other restrictions mandated by the United States Environmental Protection Agency, California Department of Food and Agriculture, and other State and federal legislation. Construction site housekeeping measures would effectively minimize temporary construction effects on biological resources by limiting construction equipment and personnel from entering areas where wildlife may be impacted; limiting the potential for erosion, fuel, or chemical spills that could adversely impact water quality and adjacent aquatic habitats; reducing the likelihood of attracting or introducing predators of special-status species; and preventing the primary or secondary poisoning of wildlife in the project vicinity.		
Public Services			
Impact PUB-a: *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of*	**MM-PUB-1** The Fire Department Site Access Plan prepared for the project[1] shows that with the fire apparatus parked on the Coast Highway, the 150' hose pull requirement (CFC 503.1.1) cannot be met. The following alternative materials and methods to mitigate for the inability to meet the	Applicant/Construction Contractor	City of Laguna Beach Fire Department

[1] AM&M Request for Joe Reyna, 718 The Strand, Hermosa Beach, CA 90254, prepared by FIREWISE 2000, LLC, January 27, 2022.

Impact	Mitigation Measure	Responsible Party	Monitoring Party
which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: Fire protection?	hose pull requirement or provide for the Guidelines fuel treatment measures are proposed: • The automatic fire sprinkler system shall be upgraded to a 4-head sprinkler design to be applied to all rooms including garages, storage areas, closets and bathrooms regardless of size. The design and projected flow demand of the system shall be deigned and calculated by a qualified Fire Protection Contractor. The four head calculation system must have a minimum .05 density design, QR and intermediate temperature heads; the heads may be of a small orifice type such as 3/8" or 7/16". Copper piping is required in the attics; CPVC project site only be permitted in the attic if listed heads are used in accordance with their listing. A Fire Sprinkler subcontractor shall submit plans to the architect and LBFD, showing sprinkler head layout prior to installation. The Fire Sprinkler System shall be inspected annually by a qualified Fire Protection Contractor and the report submitted to LBFD. • To meet the required hose pull distances, install two (2) wet manual Class 1 Standpipe System with 2-2 ½ outlets at the hose connection, with 2-2½ snoots at the FDC. Location is noted on the FDSAP Appendix A.		

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	System shall be designed to meet the requirements of 2019 CFC, NFPA 13, NFPA 14 & LBMC. Submitted under a separate deferred submittal by a qualified Fire Protection System Contractor. Plans shall be submitted to the LBFD for review and approval, a permit issued, and final inspection required. Appropriate signage shall be provided for standpipe hose connection and FDC at the time of installation. All underground piping shall be 3-inch, wet standpipe must connect to fire sprinklers system above sprinkler flow switch. Standpipe hose connection to be accessible from firefighter access pathway. Two (2) standpipe locations on project site, one in the northwest corner of travel pathway and the second on southeast side at 150 feet hose pull distance. FDC located northeast of garage entry point, from Coast Highway. FDC must be accessible from street and cannot be blocked by vehicles, wall, gates or vegetation.		
Tribal Cultural Resources			
Impact TCR-a and b: *Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or A resource determined by the lead agency, in its discretion and*	**MM-CULT-1 Retain Qualified Archaeologist**: Prior to the issuance of a demolition or grading permit, the Applicant shall retain a qualified Archaeologist who meets the Secretary of the Interior's Professional Qualifications Standards for professional archaeology (Qualified	Applicant/Construction Contractor	City of Laguna Beach Community Development Department

Impact	Mitigation Measure	Responsible Party	Monitoring Party
supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	Archaeologist) to carry out and ensure proper implementation of mitigation measures that address archaeological resources. The Applicant shall submit a letter of retention to the City of Laguna Beach (City) no fewer than 60 days before construction activities commence to demonstrate to the City that the Applicant has retained a Qualified Archaeologist who meets the Secretary of the Interior's Professional Qualifications Standards. The letter shall include a resume for the Qualified Archaeologist. The letter shall also demonstrate that a Native American Monitor has been retained. **MM-CULT-2 Training Session for Construction Personnel.** Prior to the commencement of ground-disturbing activities, a Sensitivity Training shall be given by the Qualified Archaeologist and Native American Monitor for construction personnel. The training session will include a brief review of the cultural sensitivity of the project site and the surrounding area, what resources could potentially be identified during ground-disturbing activities, and the procedures to follow in the event of discovery during construction. A sign in sheet for attendees of this training shall be included in the monitoring technical report as described in MM-CULT-6.		

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	MM-CULT-3 Archaeological Construction Monitoring. The Qualified Archaeologist shall oversee an archaeological monitor who has a bachelor's degree in a relevant field of study and either two months of archaeological construction monitoring experience or two months of supervised training with prehistoric archaeological materials in a field or laboratory setting. The archaeological monitor shall be present during construction activities on the project Site deemed by the Qualified Archeologist to have the potential for encountering archeological resources, such as demolition, clearing/grubbing, drilling/auguring, grading, trenching, excavation, or other ground- disturbing activity associated with the project. The activities to be monitored may also include off-site improvements in the vicinity of the project site, such as utilities, sidewalks, or road improvements. The archeological monitor and Native American Monitor (as required under MM-CULT-4) shall have the authority to direct the pace of construction equipment activity in areas of higher sensitivity and to temporarily divert, redirect or halt ground disturbance activities to allow identification, evaluation, and potential recovery of archaeological resources in coordination with the Qualified Archaeologist. Full-time monitoring may be reduced to part-time inspections, or		

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	ceased entirely, if determined appropriate by the Qualified Archaeologist. **MM-CULT-4 Native American Construction Monitoring**: Prior to issuance of a demolition permit or grading permit, the Applicant shall retain a Native American Monitor. The appropriate Native American Monitor shall be selected based on ongoing consultation under AB 52 and shall be identified on the most recent contact list provided by the Native American Heritage Commission. The Native American Monitor shall be present during construction activities on the project site deemed by them to have the potential for encountering archeological resources, such as demolition, clearing/grubbing, drilling/auguring, grading, trenching, excavation, or other ground- disturbing activity associated with the project. The activities to be monitored may also include off-site improvements in the vicinity of the project site, such as utilities, sidewalks, or road improvements. The Native American Monitor, in coordination with the Qualified Archaeologist and archaeological monitor as identified in Mitigation Measure CULT-3, shall have the authority to direct the pace of construction equipment activity in areas of higher sensitivity and to temporarily divert, redirect or halt ground disturbance activities to allow		

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	identification, evaluation, and potential recovery of tribal cultural resources. Full-time monitoring may be reduced to part-time inspections, or ceased entirely, if determined appropriate by the Native American Monitor in the event there appears to be little to no potential for impacting tribal cultural resources **MM-CULT-5 Inadvertent Discovery of Resources:** In the event that historic (e.g., bottles, foundations, refuse dumps/privies, railroads, etc.) or prehistoric (e.g., hearths, stone tools, shell and faunal bone remains, etc.) resource are encountered, ground-disturbing activities shall be halted or diverted away from the vicinity of the find so that the find can be evaluated. An appropriate buffer area shall be established by the Qualified Archaeologist around the find where construction activities shall not be allowed to continue. Work shall be allowed to continue outside of the buffer area. All archaeological resources unearthed by project construction activities shall be evaluated by the Qualified Archaeologist and the Native American tribal monitor. If the resources are prehistoric or Native American in origin, the Native American Monitor shall consult with the City and Qualified Archaeologist regarding the treatment and curation of any prehistoric archaeological		

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	resources. If a resource is determined by the Qualified Archaeologist to constitute a "historical resource" pursuant to CEQA Guidelines Section 15064.5(a) or a "unique archaeological resource" pursuant to Public Resources Code Section 21083.2(g), the Qualified Archaeologist shall coordinate with the Applicant and the City to develop a formal treatment plan that would serve to reduce impacts to the resources. The treatment plan established for the resources shall be in accordance with CEQA Guidelines Section 15064.5(f) for historical resources and Public Resources Code Sections 21083.2(b) for unique archaeological resources. The treatment plan shall incorporate the Native American tribal monitor's treatment and curation recommendations. Preservation in place (i.e., avoidance) is the preferred manner of treatment. If preservation in place is not feasible, treatment may include implementation of archaeological data recovery excavations to remove the resource along with subsequent laboratory processing and analysis. The treatment plan shall include measures regarding the curation of the recovered resources. The prehistoric or Native American resources may be placed in the custody of the Native American Tribe who may choose to use them for educational purposes or they may be curated at a public, non-profit institution with a		

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	research interest in the materials, such as the Cooper Center. If the Native American Tribe or an institution does not accept the resources, they may be donated to a local school or historical society in the area (such as the Laguna Beach Historical Society) for educational purposes. **MM-CULT-6 Prepare Memo and Monitoring Technical Report**: Within 14 days of concluding the archaeological monitoring, the Qualified Archaeologist shall prepare a memorandum stating that the archaeological monitoring requirement of the mitigation measure has been fulfilled and summarize the results of any archaeological finds. The memorandum shall be submitted to the Applicant and City. Following submittal of the memorandum, the Qualified Archaeologist shall prepare a technical report the follows the format and content guidelines provided in California Office of Historic Preservation's Archaeological Resource Management Reports (ARMR). The technical report shall include a description of resources encountered during construction monitoring, if any, treatment of the resources, results of the artifact processing, analysis, and research, and evaluation of the resources with respect to the California Register of Historical Resources and CEQA. Appropriate California Department of		

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	Parks and Recreation Site Forms (Site Forms) shall also be prepared and provided in an appendix to the report. The technical report shall be prepared under the supervision of the qualified Archaeologist and submitted to the City within 150 days of completion of the monitoring. The final draft of the report shall be submitted to the South Central Coastal Information Center. **MM-CULT-7 Inadvertent Discovery of Human Remains**: If human remains are encountered unexpectedly during implementation of the project, State Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the Native American Heritage Commission (NAHC). The NAHC shall then identify the person(s) thought to be the Most Likely Descendent (MLD). The MLD may, with the permission of the land owner, or his or her authorized representative, inspect the site of the discovery of the Native American remains and may recommend to the owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and any associated grave		

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	goods. The MLD shall complete their inspection and make their recommendation within 48 hours of being granted access by the land owner to inspect the discovery. The recommendation may include the scientific removal and nondestructive analysis of human remains and items associated with Native American burials. Upon the discovery of the Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred, as prescribed in this mitigation measure, with the MLD regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment. If the NAHC is unable to identify a MLD, or the MLD identified fails to make a recommendation, or the landowner rejects the recommendation of the MLD and the mediation provided for in subdivision (k) of Section 5097.94, if invoked, fails to provide measures acceptable to the landowner, the landowner or his or her authorized		

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	representative shall inter the human remains and items associated with Native American human remains with appropriate dignity on the facility property in a location not subject to further and future subsurface disturbance.		