# Initial Study for the 30 San Rafael Avenue Residential Project, Belvedere, Marin County, California

**NOVEMBER 2024**

PREPARED FOR

**City of Belvedere**

PREPARED BY

**SWCA Environmental Consultants**

# INITIAL STUDY FOR THE 30 SAN RAFAEL AVENUE RESIDENTIAL PROJECT, BELVEDERE, MARIN COUNTY, CALIFORNIA

Prepared for

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# 1 INTRODUCTION

## 1.1 Project Location

The 30 San Rafael Avenue Residential Project (project) site is located at 30 San Rafael Avenue (Assessor's Parcel Number 060-011-12) in the city of Belvedere at the intersection of San Rafael Avenue and Lagoon Road in Marin County, California. **Figure 1, Project Vicinity**, illustrates the location of the project site within the city and in southern Marin County. The city is approximately 10 miles north of the Golden Gate Bridge. As shown in **Figure 2, Project Location**, the project site is directly bounded by Lagoon Road to the north, San Rafael Avenue and Richardson Bay to the west, a neighboring residential property to the south, and Belvedere Lagoon to the southeast.

Regional access to the project site is provided by U.S. Highway 101 (US 101), California State Highway 131 (CA 131), and Tiburon Boulevard. US 101 runs in a north–south orientation and is located approximately 2.5 miles west of the project site at its nearest point. CA 131 and US 101 provide regional access between Belvedere and the surrounding communities, such as the town of Tiburon to the north and east, the city of Mill Valley to the northwest, and the cities of Sausalito and San Francisco to the south.

## 1.2 Existing Conditions

The project site is a roughly rectangular, 6,306-square-foot lot set between Richardson Bay and Belvedere Lagoon at approximately 8 feet above sea level. The lot includes 106 square feet of public sidewalk and 362 square feet of area that is underwater at summer-level high tide. The project site contains an existing 2,284-square-foot single-story, single-family residence that was constructed in 1941. The attached two-car garage is accessed from a driveway off Lagoon Road. The exterior yards include brick patios, landscaping areas, and a dock on Belvedere Lagoon. A bulkhead wall defines the transition from the dock to the rear patio.

The project site has street frontage on San Rafael Avenue and Lagoon Road, as shown in **Figure 3, Existing Site Conditions**. An approximately 3.5- to 4.5-foot-wide public sidewalk runs along San Rafael Avenue. There is no public sidewalk along the Lagoon Avenue street frontage. Six existing trees are located throughout the project site. Electrical and sewer easements are located on the western portion of project site, running roughly north–south along San Rafael Avenue.

The natural site grade is essentially level, with a slight eastern slope towards Belvedere Lagoon. Before development, the project vicinity was a coastal flat adjacent to the tidal marsh that stretched between the Tiburon peninsula and Belvedere Island. The project site is underlain by artificial fill that was placed over native marsh deposits and soft sediment known locally as Bay Mud during development of the lagoon shoreline. The region contains known archaeological deposits.[1]

The project site is currently served by utility services, including water, wastewater, electricity, natural gas, and telecommunications. The Sanitary District No. 5 of Marin County collects and treats wastewater and Marin Water supplies potable water. Pacific Gas and Electric Company (PG&E) delivers electricity and natural gas. The Belvedere Police Department provides police protection services, and the Tiburon Fire Protection District (TFPD) provides fire protection services.

[1] City of Belvedere. 2010. City of Belvedere 2030 General Plan, Volume 3: Technical Reports & Appendices. Available at: https://www.cityofbelvedere.org/documents/belvedere-general-plan-2030-technical-reports/. Accessed October 2024.

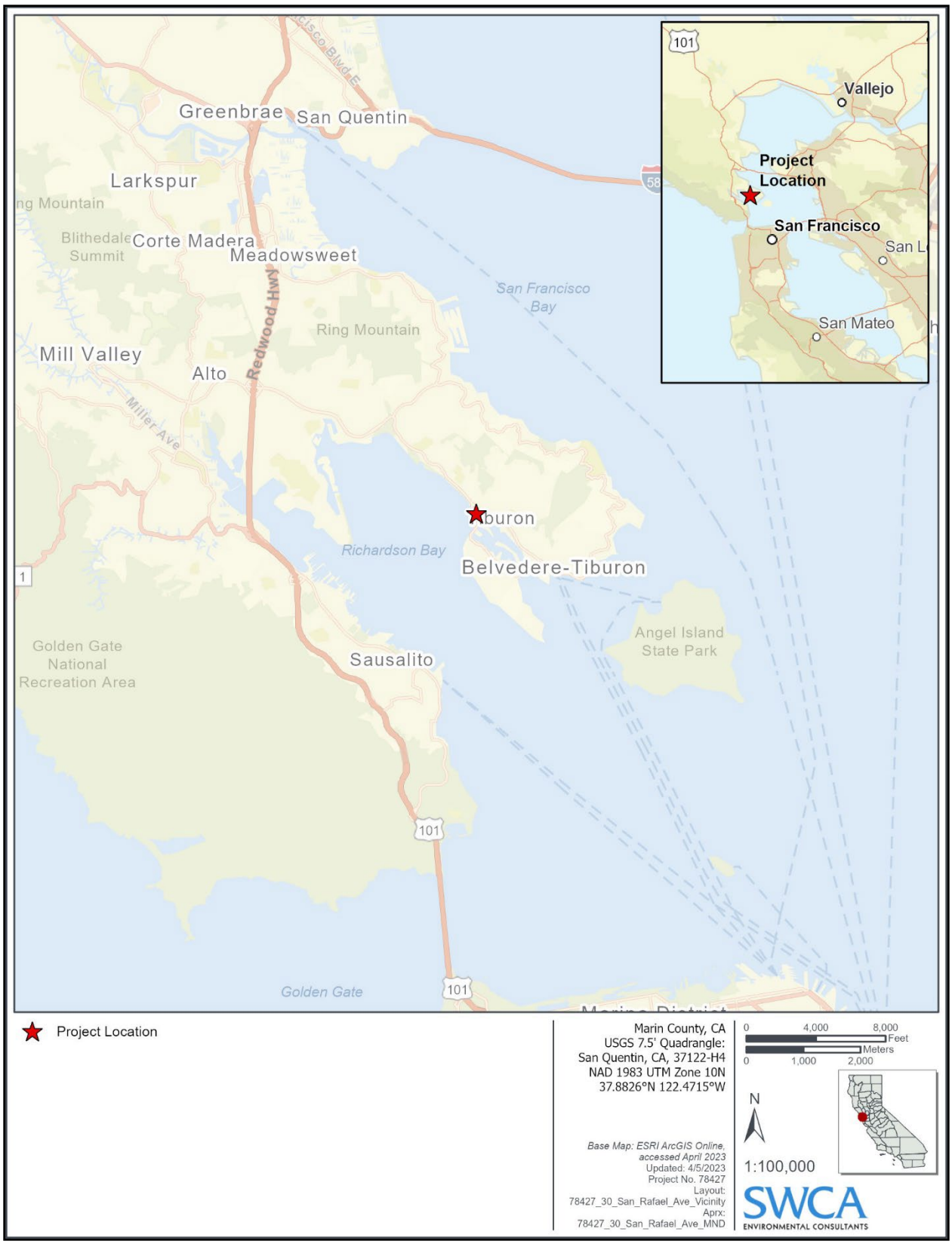


**Figure 1: Project Vicinity**


**Figure 2: Project Location**


**Figure 3: Existing Site Conditions**

### 1.2.1 *Zoning and General Plan Land Use*

The project site is zoned as single-family residential zone, R-1L (Lagoon area).[2] The project site is designated as Residential, Medium Density Single Family Residential (SFR) in the *City of Belvedere 2030 General Plan* (Belvedere General Plan).[3] The SFR designation provides for 3.1 to 6.0 dwelling units per net acre and 8.2 to 16.2 persons per acre. The total floor area permitted is 50% of the lot size, up to a house size cap of 4,000 square feet in the R-1L (Lagoon Area) zone. The existing zoning would remain unchanged.

# 2 PROJECT DESCRIPTION

## 2.1 Proposed Project

The project would demolish the existing 2,284-square-foot residence and construct a new 3,988-square-foot, two-story residence and a new junior accessory dwelling unit (JADU) above a new two-car garage (**Figure 4, Proposed Project Site Plan**, and **Figure 5, Proposed Building Sections**). The JADU would be approximately 335 square feet. The proposed building footprint would generally form an L-shape oriented towards the south and would be two stories, with a maximum height of 25'-5" feet from existing grade. The project would include solar panels on the building roof. As shown in **Figure 4**, the main vehicle access would be from San Rafael Avenue and the vehicle garage entry would continue to be from Lagoon Road, where it is currently located under existing conditions. The proposed project plans are included in Appendix A.

A variance is required for the new garage, and proposed second-floor roof eave extension that would encroach into the rear and side yard setbacks abutting another lot.

## 2.2 Street Frontage and Landscaping Improvements

The project would implement street frontage improvements along San Rafael Avenue and Lagoon Road. These improvements would consist of a new vegetation-lined, pedestrian-friendly streetscape with a 4-foot-wide sidewalk, an Americans with Disabilities Act (ADA)–compliant curb ramp, and a painted wooden fence.

As shown in **Figure 6, Proposed Landscaping Plan**, the project would install new water-efficient landscaping in various places around all four sides of the property. The project would remove five existing trees.[4] Approximately nine new trees and 1,500 square feet of landscaping would be planted throughout the project site.

[2] City of Belvedere. 2014. Official Zoning Map. Available at: https://www.cityofbelvedere.org/documents/zoning-map/. Accessed March 24, 2023.

[3] City of Belvedere. 2010. City of Belvedere 2030 General Plan: Land Use Map. Available at: https://www.cityofbelvedere.org/documents/belvedere-general-plan-2030/. Accessed March 24, 2023.

[4] Hood Thomas Architects. 2022. *Utting Obradaigh Residence New Construction Design Review Set*.

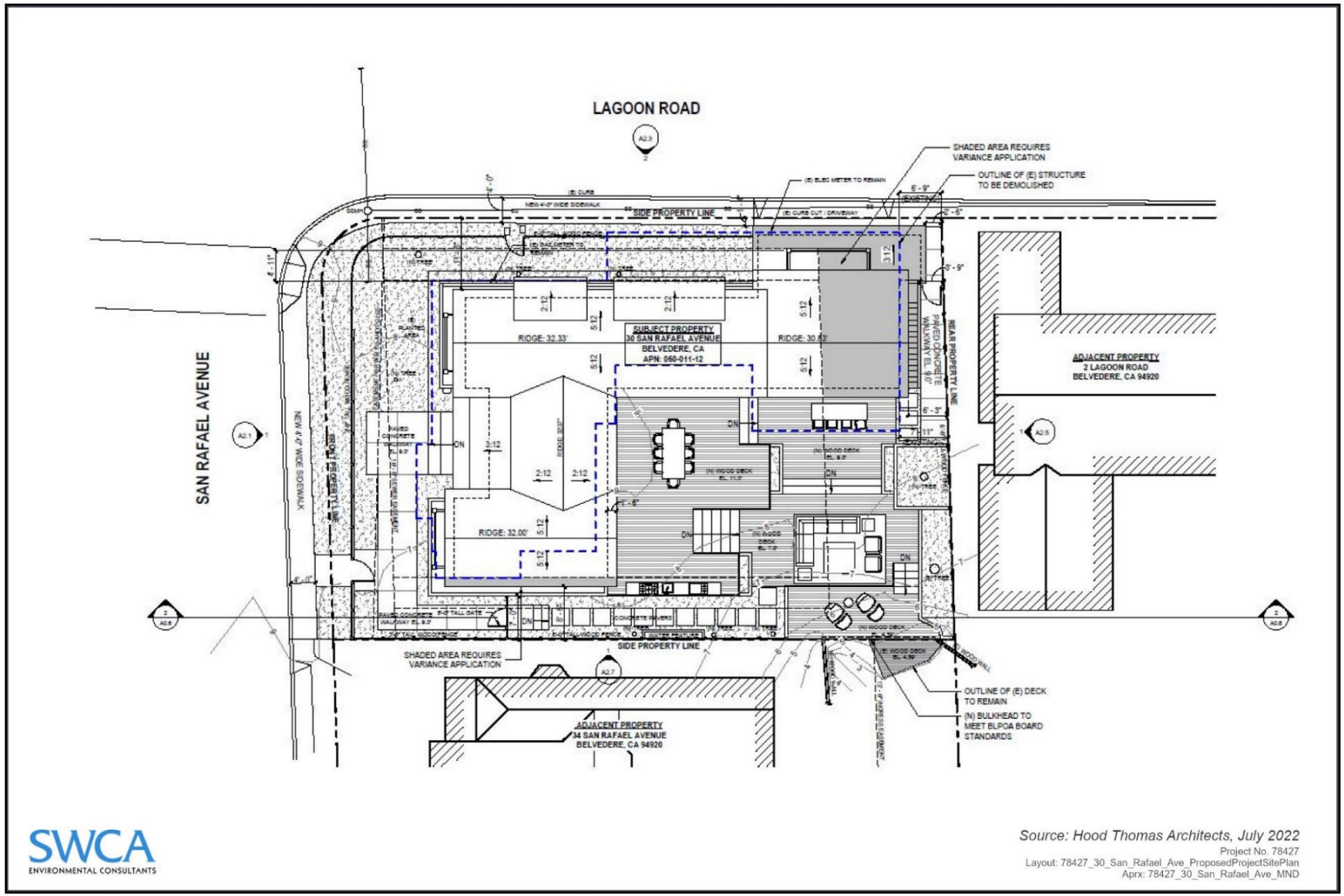


**Figure 4: Proposed Project Site Plan**

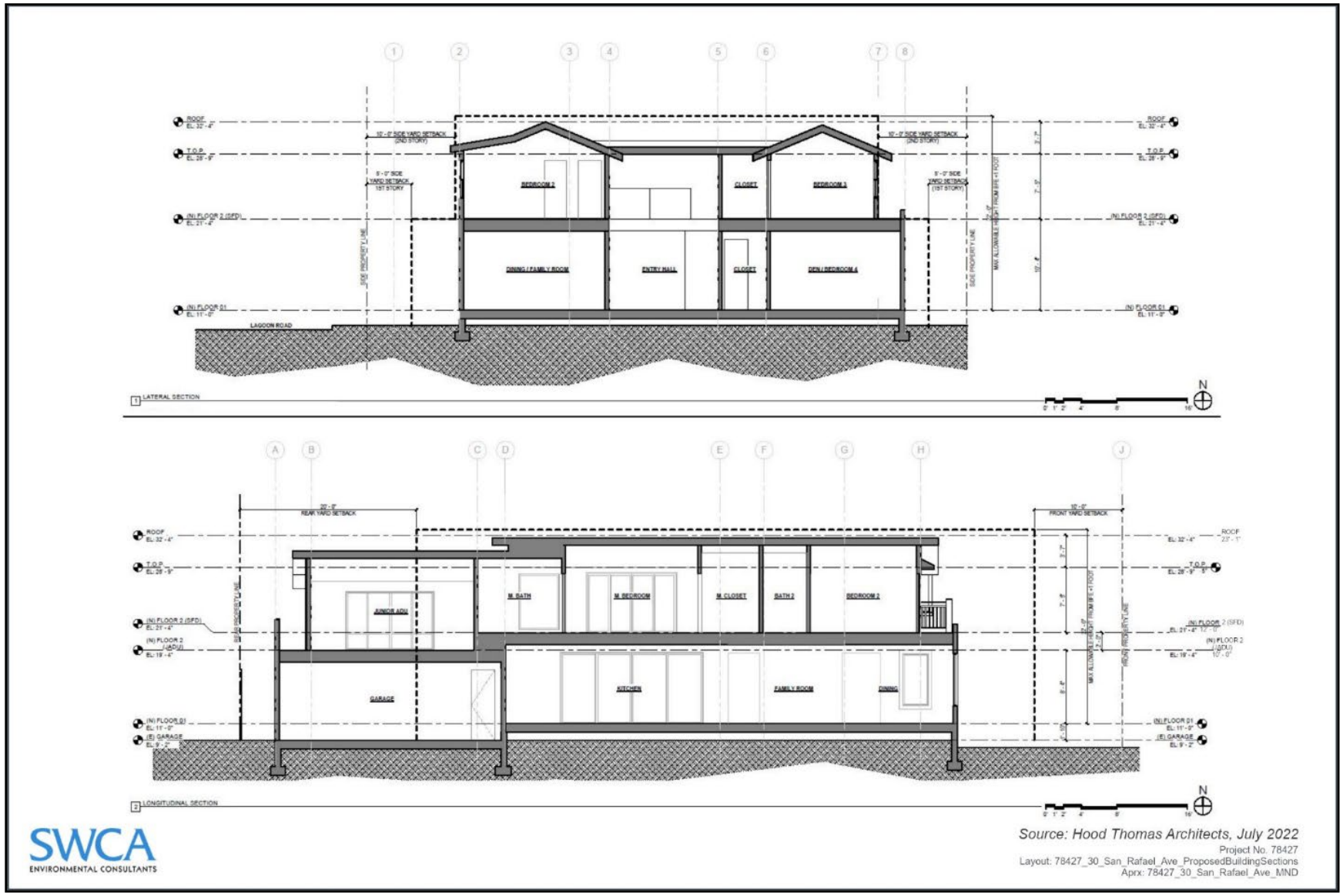


**Figure 5: Proposed Building Sections**


**Figure 6: Proposed Landscaping Plan**

## 2.3 Construction

The project's construction activities are expected to occur over a period of approximately 12 to 16 months. Construction activities for the proposed project would include grading and filling portions of the project site. These activities would be followed by site preparation, building construction and utility trenching, paving, and architectural coating. Helical anchors will be used for the foundation, installed approximately 6 to 8 feet deep into the soil. Project construction would use standard construction equipment, including excavators, graders, tractors, loaders, and pavers.

The project would result in permanent disturbance to the 6,306-square-foot project site. The existing grade would be raised from current location to meet floodplain requirements, with minimal excavation except for what is required for foundation embedment's. The new impervious surface pavement area would be 730 square feet, a reduction from the existing conditions of 1,022 square feet.

## 2.4 Required Discretionary Approvals

The City of Belvedere (City) is the Lead Agency with responsibility for approving the project, including certification of the Initial Study/Mitigated Negative Declaration (IS/MND). The project would require the following approvals from the City:

- Demolition Permit to demolish the existing 2,284 square-foot single-family dwelling and attached garage.
- Design Review to construct a new single-family dwelling.
- Variance to retain the existing non-conforming location of the garage encroaching into the rear yard setback as well as a second-floor roof eave extension at the main house encroaching into the west side yard setback.

# 3 ENVIRONMENTAL CHECKLIST AND ENVIRONMENTAL EVALUATION

## Environmental Factors Potentially Affected

The proposed project could have a "Potentially Significant Impact" for environmental factors checked below. Please refer to the attached pages for discussion on mitigation measures or project revisions to either reduce these impacts to less than significant levels or require further study.

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

## Environmental 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 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 measure 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.

**Date:** 11/01/2024 **Signed:** Rebecca Markwick

# I. Aesthetics

| Environmental Issues | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| *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 outcroppings, 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? | ☐ | ☐ | ☒ | ☐ |

## *Environmental Evaluation*

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

**Less-than-Significant Impact.** San Rafael Avenue is designated as a scenic community corridor in the Belvedere General Plan and the importance of maintaining public views is reinforced in Policy REC-1.4.[5] As discussed in the Belvedere General Plan, views in residential land use classifications are protected by the height limits, minimum lot size requirements, and setbacks established in the Belvedere Zoning Ordinance. The demolition and redevelopment of the single-family residence with a JADU, new site improvements, and new landscaping would be consistent with the guidelines of Belvedere Municipal Code Title 20, *Architectural and Environmental Design Review*, which ensures that new structures and other improvements would be harmonious with the neighborhood and the larger community.[6] Construction of the new residence and the landscape and streetscape improvements would require removal of five existing trees, including a 44-inch-diameter magnolia tree. However, the project includes a revegetation plan that includes planting seven new trees and additional vegetation along both San Rafael Avenue and Lagoon Road as part of construction of a 4-foot-wide sidewalk, an ADA–compliant curb ramp, and a painted wood fence. Compliance with the requirements of Title 20 would ensure that the project would not cause adverse effects to views from San Rafael Avenue. Impacts to scenic vistas would be less than significant.

[5] City of Belvedere. 2010. *City of Belvedere General Plan 2030*. Adopted June 9. Available at: https://www.cityofbelvedere.org/general-plan-housing-element/. Accessed 2024.

[6] City of Belvedere. 2024. Municipal Code. Available at: https://belvedere.municipal.codes/Code/20. Accessed 2024.

### 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.** The US 101, an eligible state designated highway and approximately 2 miles west of the project site,[7] would not be visible from the project site. As discussed above under Impact Discussion I(a), compliance with the requirements of Belvedere Municipal Code Title 20 would ensure that the project would not damage scenic resources. Therefore, this impact would be less than significant.

### c) In non-urbanized areas, would the project 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.** The project area is an urbanized residential neighborhood and would not conflict with applicable zoning and other regulations governing scenic quality. Impacts to visual character and scenic quality would be less than significant.

### 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.** The project site currently contains a single-family residence, which generates nighttime lighting, including interior and exterior lighting for decorative and security purposes. The project includes installation of wall-mounted downlight lanterns across the exterior of the building.[8] Belvedere Municipal Code Section 20.04.180, *Exterior lighting, skylights and reflectivity*, requires all exterior lighting to face downward and avoid creating glare or annoyance. Compliance with requirements, which are implemented as part of the Design Review and/or building permit process, ensure that the project would not create substantial light or glare that would adversely affect day or nighttime views in the area. Therefore, impacts related to light and glare would be less than significant.

[7] California Department of Transportation (Caltrans). 2019. California State Scenic Highways. Available at: https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways. Accessed September 2024.

[8] Hood Thomas Architects. 2022. Utting Obradaigh Residence New Construction Design Review Set. July 26, 2022.

# II. Agriculture and Forestry Resources

| Environmental Issues | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| *In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. 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 non-agricultural use? | ☐ | ☐ | ☐ | ☒ |
| (b) Conflict with existing zoning for agricultural use, or a Williamson Act contract? | ☐ | ☐ | ☐ | ☒ |
| (c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? | ☐ | ☐ | ☐ | ☒ |
| (d) Result in the loss of forest land or conversion of forest land to non-forest use? | ☐ | ☐ | ☐ | ☒ |
| (e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use? | ☐ | ☐ | ☐ | ☒ |

## *Environmental Evaluation*

### a) Would the project 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**. No areas within the city are designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on maps prepared pursuant to the California Department of Conservation's Farmland Mapping and Monitoring Program.[9] The entirety of the city is designated as Urban and Built-Up Land. No agricultural uses or activities will be adversely affected by the project as there is no prime farmland nor are there any agricultural uses in the city. Therefore, the project would have no impact on agriculture or forest resources.

[9] California Department of Conservation (CDOC). 2024. California Important Farmland Finder. Available at: https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed September 2024.

### b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

**No Impact**. The project site is designated SFR in the Belvedere General Plan and zoned R-1L (Lagoon area). As such, no portion of the project would occur within an area zoned by the City for agricultural use. No areas within the City are enrolled in the Williamson Act program.[10] Therefore, the project would not conflict with existing zoning for agricultural use, nor would it conflict with a Williamson Act contract. No impact would occur.

### c) Would the project 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**. The project would not be within areas zoned for forest land, timberland, or Timberland Production, and would not affect any areas zoned for forest land, timberland, or Timberland Production. The project is zoned R-1L (Lagoon area) and there are no areas zoned for agricultural or forest land uses within the vicinity of the project site. Therefore, the proposed project would not conflict with existing zoning, or cause the rezoning of forest land, timberland, or Timberland Production land. No impact would occur.

### d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

**No Impact.** See Impact Discussion II(c). The project would not result in the loss or conversion of forest land. No impact would occur.

### e) Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

**No Impact**. No agricultural resources or forest land resources currently exist within the project vicinity or site. Therefore, the project would not involve changes in the existing environment that would result in the conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use. No impact would occur.

[10] California Department of Conservation (CDOC). 2024. California Williamson Act Enrollment Finder. Available at: https://maps.conservation.ca.gov/dlrp/WilliamsonAct/. Accessed September 2024.

# III. Air Quality

| Environmental Issues | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| *Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. 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 non-attainment under an applicable federal or state ambient air quality standard? | ☐ | ☐ | ☒ | ☐ |
| (c) Expose sensitive receptors to substantial pollutant concentrations? | ☐ | ☐ | ☒ | ☐ |
| (d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people? | ☐ | ☐ | ☒ | ☐ |

## *Environmental Evaluation*

The proposed project would demolish an existing single-family residence and construct a 3,988-square-foot, single-family residence with a JADU, new site improvements, and new landscaping. The project site is located within the San Francisco Bay Area Air Basin (Air Basin), which consists of the entirety of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties; the western portion of Solano County; and the southern portion of Sonoma County. The Air Basin is characterized by complex terrain consisting of coastal mountain ranges, inland valleys, and bays. The regional climate of the Air Basin is characterized by mildly dry summers and moderately wet winters. The region experiences moderate humidity with wind patterns consisting of mild onshore breezes during the day. The location of a strong subtropical high-pressure cell located in the Pacific Ocean induces foggy mornings and moderate temperatures during the summer, as well as occasional rainstorms during the winter. The air pollutants for which national and state standards have been promulgated and that are most relevant to air quality planning and regulation in the Bay Area include ozone, nitrogen oxides ($NO_X$), carbon monoxide (CO), and particulate matter, including dust, 10 micrometers or less in diameter ($PM_{10}$) and 2.5 micrometers or less in diameter ($PM_{2.5}$). In addition, toxic air contaminants (TACs) are of concern in the Bay Area.

Construction and operation of the project would be subject to applicable Bay Area Air Quality Management District (BAAQMD) rules and requirements. The BAAQMD *California Environmental Quality Act Air Quality Guidelines* (BAAQMD CEQA Guidelines)[11] were developed to assist local jurisdictions and lead agencies in complying with the requirements of CEQA regarding potentially adverse impacts to air quality. The screening criteria established by the BAAQMD CEQA Guidelines, dated April 2023, have been relied upon to make the following significance determinations.

[11] Bay Area Air Quality Management District (BAAQMD). 2023. *California Environmental Quality Act Air Quality Guidelines*. Revised April 20. Available at: https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines. Accessed September 2024.

### a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

**Less-than-Significant Impact**. The *2017 Clean Air Plan: Spare the Air, Cool the Climate* (2017 Clean Air Plan)[12] is the current applicable regional Air Quality Plan (AQP) for the Air Basin. The primary goals of the 2017 Clean Air Plan are to protect public health and protect the climate, and the plan acknowledges that the BAAQMD's two stated goals of protection are closely related. As such, the 2017 Clean Air Plan identifies a wide range of control measures intended to decrease both criteria pollutants and greenhouse gas (GHG) emissions. Because the proposed project does not involve population or employment growth, determining consistency with the 2017 Clean Air Plan involves assessing whether applicable control measures contained in the 2017 Clean Air Plan are implemented and whether implementation of the proposed project would disrupt or hinder implementation of AQP control measures. The control measures are organized into five categories: (1) stationary and area source control measures; (2) mobile source measures; (3) transportation control measures; (4) land use and local impact measures; and (5) energy and climate measures. These measures pertain to larger development projects; however, all projects within the BAAQMD's jurisdiction are required to implement the BAAQMD Best Management Practices (BMPs) during construction activities. As discussed in Impact Discussion III(b), the proposed project would implement all BMPs for construction activities and would be consistent with the assumptions in the AQP. Furthermore, the project would not include any special features that would disrupt or hinder implementation of the AQP control measures. The City maintains the Belvedere General Plan, which includes policies related to sustainability and environmental improvement. Specifically, Policy SUST-4.1.3 of the Belvedere General Plan Sustainability and Resource Conservation Element outlines the creation of a Climate Action Plan with measurable goals and progress reporting to the public and responsible officials.[13] Additionally, in June 2022, the city adopted the *City of Belvedere Climate Action Plan 2030* (2030 Climate Action Plan), which takes an inventory of local GHG emissions and outlines programs and actions to achieve emission reduction goals and conserve resources.[14] The proposed project would not include any features that would disrupt or hinder implementation of the Belvedere General Plan or 2030 Climate Action Plan. Therefore, the project would not obstruct implementation of the any applicable air quality plans and would have a less-than-significant impact on air quality.

### b) Would the project 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 region is non-attainment for the federal and state ozone standards, state $PM_{10}$ standards, and federal and state $PM_{2.5}$ standards. The BAAQMD CEQA Guidelines developed

[12] Bay Area Air Quality Management District (BAAQMD). 2017. *2017 Clean Air Plan: Spare the Air, Cool the Climate*. Adopted April 19. Available at: https://www.baaqmd.gov/plans-and-climate/air-quality-plans/current-plans. Accessed September 2024.

[13] City of Belvedere. 2010. *City of Belvedere 2030 General Plan, Chapter 4: Sustainability and Resource Conservation Element*. Available at: https://docs.google.com/viewerng/viewer?url=https://storage.googleapis.com/proudcity/belvedereca/uploads/2023/07/Belvedere-General-Plan-2030-compressed_2.pdf. Accessed September 2024.

[14] City of Belvedere. 2022. *City of Belvedere Climate Action Plan 2030*. Adopted June 13. Available at: https://www.cityofbelvedere.org/climate-action-plan/#:~:text=In%20June%202022%2C%20the%20City,goal%20and%20conserve%20scarce%20resources. Accessed September 2024.

screening criteria and significance thresholds for criteria air pollutants and precursors.[15] The screening criteria are a conservative indication of whether implementing a proposed project could result in potentially significant criteria air pollutant and precursor impacts and therefore would need a more detailed analysis to determine if there are exceedances of the BAAQMD significance thresholds. BAAQMD's thresholds of significance represent the allowable emissions a project can generate without generating a cumulatively considerable contribution to regional air quality impacts. Therefore, a project that would not exceed BAAQMD screening levels, and therefore not exceed the BAAQMD thresholds of significance on a project level, also would not be considered to result in a cumulatively considerable contribution to these regional air quality impacts.

The proposed project would generate emissions from construction equipment exhaust, worker travel, and fugitive dust. These construction emissions include criteria air pollutants and precursors from the operation of heavy construction equipment. Short-term (12–16 months) construction activities could result in temporary increases in pollutant concentrations. Once construction is completed, the project would be an operational single-family residence with a JADU with operational emissions consistent with those from the existing single-family residence on the project site. For all proposed projects, the BAAQMD recommends the implementation of BMPs, whether or not construction-related emissions exceed applicable screening criteria or thresholds of significance. As such, to ensure construction emission impacts are less than significant, the proposed project would apply the BAAQMD BMPs during construction activities.[16]

The BAAQMD CEQA Guidelines screening criteria for a residential single-family home is 254 dwelling units during construction and 421 dwelling units during operations. The project is a single-family dwelling unit with JADU and far below the BAAQMD construction and operation screening criteria of 254 dwelling units and 421 dwelling units, respectfully. Since the project would be below the screening criteria, the project would not exceed the BAAQMD significance thresholds. Therefore, the proposed project would have a less-than-significant contribution to cumulative impacts during construction.

The BAAQMD recommends a screening analysis to determine whether a project has the potential to contribute to a CO hotspot. The screening criteria identify when subsequent site-specific CO dispersion modeling is necessary. The BAAQMD considers a project's local CO emissions to be less than significant if one of the following screening criteria is met:

- The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans.
- The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
- The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

[15] Bay Area Air Quality Management District (BAAQMD). 2024. CEQA Thresholds and Guidelines Update. Available at: https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines. Accessed September 2024.

[16] Bay Area Air Quality Management District (BAAQMD). 2023. *California Environmental Quality Act Air Quality Guidelines, Chapter 5: Project-Level Air Quality Impacts*. Available at: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-guidelines-2022/ceqa-guidelines-chapter-5-project-air-quality-impacts_final-pdf.pdf?rev=de582fe349e545989239cbbc0d62c37a&sc_lang=en. Accessed September 2024.

Project operations would not affect traffic volumes at any affected intersection or exceed the CO screening criteria. Therefore, based on the above criteria, the project would have a less-than-significant impact related to CO hotspots.

### c) Would the project expose sensitive receptors to substantial pollutant concentrations?

**Less-than-Significant Impact.** The BAAQMD considers a sensitive receptor to be any facility or land use that includes members of the population who are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. The project is a single-family residence located approximately 10 miles north of the Golden Gate Bridge and is directly bounded by Lagoon Road to the north, San Rafael Avenue and Richardson Bay to the west, a neighboring residential property to the south, and Belvedere Lagoon to the southeast. US 101 runs in a north–south orientation and is located approximately 2.5 miles west of the project site at its nearest point. Implementation of the project would not result in the short-term or long-term operation of any emission sources that would adversely affect nearby sensitive receptors. Short-term (12–16 months) construction activities could result in temporary increases in pollutant concentrations. The construction-related emissions would be short term and vary in types and quantities in emissions over the 12- to 16-month construction period, such that peak construction would last for a much shorter time. During construction, the BAAQMD BMPs would minimize construction impacts by reducing dust and exhaust emissions. Once construction is completed, the project would be an operational single-family residence with a JADU with operational emissions consistent with those from the existing single-family residence on the project site. Therefore, construction and operation of the project would not expose sensitive receptors to substantial pollutant concentrations, and impacts would be less than significant.

### d) Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

**Less-than-Significant Impact.** The project would not be a source of any odors during operations. During construction, a limited number of diesel engines would be operated on the project site for limited durations. Diesel exhaust and volatile organic compounds (VOCs) from these diesel engines would be emitted during construction of the project, which are objectionable to some; however, the duration of construction activities is expected to last approximately 12 to 16 months, emissions would disperse rapidly from the project site, and diesel exhaust odors would be consistent with existing vehicle odors in the area. Considering this information, construction and operation of the project would not create other emissions or odors adversely affecting a substantial number of people, and impacts would be less than significant.

# IV. Biological Resources

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

## *Environmental Evaluation*

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

**Less-than-Significant Impact With Mitigation.** The proposed project site is currently developed and located within a suburban shoreline community setting dominated by hardscaped areas, residences and non-native landscaped vegetation. Areas mapped as developed include city roads and residences (which lack natural vegetation/land cover types) in the project site or adjacent properties based on desktop research, including, but not limited to the latest aerial and street view imagery and previous biological

resource analysis in the project vicinity.[17][18] Located immediately southeast of the project site is the Belvedere Lagoon which is a completely enclosed shallow water body separating the mainland of the Tiburon Peninsula and the urban, residential community. This lagoon is maintained by the Belvedere Property Owners Association (BLPOA) and provides relatively low aquatic value compared to other surrounding bay waters as suitable nesting habitat in the lagoon is absent but does provide foraging habitat for birds.[19] Richardson Bay is located west of the project site and includes varied flood control rock-sloped protection at the Bay's edge. Vegetation is marginal immediately adjacent to the project site along the levee of Richardson Bay appears to be regularly maintained. There is low potential for presence of special -status fish in the open water habitats of both Belvedere Lagoon and the portion of Richardson Bay immediately adjacent to the project which lacks suitable tidal salt marsh habitat for and species of concern, San Pablo Song Sparrow. Neither of these habitats are situated within the project site. Construction on the project site will be restricted to the residential area and disturbance to Richardson Bay is not anticipated. Implementation of Mitigation Measure (MM) BIO-1 would reduce the potentially significant impact associated with nesting birds in the project site or immediate vicinity.

Review of CNDDB and other relevant database queries indicate that several special status plant and animal species are known to occur in the vicinity of the project site within 5 miles or the larger Marin County area.[20][21][22] However, as is consistent with the findings of the Belvedere Seismic Upgrade Project Draft EIR, no special status plant or animal species have been reported at the project site in similar developed habitats.[23] The full list of special-status plant and animal species reviewed for the project site and vicinity are included in Appendix B. With the exception of potential nesting birds discussed in more detail below, the project site does not have the significant potential to host sensitive or special-status species, nor would the proposed project include work in undisturbed terrestrial or aquatic habitat adjacent.

Some existing trees are proposed for removal, including a 44-inch-diameter magnolia tree. These trees provide suitable foraging and nesting habitat for birds protected by the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code not otherwise protect under federal, state, regional of local laws. This habitat removal will occur pursuant to Section 20.04 of Belvedere's Municipal Code, Design Review for tree removals which is in adherence with International Society of Arboriculture (ISA) best management practices.[24] Construction activities would likely include noise and visual disturbances

[17] Google Earth. 2024. Aerial imagery for Marin County, California. [37.88265], [-122.47155]. Google Earth Pro V 7.3.6.9796. Digital Globe. Available at: https://earth.google.com/. Accessed [October 1, 2024].

[18] City of Belvedere. 2022. Draft EIR for the Belvedere Seismic Upgrade Project. SCH Number 2022010159. Prepared for City of Belvedere. Prepared by Amy Skewes-Cox, AICP. Available at https://ceqanet.opr.ca.gov/2022010159/4. Accessed October 1, 2024.

[19] City of Belvedere. 2022. Draft EIR for the Belvedere Seismic Upgrade Project. SCH Number 2022010159. Prepared for City of Belvedere. Prepared by Amy Skewes-Cox, AICP. Available at https://ceqanet.opr.ca.gov/2022010159/4. Accessed October 2024.

[20] California Department of Fish and Wildlife. 2024. California Natural Diversity Database (CNDDB), Wildlife and Habitat Data Analysis Branch. RareFind Version 6. Commercial version. Available at: https://wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed October 2024.

[21] California Native Plant Society. 2024. Rare Plant Program. Rare Plant Inventory (online edition, v9.5). California Native Plant Society, Sacramento, California. Available at: https://rareplants.cnps.org/. Accessed October 2024.

[22] U.S. Fish and Wildlife Service. 2024. Information for Planning and Consultation (iPAC). Species list generator. Available at: https://ecos.fws.gov/ipac/. Accessed October 2024.

[23] City of Belvedere. 2022. Draft EIR for the Belvedere Seismic Upgrade Project. SCH Number 2022010159. Prepared for City of Belvedere. Prepared by Amy Skewes-Cox, AICP. Available at https://ceqanet.opr.ca.gov/2022010159/4. Accessed October 2024.

[24] City of Belvedere. 2024. Municipal Code 20 and Chapter 8, Architectural and Environmental Design Review. Available at https://www.cityofbelvedere.org/tree-trimming-removal. Accessed October 2024.

temporarily during nesting season that could disturb birds nesting nearby, potentially resulting in nesting failure. Disturbance of nesting pairs could result in nest abandonment, or premature fledging of young. Although the likelihood is low, active nests could occur, potentially resulting in direct destruction of an active nest and loss of eggs or young. Implementation of MM BIO-1 would reduce the potentially significant impact associated with nesting birds in the project site or immediate vicinity.

Therefore, with implementation of MM-BIO-1, no special-status species, including listed or rare species, are expected to be harmed by project construction activities and as a result, direct and/or indirect impacts to federally designated critical habitat or species are not anticipated to occur because of project construction. In addition, the project site would not provide suitable habitat to support plants species. Thus, no special-status plants are anticipated to occur on the project site, and special-status plants would not be adversely affected by the development of the proposed project. Therefore, impacts to biological resources as a result of the proposed project are less than significant.

> **MM-BIO-1: Special-Status and Nesting Birds.** The City shall implement the following seasonal restrictions to protect nesting birds. If work occurs outside of the nesting period of March 1 to July 31, surveys and avoidance measures will not be necessary for special status and nesting birds. Surveys shall be conducted within 7 days of the start of active ground-disturbing activities. If the work area is left unattended for more than 7 days following the initial surveys, additional surveys shall be completed. Ongoing construction monitoring of active nests shall occur to ensure no nesting activity is disturbed. If the biologist finds no active nesting or breeding activity, work can proceed without restrictions. If state and/or federally listed birds are found breeding within the construction area, activities shall be halted until the chicks have fledged. If construction activities must continue and would incur take of the listed species, the applicant would consult with the CDFW and USFWS prior to the initiation of work that would result in take. If construction activities must continue and would not incur take of the listed species, an established buffer area would be 75 feet.

### b) Would the project 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 Game or US Fish and Wildlife Service?

**Less-than-Significant Impact.** The project site does not contain any streams or rivers and does not have the potential to significantly impact any riparian habitat or other sensitive natural community.[25] The nearest sensitive natural community is Richardson Bay, a shoreline regulated waterbody that provides a range of aquatic and wildlife habitats. Richardson Bay is located approximately 70 feet from the project site boundary and is separated by San Rafael Avenue. The project site is also located in close proximity to Belvedere Lagoon, an artificial lagoon that is completely enclosed and is used primarily for recreational boating activities. While the proposed project is within proximity to both resources, project construction would implement standard erosion and sediment control BMPs, thus minimizing impacts to the surrounding environment. Therefore, impacts would be less than significant.

[25] U.S. Fish and Wildlife Service (USFWS). 2024. National Wetlands Inventory. Available at: https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/. Accessed October 1, 2024].

### c) Would the project 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?

**Less-than-Significant Impact.** The project site does not contain any federally or state-protected wetlands. The implementation of erosion and sediment control BMPs would ensure project activities would not significantly impact surrounding coastal or lagoon habitat, as addressed in Impact Discussion IV(b). Therefore, impacts would be less than significant.

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

**Less-than-Significant Impact.** The project site is currently developed with existing residential uses and ornamental landscaping. Implementation of MM BIO-1 would ensure project construction activities do not disrupt bird nesting that would occur in the project site or vicinity. Therefore, temporary disturbances to native wildlife would be reduced. The project site does not obstruct wildlife movement, migration, or small travel pathways and is not within a Natural Landscape Block (defined as relatively natural habitat blocks that support native biodiversity) or an Essential Connectivity Area (defined as areas that are essential for ecological connectivity between blocks).[26] The project would not interfere with wildlife corridors or impede the use of native wildlife nursery sites. Therefore, impacts would be less than significant.

### e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

**Less-than-Significant Impact.** The project would remove approximately five trees from the urban landscaped site. The species proposed for removal are non-native ornamental species the removal would not conflict with City Belvedere Municipal Code (Chapter 8.12; Chapter 20)[27]. Removal of existing trees will be considered as part of the overall Design Review application. Tree removal does not conflict with the City's tree protection policies if the tree removal occurs in conjunction with the Design Review process requiring tree removal permit, wherein conditions of approval regarding replacement ratios or other aesthetic considerations are applied to the project. Therefore, impacts would be less than significant.

### f) Would the project 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.** The project would not conflict with the San Francisco Bay Plan or the Richardson Bay Special Area Plan. Policy recommendations in these plans primarily address the protection of existing ecologically important habitat, shoreline development, and water quality practices. As construction of the project would not likely impact these resources through the use of standard BMPs, impacts would be less than significant.

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[26] California Department of Fish and Wildlife (CDFW). 2023. Natural Landscape Blocks - California Essential Habitat Connectivity. Available online at: https://apps.wildlife.ca.gov/bios6/?al=ds621. Accessed October 2024.

[27] [27] City of Belvedere. 2024. Municipal Code 20 and Chapter 8, Architectural and Environmental Design Review. Available at https://www.cityofbelvedere.org/tree-trimming-removal. Accessed October 2024.

# V. Cultural Resources

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

## *Environmental Evaluation*

Impacts to historical and archaeological resources were evaluated for this project based on a field inspection, and subsequent archaeological testing by a qualified archaeologist. The information presented in this analysis is based on and supplemented with the Cultural Resources Survey Report prepared by Archaeological/Historical Consultants, dated May 2022, the Archaeological Excavation Report of P-21-000066 (CA-MRN-35) prepared by ALTA Archaeological Consulting (ALTA), dated May 8, 2024[28], and the Historic Properties Treatment Plan CA-MRN-35 (P-21-000066) prepared by ALTA, dated October 23, 2024[29]. The technical reports prepared for this project are incorporated by reference.

Federal and State law protects the location of precontact archaeological sites by making these data exempt from the Freedom of Information Act (FOIA) as this information could encourage the disturbance, theft or destruction of irreplaceable cultural resources and as such location specific information has been redacted from this IS/MND. A copy of the technical reports cited are available and on file with the City and available for review by qualified cultural resources professionals who meet the U.S. Secretary of the Interior qualifications and recognized by the California Office of Historic Preservation, as required by state law.

A search of the Sacred Lands File was completed at the Native American Heritage Commission (NAHC) on May 4, 2022. The results were positive, and NAHC recommended contacting the Federated Indians of the Graton Rancheria for more information. All tribal coordination was completed by the City pursuant to California Assembly Bill (AB) 52. See Section XVIII, Tribal Cultural Resources, for more information.

### a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?

**Less Than Significant With Mitigation.** The project site was surveyed by an architectural historian April 27, 2022.[30] The house at 30 San Rafael Avenue was one of ten similar homes constructed as part of the Belvedere Lagoon Development in 1941. The development represented a new phase in Belvedere focusing on residences built around the Belvedere Lagoon. The house has had minimal improvements

[28] Archaeological/Historical Consultants. Cultural Resources Survey Report: 30 San Rafael Avenue. May 2022.

[29] Alta Archaeological Consulting. Historic Properties Treatment Plan CA-MRN-35 (P-21-000066). October 23, 2024.

[30] Archaeological/Historical Consultants. Cultural Resources Survey Report: 30 San Rafael Avenue. May 2022.

since its construction in 1941, which included a window, roof replacement, fence, and dock repairs. However, 30 San Rafael is not an individually significant residential design and does not retain sufficient historic integrity to be eligible as a historic district related to this particular period of Belvedere's history. As such, 30 San Rafael does not meet Criterion 1 of the California Register of Historical Resources (California Register). Historic research did not identify any significant figures important to local, state, or national history; therefore, the buildings on these parcels do not meet Criterion 2 of the California Register. The house at 30 San Rafael Avenue is a simple, undistinguished example of the Ranch House Style in Belvedere and is not sufficiently exceptional or a distinguished example of residential design in Belvedere from the 1940s or 1950s to be eligible under California Register Criterion 3. All buildings within the project area are architecturally indistinctive and do not meet Criterion 3 of the California Register. The house at San Rafael Avenue was built using standard wood frame construction techniques common during the mid-20th century. The building would not yield information important to history or prehistory thus the building is not eligible under Criterion 4.

The house at 30 San Rafael Avenue is not eligible for the California Register and is not a contributing resource to a California Register eligible historic district. Therefore, demolition of the house would not cause a substantial adverse change in the significance of a historical resource.

The project area forms part of CA-MRN-35, a National Register-eligible archaeological site, which is a historic resource and unique archaeological resource as defined in the CEQA Guidelines. Therefore, impacts to historic resources would be less than significant with implementation of Mitigation Measure CUL-1 and CUL-2 as described below.

## b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?

**Less Than Significant With Mitigation.** A confidential search of the archaeological site base maps and records, survey reports, and other materials on file at the California Historical Resources Information System (CHRIS) at the Northwest Information Center (NWIC) was completed for the project site and a ¼-mile radius on April 18, 2022. The search included previous cultural resource studies and archaeological resources within the project site. One previously recorded cultural resource, CA-MRN-35, was identified within the project site and two additional archaeological deposits were located within ¼-mile of the project area. CA-MRN-35 appears eligible for the National Register of Historic Places and the California Register of Historic Resources due to its information potential. Soils on site consist of shell midden, which are likely to contain artifacts and human remains.

Due to this area having a high sensitivity for both surface and buried archaeological deposits, an intensive field survey and subsequent archaeological testing was completed within the project site between 2022 and 2024. Archaeological/Historical Consultants (A/HC) of Oakland, California, completed an archaeological and built environment survey of the project area on April 27, 2022. During the initial field survey and subsurface testing, intact archaeological deposits and human remains were identified.

In March 2024, ALTA conducted subsurface investigations to assess the extent and condition of CA-MRN-35. ALTA identified disturbed shell midden and isolated human remains on the project site. No intact archaeological deposits were encountered. Ground-disturbing activity therefore has the potential to have a substantial adverse effect on the integrity of a historic resource as defined in the CEQA Guidelines.

Impacts related to known cultural resources are potentially significant. The project would incorporate Mitigation Measure CUL-1 and CUL-7 to reduce potential impacts to archaeological resources to less than significant with mitigation incorporated. All mitigation measures below are summarized from the

Archaeological Research Design and Treatment Plan for P-21-00066 (CA-MRN-35) located at 30 San Rafael Avenue Belvedere, California.[31]

**CUL-1** **Cultural Resources Awareness Training.** Prior to construction activities, a cultural resources training will be provided to all supervisors, contract foreman, construction crew members and any additional key construction personnel. The professional archaeologist will administer the training. The training will include a discussion of the monitoring plan with an emphasis on the procedures for stopping work and notification of key personnel. Appropriate protocols in the event that human remains are discovered will be discussed. A training pamphlet (Cultural Resources Guide to Identification and Protocols) will be distributed to all construction personnel. All new construction personnel added after construction commences will receive the same training and orientation before working on site. All site personnel will sign a confidentiality agreement to keep archaeological resource information confidential (per California Government Code Section 6254.10).

**CUL-2** **Archaeological and Tribal Monitoring of Ground-Disturbing Activities.** During project construction, all ground-disturbing activities will be monitored by an archaeologist and a representative of the Federated Indians of the Graton Rancheria. The archaeological monitor shall meet the Secretary of the Interior's Professional qualifications for both prehistoric and historic-era archaeology or be directly supervised by an individual who meets those qualifications. Monitoring will include observation of excavations to their maximum depths, documentation of soil stratigraphy, and inspection of stockpiled soil sediments. Both the Archaeological Monitor and the Tribal Monitor will be responsible for documenting activities in a daily log. At a minimum, documentation will include location of archaeological monitoring, activities for the reporting period and periodic digital photographs of the project work. As appropriate a description of any archaeological resources identified, and any actions undertaken will be noted in the log. Most importantly, if intact cultural resources are encountered, both the Archaeological Monitor and Tribal Monitor will have the authority to temporarily halt or re-direct construction activities within a 25-foot radius of the discovery.

**CUL-3** **Site Security Measures.** In order to prevent vandalism and artifact hunting, and to protect landowners from trespass, temporary security fencing will be used to restrict access to the area. All personnel granted access to restricted information will sign an agreement whereby they shall keep site content and location information confidential by not disclosing it to unauthorized individuals or including it in publicly distributed documents (see **CUL-1** above). No personnel shall release any information to the media, including social media platforms, that could result in disclosing confidential information. Cultural soils will be gathered and placed on plastic tarps. These accumulated cultural soils will then be shielded by a tarp, which will be fastened using sandbags, and straw wattles will be positioned around the heap to prevent any sediment from eroding. All cultural materials and human remains recovered from the project will be placed on a temporary basis in a steel shipping container located on site. The container will be secured with a padlock. Only the Cultural Resources Monitor, Federated Indians of the Graton Rancheria Tribal monitor, and Tribal Historic Preservation Officer shall have access to the container. At the end of each day digital photos will be taken of the project area and surroundings to document current conditions.

[31] Alta Archaeological Consulting. Historic Properties Treatment Plan CA-MRN-35 (P-21-000066). October 23, 2024.

**CUL-4** **Treatment of Stockpiled Sediments.** As stockpiled sediments resulting from grading and other excavations may contain Tribal Cultural Resources and archaeological materials, Native American skeletal remains or associated funerary objects, archaeological sampling and recovery efforts on stockpiled sediments will be conducted to determine the presence of absence of cultural materials and recovery materials for future reburial. Sediments will be processed through ¼-inch mesh hardware cloth. Any cultural material or items of interest will be retained, inventoried in the field and placed in the on-site temporary storage facility. Sediments determined through systematic sampling to not contain cultural materials will be allowed to be off hauled or used as fill to cap cultural spoils. The Archaeologist, in collaboration with the Tribal Monitor, will determine what sediments are allowed to leave the project site. Sediments that contain archaeological materials will be retained on-site and covered with plastic until they can be placed within the preservation mound.

**CUL-5** **Preservation Area.** A preservation area will be established and recorded on the property deed with the intent of providing long-term protection of cultural resources present on the property. As the project proceeds, specific areas that merit preservation will be identified. Absent written consent of the Federated Indians of the Graton Rancheria, there shall be no future ground disturbing activities within preservation area. When appropriate, all sediments containing disturbed archaeological deposits will be placed in the preservation area. At the end of fieldwork and reporting all archeological materials, including human remains and associated funerary objects discovered as a result of archaeological fieldwork, will be placed in the preservation area. No compaction of sediments containing archaeological materials will be allowed. Once all disturbed archaeological deposits have been placed at the designated location the materials will be covered with layer geotextile cloth. Sterile soil having no archaeological materials will be placed on top of the geotextile cloth. The sterile sediment layer will have a minimum depth of 12 inches. Sterile sediments may be compacted with mechanical equipment in order to further protect underlying cultural deposits from possible future erosion. In order to limit potential future erosion, the preservation mound may be planted with shallow rooted vegetation and irritated by surface drip irrigation. The preservation area will be recorded on the deed and filed with the County. The finished mound is anticipated to be no greater than 2.5 meters wide by 8 meters long and 80 centimeters tall.

**CUL-6** **Treatment of Intact Archaeological Deposits.** If intact or significant archaeological deposits are present within the project area, it is important that they are identified through subsurface exploration. A series of archaeological cores will be excavated at the location of each proposed helical core. An estimated 30 cores are proposed. Subsurface exploration will occur after to demolition of the building. Cores will measure 5 cm (2-inches) in diameter and will be excavated in arbitrary 20-centimeter levels (7.8-inches). Each core will be dug until culturally sterile soils are encountered. It is expected that sterile sediments are present at about 100 cm below surface. The sediments will be dry screened through 0.25-inch-thick hardware cloth. Any artifacts or items of interest will be inventoried in a field catalog. A narrative description, including basic metric information, will be gathered in the field. Digital photos will be taken of all artifacts uncovered by the cores. Artifacts and other items of interest will be collected and secured in the temporary onsite storage container.

**CUL-7** **Treatment of Intact Archaeological Deposits.** If intact archaeological deposits are encountered, a program of field testing, evaluation, and mitigation (as necessary and approved by Federated Indians of the Graton Rancheria) will be implemented. Hand or

mechanical excavation techniques may be employed during the archaeological investigation to meet various project goals. At the direction of the Professional Archaeologist, mechanical equipment will be used to remove disturbed soils, historic rubble, or other materials in order to expose intact native sediments and/or prehistoric or historic-era features. The proposed treatment measures should follow those protocols (Scenario A: Project Redesign, Move Helical Anchor Location; Scenario B, Project Redesign (Mat Slab Foundation); Scenario C, Archaeological Data Recovery) outlined in the Archaeological Research Design and Treatment Plan for P-21-00066 (CA-MRN-35) located at 30 San Rafael Avenue Belvedere, California.

Therefore, impacts to archaeological resources would be less than significant with implementation of Mitigation Measures CUL-1 through CUL-7.

### c) Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

**Less Than Significant With Mitigation.** Based on the NWIC records search, pedestrian surveys, and archaeological testing, human remains are known to exist within the project site. In the event of an accidental discovery of human remains and funerary objects, Mitigation Measure CUL-8 would be implemented to reduce potential impacts on human remains to a less-than-significant level.

**CUL-8** **Treatment of Human Remains and Funerary Objects.** If human remains or associated funerary objects are encountered that appear in-situ and remain in an undisturbed context the preferred approach is to preserve these items in-place and redesign the project to avoid impacts to the area. No photographs will be allowed of human remains, funerary objects or associated contexts. The landowner, construction manager, archaeologist and Tribal Historic Preservation Officer shall work together to develop feasible options that meet both the preservation needs of the tribe and facilitate construction. A mutual agreement will be reached before any action is taken that could lead to disturbance of remains or funerary items.

Therefore, impacts would be less than significant with implementation of Mitigation Measure CUL-8.

# VI. Energy

| Environmental Issues | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| *Would the project:* | | | | |
| (a) Result in a 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? | ☐ | ☐ | ☒ | ☐ |

## *Environmental Evaluation*

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

**Less-than-Significant Impact.** During project construction, fossil fuels, electricity, and natural gas would be used by construction vehicles and equipment. The energy consumed during construction would be temporary in nature and typical of other similar construction activities in the county. Federal and state regulations in place require the use of fuel-efficient equipment and vehicles and require wasteful activities, such as diesel idling, to be limited. Construction contractors, in an effort to ensure cost efficiency, would not be expected to engage in wasteful or unnecessary energy and fuel practices.

Energy use associated with project operations would be typical of a single-family residence and would be subject to green building and 2022 California Building Code (CBC) standards. The project site is currently serviced by PG&E for electricity and natural gas. The 2022 PG&E electric power mix consists of 38% renewable energy sources and 57% GHG-free energy sources.[32] Existing utilities include underground electrical lines and an existing natural gas line running north–south along San Rafael Avenue. The project would be subject to all relevant provisions of the most recent current standards of Building Energy Efficiency Standards (Title 24) and California Green Building Standards Code (CALGreen). Compliance with these standards would ensure that the building energy use associated with the project would not be wasteful, inefficient, or unnecessary. Therefore, impacts would be less than significant.

### b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

**Less-than-Significant Impact.** The applicable state plans and policies for renewable energy and energy efficiency include the 2022 Title 24 and CALGreen standards, California Public Utilities Commission's Strategic Plan, California Energy Commission's 2019 Integrated Energy Policy Report (IEPR), and 2030 Climate Action Plan. The project would be required to comply with 2022 Title 24 and CALGreen standards pertaining to building energy efficiency. Compliance with 2022 Title 24 and CALGreen

[32] Pacific Gas and Electric Company (PG&E). 2022. Exploring Clean Energy Solutions. Available at: https://www.pge.com/en/about/corporate-responsibility-and-sustainability/taking-responsibility/clean-energy-solutions.html. Accessed September 2024.

standards would ensure the project incorporates energy-efficient windows, insulation, lighting, and ventilation systems, which are consistent with the Strategic Plan strategies, the IEPR building energy efficiency recommendations, and 2030 Climate Action Plan, as well as water-efficient fixtures, water-efficient landscaping, and electric vehicle charging infrastructure. Additionally, the project would use electricity provided by PG&E. Therefore, the project would not conflict or obstruct a state or local plan for renewable energy or energy efficiency, and impacts would be less than significant.

# VII. Geology and Soils

| Environmental Issues | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| *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? Refer to Division of Mines and Geology Special Publication 42. | ☐ | ☐ | ☒ | ☐ |
| (ii) Strong seismic ground shaking? | ☐ | ☐ | ☒ | ☐ |
| (iii) Seismic-related ground failure, including liquefaction? | ☐ | ☐ | ☒ | ☐ |
| (iv) Landslides? | ☐ | ☐ | ☒ | ☐ |
| (b) Result in substantial soil erosion or the loss of topsoil? | ☐ | ☐ | ☒ | ☐ |
| (c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse? | ☐ | ☐ | ☒ | ☐ |
| (d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property? | ☐ | ☐ | ☒ | ☐ |
| (e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water? | ☐ | ☐ | ☐ | ☐ |
| (f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? | ☐ | ☐ | ☒ | ☐ |

## *Environmental Evaluation*

The information presented in this analysis is based on and supplemented with the Geotechnical Investigation prepared by Murray Engineers, Inc., dated May 2022.[33] This report is included as Appendix C.

### a) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

#### a-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.** The project site is not located in proximity to an active fault, a current Alquist-Priolo Special Studies Zone, or Seismic Hazards Zone as shown on the most recently published maps from the California Geological Survey.[34] The closest Alquist-Priolo Earthquake Fault Zone boundary is designated for the Hayward fault, approximately 10 miles east of the project site. Known faults or fault-related features are not located within the project site; therefore, the potential for fault rupture within the site is considered low. Development of the proposed project would not exacerbate the potential for fault rupture to occur. Therefore, the project would not be expected to cause substantial adverse effects, including the risk of loss, injury, or death, due to rupture of a known earthquake fault, and impacts would be less than significant.

#### a-ii) Strong seismic ground shaking?

**Less-than-Significant Impact.** The entire San Francisco Bay Area has the potential for strong earthquake shaking from several fault systems, primarily the San Andreas fault, approximately 9 miles west, and the Hayward fault, approximately 10 miles east.[35] Earthquakes along the active faults in the region could cause moderate to strong ground shaking at the site. The most significant adverse impact associated with strong seismic shaking is potential damage to structures and improvements. Based on the Geotechnical Investigation, there is potential for a relatively minor amount of seismic densification and ground shaking to occur; however, seismic densification and ground shaking is not anticipated to constitute a significant hazard to the proposed project, provided that it is supported on foundations designed and constructed in accordance with the 2022 CBC and design parameters within the Geotechnical Investigation.[36] Prior to issuance of a building permit, the project design must be found by the City's Building Department to conform to the current standards for earthquake-resistant construction and other potential hazards, including the CBC, for seismic safety. Therefore, impacts related to seismic ground shaking would be less than significant.

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[33] Murray Engineers, Inc. 2022. *Geotechnical Investigation for Brady New Residence, 30 San Rafael Avenue, Belvedere, California*. Prepared for Andy Brady. May 6.

[34] California Department of Conservation (CDOC). 2024. Alquist-Priolo Site Investigation Reports. California Department of Conservation, California Geological Survey, California Seismic Hazards Program. Available at: https://maps.conservation.ca.gov/cgs/informationwarehouse/apreports/. September 2024.

[35] California Department of Conservation (CDOC). 2024. Alquist-Priolo Site Investigation Reports. California Department of Conservation, California Geological Survey, California Seismic Hazards Program. Available at: https://maps.conservation.ca.gov/cgs/informationwarehouse/apreports/. September 2024.

[36] Murray Engineers. 2022. *Geotechnical Investigation*.

### a-iii) Seismic-related ground failure, including liquefaction?

**Less-than-Significant Impact.** The project site is not located within a liquefaction zone, as shown on the most recently published maps from the California Geological Survey.[37] In addition, soil borings performed as part of the Geotechnical Investigation indicate the potential for liquefaction to occur and affect the proposed project is very low.[38] The project is required to comply with the CBC, which outlines specific design, engineering, and development standards for structures proposed in areas with potentially unstable soils. Prior to issuance of a building permit, the project design must be found by the City's Building Department to conform to the current standards for seismic safety according to the CBC. Moreover, development of the project would not exacerbate the potential for seismic-related ground failure, including liquefaction, to occur. Therefore, impacts would be less than significant.

### a-iv) Landslides?

**Less-than-Significant Impact.** The project site is not located within a liquefaction zone, as shown on the most recently published maps from the California Geological Survey.[39] The site is relatively flat with elevation ranging from 7 to 10 above mean sea level, and therefore has very low risk of landslides. There are identified landslide hazard zones to the east but the project site is separated from these landslide zones by urban development, which would largely diminish the likelihood of a landslide ever reaching the project site. As such, development of the proposed project is not anticipated to cause or exacerbate slope stability issues on the project site, since it is not within a mapped landslide area and is relatively level. Design and construction in accordance with the CBC and local requirements would minimize public exposure to earthquake risks, including landslides, to the extent practicable. Moreover, development of the proposed project would not exacerbate the potential for landslides to occur. Therefore, impacts would be less than significant.

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

**Less-than-Significant Impact.** Project construction would cause minor amounts of ground disturbance during construction activities, including the removal and replacement of topsoil. These impacts are short term and minor and do not represent an appreciable potential loss of topsoil or a substantial risk of additional erosion. The proposed project would cause minor amounts of ground disturbance during construction activities. The construction contractor would be required to comply with the Construction General National Pollution Discharge Elimination System (NPDES) Permit. The Construction General Permit requires preparation of and compliance with a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must include erosion control measures such as covering exposed soil stockpiles and working slopes, lining the perimeter of the construction site with sediment barriers, and protecting storm drain inlets. During operation, the project site would be fully developed with buildings, hardscape, and landscaping, all of which would preclude erosion and the associated loss of topsoil during project operation. Adherence to existing regulations and implementation of standard construction practices would ensure that soil erosion impacts are less than significant.

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[37] California Department of Conservation (CDOC). 2024. Earthquake Zones of Required Investigation. California Department of Conservation, California Geological Survey, California Seismic Hazards Program. Available at: https://maps.conservation.ca.gov/cgs/EQZApp/app/. Accessed September 2024.

[38] Murray Engineers. 2022. *Geotechnical Investigation*.

[39] California Department of Conservation (CDOC). 2024. Earthquake Zones of Required Investigation. California Department of Conservation, California Geological Survey, California Seismic Hazards Program. Available at: https://maps.conservation.ca.gov/cgs/EQZApp/app/. Accessed September 2024.

### c) Would the project 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.** See Impact Discussions VII (a-iii) and VII (a-iv), above. The project site is located in an area with low risk for liquefaction and landslides. According to the USGS Areas of Land Subsidence in California Map, the project site is not located in an area of recorded land subsidence.[40] The project would be required to comply with all applicable CBC and other engineering standards to reduce potential risk associated with development on unstable soils. Therefore, impacts related to unstable soils would be less than significant.

### d) Would the project 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.** The project site is not underlain by soils which are at risk of critical expansion which would create a substantial risk to life or property.[41]

### e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

**No impact.** The project would be connected to existing utility and wastewater infrastructure. No septic tanks or alternative wastewater disposal systems are proposed. Therefore, no impact associated with the use of alternative wastewater disposal systems would occur.

### f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

**Less-than-Significant Impact.** Paleontological resources are mineralized or fossilized remains of prehistoric plants and animals, as well as mineralized impressions or trace fossils that provide indirect evidence of the form and activity of ancient organisms. A search of the fossil database maintained by the University of California Museum of Paleontology at the University of California, Berkeley did not identify any fossils within Belvedere. Although not anticipated, sub-surface construction activities associated with the Project implementation, such as grading or trenching, could result in a significant impact to paleontological resources, if encountered. Public Resources Code Section 5097.5 specifies the procedures to be followed in the event of the unexpected discovery of human remains. Additionally, the Belvedere General Plan Action PRES-3.1.6 requires that "In the event unanticipated paleontological resources are uncovered during construction, all work must be halted, and an evaluation must be undertaken by a qualified paleontologist to identify the appropriate mitigation for the feature." Therefore, compliance with existing regulations would result in less than significant impacts related to paleontological resources.

[40] California Department of Conservation. 2024. Areas of Land Subsidence in California. Available at: https://ca.water.usgs.gov/land_subsidence/california-subsidence-areas.html. Accessed September 2024.

[41] Murray Engineers. 2022. *Geotechnical Investigation*.

# VIII. Greenhouse Gas Emissions

| Environmental Issues | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| *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? | ☐ | ☐ | ☒ | ☐ |

## *Environmental Evaluation*

### a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

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

**Less-than-Significant Impact.** The proposed project is consistent with the Belvedere General Plan and the greenhouse gas emissions anticipated from implementation of the Belvedere General Plan fall below the BAAQMD thresholds of significance for greenhouse gas emissions.[42] The Belvedere General Plan incorporates provisions to further reduce greenhouse gas emissions in the Sustainability and Resource Conservation Element. In June 2022, the City adopted its 2030 Climate Action Plan, which focuses on the efforts Belvedere can take to reduce its greenhouse gas emissions and mitigate, to the extent feasible at the local level, the potential impacts of climate change.[43] Most of the policies in the 2030 Climate Action Plan are related to transportation, "green building," energy efficiency, and renewable energy. The 2030 Climate Action Plan is not included in the Belvedere General Plan itself, but integrates the strategies and actions identified in the relevant elements of the Belvedere General Plan. The project's inclusion of solar panels and green-building energy efficiency specifically meets the goals of renewable energy and energy efficiency in the 2030 Climate Action Plan.

For projects that involve demolition of structures or substantial renovation of an existing building, the City requires that contractors demonstrate how this target will be met for construction waste and debris, which will occur for any demolition during the proposed project. The proposed project will also be consistent with BAAQMD guidance, which states that for a project to have a less-than-significant impact related to operational GHG emissions, it must include certain project design elements (see BAAQMD CEQA Guidelines Chapter 3, Table 3-2) or be consistent with a local GHG reduction strategy that meets State CEQA Guidelines Section 15183.5(b) requirements. Due to the relatively small scale of proposed

[42] Bay Area Air Quality Management District (BAAQMD). 2023. *California Environmental Quality Act Air Quality Guidelines*. Revised April 20. Available at: https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines. Accessed September 2024.

[43] City of Belvedere. 2022. *City of Belvedere Climate Action Plan 2030*. Adopted June 13. Available at: https://www.cityofbelvedere.org/climate-action-plan/#:~:text=In%20June%202022%2C%20the%20City,goal%20and%20conserve%20scarce%20resources. Accessed September 2024.

improvements and construction activities, the fact that proposed improvements would not substantially change or increase the intensity of the existing use of the project site, and that the project would not conflict with the Belvedere General Plan, 2030 Climate Action Plan, or BAAQMD CEQA Guidelines, the proposed project would not generate a substantial source of GHG emissions that may have a significant impact on the environment. Therefore, impacts related to GHG emissions would be less than significant.

# IX. Hazards and Hazardous Materials

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

## *Environmental Evaluation*

### a) Would the project 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 would involve the use or disposal of hazardous materials as part of its routine operations or would have the potential to generate toxic or otherwise hazardous emissions that could adversely affect sensitive receptors.

Construction of the project would involve the 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 single-family residential project. As described in Section 2, *Project Description*, construction activities would be temporary and last between 12 and 16 months. These temporary construction activities involving the use, transport, storage, and disposal of hazardous materials would be conducted in compliance with all health and safety requirements, such as County and City General Plan policies, California Code of Regulations (CCR) 337 through 340, Chapter 6.95 of California Health and Safety Code Article 1, and 19 CCR, *Public Safety*, Division 2, *California Governor's Office of Emergency Services* (if required). As the project proponent would comply with applicable regulations and laws pertaining to the transport, storage, use, and disposal of potentially hazardous materials, the exposure of the public, construction workers, and environment to hazardous materials would be less than significant.

Operation would not produce significant amounts of hazardous waste or use or transport hazardous waste beyond those materials typically used in single-family households. Overall, the use of household hazardous materials would be similar to the existing use of surrounding residences. Thus, the operation of the project would not create a significant hazard to the environment or public, and impacts would be less than significant.

### b) Would the project 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 create an upset or accident condition involving hazardous materials. No open hazardous contamination sites are located in the project vicinity. Two closed hazardous contamination sites for leaking underground storage tanks (LUSTs) are located in the vicinity of the project site, including the Chevron gas station, located at 1515 Tiburon Highway, approximately 0.5 mile southeast, and the Mobil gas station, located at 1600 Tiburon Boulevard, approximately 0.75 mile southeast.[44,45] As there are no active hazardous contamination sites on the project site or in the project vicinity, there is no reasonably foreseeable release of hazardous materials from existing hazardous contamination. Therefore, the project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment, and impacts would be less than significant.

### c) Would the project 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.** There are no schools within 0.25 mile of the project site. The nearest existing school is Reed Elementary School, located at 1199 Tiburon Boulevard, approximately 0.34 mile southeast of the project site. The project would not emit hazardous emissions or handle hazardous materials within 0.25 mile of an existing or proposed school; therefore, no impacts would occur.

[44] State Water Resources Control Board (California Water Boards). 2018. GeoTracker. Available at: https://geotracker.waterboards.ca.gov/map/. Accessed May 10, 2023.

[45] California Department of Toxics Substances Control (DTSC). 2018. EnviroStor. Available at: https://www.envirostor.dtsc.ca.gov/public/map. Accessed May 10, 2023.

### d) Would the project 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 65962.5 requires various state agencies to compile lists of hazardous waste disposal facilities, unauthorized release from underground storage tanks, contaminated drinking water wells, and solid waste facilities from which there is known migration of hazardous waste, and to submit such information to the Secretary for Environmental Protection on at least an annual basis. Database resources such as EnviroStor and GeoTracker provide information regarding identified facilities. No open hazardous contamination sites are located in the project vicinity. Two closed hazardous contamination sites for LUSTs are located in the vicinity of the project site at the Chevron gas station and the Mobil gas station.[46,47] As there are no active hazardous contamination sites on the project site or in the project vicinity, there is no reasonably foreseeable release of hazardous materials from existing hazardous contamination. Therefore, no impacts 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.** The project is not located within an airport land use plan and there are no public or private airports or airstrips within 2 miles of the project site. The nearest airport to the project site is the San Rafael Airport, located approximately 9 miles north at 400 Smith Ranch Road in the city of San Rafael. Therefore, no impacts would occur.

### f) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

**Less-than-Significant Impact.** The project site would be constructed on San Rafael Avenue and Lagoon Road, which are 30 feet wide and 23 feet wide at the project site, respectively. San Rafael Avenue is identified in the Belvedere Evacuation Map as being an evacuation route.[48] Construction of one single-family residence would result in minimal amounts of traffic related to worker trips, the delivery of materials, and disposal of excavated soils. While road closure is not expected as a result of the project, any requests for road closure would be subject to review and approval by the City's Director of Planning and Building to ensure no interference with emergency response vehicles. The project would incorporate all applicable design and safety standards and regulations as set forth by the 2022 CBC to ensure that it does not interfere with the provision of local emergency services (e.g., provision of adequate access roads to accommodate emergency response vehicles, minimum turning radii, etc.). Thus, project implementation would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan, and impacts would be less than significant.

[46] State Water Resources Control Board (California Water Boards). 2018. GeoTracker. Available at: https://geotracker.waterboards.ca.gov/map/. Accessed May 10, 2023.

[47] California Department of Toxics Substances Control (DTSC). 2018. EnviroStor. Available at: https://www.envirostor.dtsc.ca.gov/public/map. Accessed May 10, 2023.

[48] City of Belvedere. 2009. City of Belvedere Evacuation Map. Available at: https://www.cityofbelvedere.org/114/Maps. Accessed May 15, 2023.

### g) Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

**Less-than-Significant Impact.** The project site is located in an urban area surrounded by residential development and infrastructure. The project site is within a Local Responsibility Area (LRA) but not in a fire hazard severity zone or wildland urban interface.[49,50] See Section XX, *Wildfire*, for more information. Impacts related to risk of wildland fire would be less than significant.

[49] California Department of Forestry and Fire Protection (CAL FIRE). 2024. Fire Hazard Severity Zone Viewer. Available at: https://experience.arcgis.com/experience/03beab8511814e79a0e4eabf0d3e7247. Accessed August 5, 2023.

[50] Tiburon Fire Protection District (TFPD). 2022. Wildland Urban Interface (WUI) Map. Available at: https://www.tiburonfire.org/wuimap2022/. Accessed May 15, 2023.

# X. Hydrology and Water Quality

| Environmental Issues | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| *Would the project:* | | | | |
| (a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality? | ☐ | ☐ | ☒ | ☐ |
| (b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin? | ☐ | ☐ | ☒ | ☐ |
| (c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: | | | | |
| (i) Result in substantial erosion or siltation on- or off-site; | ☐ | ☐ | ☒ | ☐ |
| (ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; | ☐ | ☐ | ☒ | ☐ |
| (iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or | ☐ | ☐ | ☒ | ☐ |
| (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? | ☐ | ☐ | ☒ | ☐ |

## *Environmental Evaluation*

### a) Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

**Less-than-Significant Impact.** Construction activities would result in ground disturbance over the entire project site. The project would be required to comply with the City's Urban Runoff Pollution Prevention Ordinance (Belvedere Municipal Code Chapter 8.36), which requires implementation of BMPs during project construction, preparation of an Erosion and Sediment Control Plan (ESCP), and implementation of post-construction stormwater control measures. The project would also be required to comply with San Francisco Bay Regional Water Quality Control Board (RWQCB) General Construction Permit requirements to further address stormwater at the project site. In addition, construction contractors would be required to comply with applicable federal and state environmental and workplace safety laws for the handling, transport, and storage of hazardous materials, which would reduce the potential for accidental spill of hazardous substances to occur. The project does not include well drilling, additional groundwater pumping, or other activities that could adversely affect groundwater quality. Based on the required

compliance with City and RWQCB requirements, implementation of the proposed project would not violate any water quality standards, and impacts would be less than significant.

### b) Would the project 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.** The project would result in the demolition and reconstruction of the existing single-family residence with a JADU, new site improvements, and new landscaping. Implementation of the project would result in a minor increase in impervious surfaces over the project site. The project would be required to comply with the City's Urban Runoff Pollution Prevention Ordinance (Belvedere Municipal Code Chapter 8.36). However, the project site does not overlay a known groundwater basin.[51] Water use on the project site would be typical of a single-family residence and would continue to be supplied by the Marin Municipal Water District. Therefore, the project would not substantially decrease groundwater supply or interfere with groundwater recharge, and impacts would be less than significant.

### c) Would the project 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:

#### c-i) Result in substantial erosion or siltation on- or off-site?

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

#### c-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?

#### c-iv) Impede or redirect flood flows?

**Less-than-Significant Impact.** The project would result in the demolition and reconstruction of the existing single-family residence with a JADU, new site improvements, and new landscaping. The project would not result in direct alteration of any drainages or surface water features or substantially increase the amount of impervious surface area or the rate or volume of surface runoff in a manner that could result in flooding on- or off-site. The project would require ground-disturbing activities during project construction, which has the potential to result in an increase in erosion that could run off from the site to surrounding areas. Construction of the proposed project would be required to comply with the City's Urban Runoff Pollution Prevention Ordinance (Belvedere Municipal Code Chapter 8.36), which requires implementation of BMPs during project construction, preparation of an ESCP, and implementation of post-construction stormwater control measures to address long-term drainage conditions at the project site. The project would also be required to comply with San Francisco Bay Regional Water Quality Control Board General Construction Permit requirements to further address pollution runoff at the project site. Compliance with City and RWQCB requirements would reduce the potential for short- and long-term pollutants to occur at the project site that could runoff into surrounding areas. Upon project

[51] State Water Resources Control Board (California Water Boards). 2024. GAMA Groundwater Information System. Available at: https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/. Accessed August 2024.

buildout, the project site would be covered with buildings, hardscape, and landscaping, which would largely preclude on-site erosion and siltation. Based on required compliance with City and RWQCB requirements, the project would not result in substantial erosion or siltation, and impacts would be less than significant.

Therefore, the project would not 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. The project would also not substantially alter the existing drainage pattern of the project site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on-site or off-site or substantially increase the rate or amount of surface runoff in a manner that would result in flooding. As a result, impacts 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.** The project site is mapped on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panel number 488 of 531 (Map Number 06041C0488E).[52] The published FIRM indicates the majority of the project site is designated within Zone AE, which is an area determined to be within the 1% Special Flood Hazard Area where the base flood elevation has been determined. FEMA established the approximate flood surface elevation for the project site as 10 feet.

The project site is also situated within a tsunami inundation area. A tsunami is a series of sea waves, typically caused by large-scale seafloor displacements associated with large earthquakes or submarine landslides. A seiche is a standing wave that forms in an enclosed body of water, such as a lake, lagoon, or enclosed narrow bay, either as a result of strong ground shaking associated with a seismic event or else as a result of water being displaced due to a mass of soil impacting the standing body of water. In general, low-lying areas near the ocean and harbors are most susceptible to flooding and/or impact-related distress to structures from tsunamis. As noted in Appendix C, although the project site is likely protected from the full initial impact of an ocean tsunami due to its position relative to the open ocean, it could but subject to widespread flooding as a result of a large tsunami or a seiche.

Consistent with Belvedere Municipal Code Chapter 16.20, *Floodplain Management*, and City Building Department Policy 14.7, *Administration Of Substantial Improvement Requirement For Projects Within Designated Floodplains*, the project would be constructed at least one foot above the base flood elevation of 10 feet. All flood-protection measures required by the City and Appendix C would be incorporated into the project design.

As stated previously, the project site is located within flood hazard and tsunami inundation zones. However, during operation, no hazardous medical materials would be stored on-site. Therefore, in the unlikely event of project inundation, a significant release of pollutants from the project is not likely. Impacts would be less than significant.

### e) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

**Less-than-Significant Impact.** The project would result in the demolition and reconstruction of the existing single-family residence with a JADU, new site improvements, and new landscaping. The project site is under the jurisdiction of the San Francisco Bay RWQCB and would be subject to the *Water Quality*

[52] Federal Emergency Management Agency. 2024. National Flood Hazard Layer Viewer. Available at: https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd. Accessed September 2024.

*Control Plan for the San Francisco Bay Basin*, which establishes water quality objectives for beneficial uses of water resources within the San Francisco Bay Area.[53] However, the project site does not overlay a known groundwater basin.[54] The project would be required to comply with the San Francisco Bay RWQCB General Construction Permit requirements, which are codified in the City's Urban Runoff Pollution Prevention Ordinance (Belvedere Municipal Code Chapter 8.36) to address pollutant control and stormwater runoff. Based on the required compliance with City and RWQCB requirements, the project would be consistent with the *Water Quality Control Plan for the San Francisco Bay Basin*, and impacts would be less than significant.

# XI. Land Use and Planning

| Environmental Issues | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| *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? | ☐ | ☐ | ☒ | ☐ |

## *Environmental Evaluation*

### a) Would the project physically divide an established community?

**Less-than-Significant Impact.** The project site is in the established residential neighborhood of Belvedere Lagoon and surrounded by Belvedere Lagoon and Richardson Bay. The adjacent lots on either side (34 San Rafael Avenue and 2 Lagoon Road) are developed with single-family residences. The project proposes to reconstruct one single-family residence and JADU. Development of the project would not physically divide an established community as it would not introduce any physical divisions or barriers between the project site and surrounding area. Therefore, the project would not physically divide an established community and no impact would occur.

### b) Would the project 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.** The project proposes to construct one single-family residence. The project site is zoned R-1L and designated SFR in the Belvedere General Plan. Single-family dwellings are permitted in the R-1 zone, as outlined in Belvedere Municipal Code Section 19.24.050, *Summary of development standards—R-1L zone (Lagoon area)*. The project would submit a Variance Application to the City to retain the existing nonconforming location of the garage encroaching into the rear yard setback

[53] San Francisco Bay Regional Water Quality Control Board (RWQCB). 2024. *Water Quality Control Plan for the San Francisco Bay Basin*. Available at: https://www.waterboards.ca.gov/sanfranciscobay/basin_planning.html. Accessed September 2024.

[54] State Water Resources Control Board (California Water Boards. 2024. GAMA Groundwater Information System. Available at: https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/. Accessed August 2024.

as well as a second-floor roof eave extension at the main house encroaching into the west side yard setback. The project would also submit a Conditional Use Authorization (CUA) Application to provide a JADU above the garage at the second floor pursuant to Belvedere Municipal Code Section 19.79.100. An Application for Exception to Total Floor Area is requested for the first-floor area increase between the location of garage and main house to accommodate the existing, non-conforming location of the garage and for the second-floor area increase to accommodate a new JADU of approximately 358 square feet.

The project would construct a residence at a maximum height of 25'-5" from existing grade , consistent with Belvedere Municipal Code Section 19.56.040, *R-1L and R-2 Zone limitations*. The proposed solar panels on the roof of the residence would comply with Belvedere Municipal Code Chapter 16.32, *Small Residential Rooftop Solar Systems*. The project would comply with all provisions of Belvedere Municipal Code Chapter 16.20, *Floodplain Management*.

The proposed project would not significantly impact the environment or conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect; therefore, impacts would be less than significant.

# XII. Mineral Resources

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

## *Environmental Evaluation*

### a) Would the project 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 site is located in an area used or available for extraction of a regionally important mineral resource, or if a project would convert an existing or future regionally important mineral extraction use to another use, or if a project would affect access to a site used or potentially available for regionally important mineral resource extraction. The project site currently contains a single-family residence and neither the existing nor the proposed land uses would include the extraction of mineral resources on-site. The project site is located in an area zoned Mineral

Resource Zone (MRZ)-3 for aggregate mineral resources.[55] [56] MRZ-3 is defined as areas containing mineral deposits the significance of which cannot be evaluated from available data. Neither the project site nor the surrounding area is identified as an area containing mineral deposits of statewide or regional significance. Therefore, no impacts to mineral resources of statewide or regional significance would occur.

According to the CDOC's Geologic Energy Management Division, there are no oil, gas, geothermal, or other known wells located on the project site.[57] As such, the proposed project would not interfere with extraction of oil, gas, or geothermal resources. Implementation of the project would not adversely affect the availability of mineral resources of statewide or regional significance; therefore, no impact would occur.

### b) Would the project 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.** The project would not 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. The project site currently contains a single-family residence and neither the existing nor the proposed land uses would include the extraction of mineral resources on site. Implementation of the project would not adversely affect the availability of locally important mineral resources; therefore, no impact would occur.

# XIII. Noise

| Environmental Issues | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| *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 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? | ☐ | ☐ | ☐ | ☒ |

[55] California Department of Conservation (CDOC). 1982. *Mineral Land Classification Map Marin County Special Report 146 Plat 3.12.* California Department of Conservation, Department of Mines and Geology. Available at: https://filerequest.conservation.ca.gov/?q=SR_146-3. Accessed May 12, 2023.

[56] California Department of Conservation (CDOC). 1987. *Mineral Land Classification San Francisco Monterey Bay Area Special Report 146 Part III.* Page 2. California Department of Conservation, Department of Mines and Geology. Available at: https://filerequest.conservation.ca.gov/?q=SR_146-3_Text.pdf. Accessed May 12, 2023.

[57] California Department of Conservation (CDOC). 2024. Well Finder. California Department of Conservation, Geologic Energy Management Division. Available at: https://maps.conservation.ca.gov/doggr/wellfinder/. Accessed September 2024.

## *Environmental Evaluation*

### a) Would the project result in 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.** The project would comply with Belvedere Municipal Code Chapter 8.10, *Noise*, which limits noise-generating construction and demolition activities to the hours between 8:00 a.m. and 5:00 p.m. Monday through Friday. Noise-generating construction and demolition activities are prohibited on weekends and City-recognized holidays. Per these regulations, construction would be limited to weekday daytime hours. Construction activities are generally temporary and have a short duration, resulting in periodic increases in the ambient noise environment. Construction of the project would occur over a 12- to 16-month duration and would include site preparation, grading, building construction, paving, and architectural coating. Ground-borne noise and other types of construction-related noise impacts typically occur during grading and building activities. These construction activities have the potential to generate the highest noise levels. For these reasons, it is not anticipated that construction-type noise at the project site would have significant impacts on the surrounding environment.

The project is replacement of an existing single-family residence and the primary noise sources associated with the project would include the typical residential noise sources such as heating, ventilating, and air conditioning (HVAC) units. The project would result in minimal additional traffic on adjacent roadways since the project is a single-family residence with a JADU, therefore vehicular noise in the project vicinity would not be significantly affected and would not be above the existing noise levels.

### b) Would the project result in generation of excessive ground borne vibration or ground borne noise levels?

**Less-than-Significant Impact.** Construction activities (e.g., ground-disturbing activities, including grading and movement of heavy construction equipment) may generate localized ground-borne vibration and noise. Blasting or pile-driving activities are not anticipated in the construction of the project. Generally, construction-related ground-borne vibration is not expected to extend beyond 25 feet from the generating source. The project would not include any permanent noise sources that would expose persons to excessive ground-borne vibration or noise levels. As a result, impacts related to ground borne vibration or noise levels would be less than significant.

### 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.** There are no private airstrips or airport land use plans within the project vicinity. The nearest public airport to the project site is the San Rafael Airport, located approximately 9 miles north. Therefore, the project would not expose people residing in the project area nor working on-site to excessive noise levels associated with aircraft, and no impacts would occur.

# XIV. Population and Housing

| Environmental Issues | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| *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? | ☐ | ☐ | ☐ | ☒ |

## *Environmental Evaluation*

### a) Would the project 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)?

**Less-than-Significant Impact.** The demolition of the existing 2,284 square-foot residence and the construction of a new 3,988-square-foot, single-family residence with a JADU, site improvements, and landscaping is not anticipated to result in an increase in population. The project would be consistent with the existing land use, as well as the R-1L zoning district and SFR land use designation. Therefore, implementation of the project would not induce substantial unplanned population growth within the city, either directly or indirectly, and impacts would be less than significant.

### b) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

**Less-than-Significant Impact.** The project would demolish an existing single-family residence to construct a new residence with attached JADU. Although demolition would result in temporary displacement of people residing in the existing residence, it would not necessitate the construction of replacement housing elsewhere as the single-family residence would be rebuilt and add a housing unit. Therefore, impacts related to the construction of replacement housing would be less than significant.

# XV. Public Services

| Environmental Issues | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| *Would the project:* | | | | |
| (a) 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: | | | | |
| Fire protection? | ☐ | ☐ | ☒ | ☐ |
| Police protection? | ☐ | ☐ | ☒ | ☐ |
| Schools? | ☐ | ☐ | ☒ | ☐ |
| Parks? | ☐ | ☐ | ☒ | ☐ |
| Other public facilities? | ☐ | ☐ | ☒ | ☐ |

## *Environmental Evaluation*

### 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 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?

**Less-than-Significant Impact.** The project site would continue to be used for private residential use, with no substantial increase in intensity of use. The TFPD provides 24-hour fire, rescue, and emergency medical services to the City, including the project site. As discussed in Section XIV, *Population and Housing*, the project is not anticipated to result in a substantial increase in population. Due to the limited population increase and the nature of development, a substantial increase in the need for fire facilities compared to the existing conditions is not anticipated. As a result, project implementation is not anticipated to require the construction of new or physically altered fire facilities and is not anticipated to result in an increase in service calls. Therefore, impacts would be less than significant.

#### Police protection?

**Less-than-Significant Impact.** The project site would continue to be used for private residential use, with no substantial increase in intensity of use. The Belvedere Police Department provides law enforcement services to the City, including the project site, and is located approximately 0.67 mile southeast of the project site at 450 San Rafael Avenue. Due to the limited population increase and the nature of development, a substantial increase in the need for police protection facilities compared to the existing conditions is not anticipated. As a result, project implementation is not anticipated to require the

construction of new or physically altered police facilities and is not anticipated to result in an increase in service calls. Therefore, impacts would be less than significant.

### Schools?

**Less-than-Significant Impact.** The City is served by the Reed Union School District. The project site would continue to be used for private residential use, with no substantial increase in intensity of use. The project would be subject to the requirements of Assembly Bill (AB) 2926 and Senate Bill (SB) 50, which allow school districts to collect development impact fees to minimize potential impacts to school districts as a result of new development. Therefore, impacts would be less than significant.

### Parks?

**Less-than-Significant Impact.** The project site would continue to be used for private residential use, with no substantial increase in intensity of use and would not substantially increase the population in the project area. The nearest City park to the project site is the Tom Price Park, located approximately 0.38 mile southeast of the project site between Lagoon Road and Tiburon Boulevard. In addition, Community Park, next to Belvedere City Hall and Community Center, is located approximately 0.61 mile south of the project site. Due to the limited population increase, the project is not anticipated to indirectly result in a substantial increase in demand for parks or recreational facilities. Therefore, impacts would be less than significant.

### Other public facilities?

**Less-than-Significant Impact.** The project site would continue to be used for private residential use, with no substantial increase in intensity of use, and would not substantially increase the population in the project area. Other public services that could potentially be impacted by the project are public libraries. The project site is served by the Belvedere-Tiburon Library, which is located approximately 0.67 mile southeast of the project site. Therefore, impacts would be less than significant.

# XVI. Recreation

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

## *Environmental Evaluation*

### a) Would the project 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?

**Less-than-Significant Impact.** See Impact Discussion XV(a-iv). Given the project site would continue to be used for private residential use, with no substantial increase in intensity of use, the project would not result in a substantial increase in demand for parks or other recreational facilities and would not result in physical deterioration of these facilities. Therefore, impacts would be less than significant.

### 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?

**No Impact.** See Impact Discussion XV(a-iv). Given the project site would continue to be used for private residential use, with no substantial increase in intensity of use, the project would not include recreational facilities or require the construction or expansion of recreational facilities. Therefore, no impacts would occur.

# XVII. Transportation

| | Environmental Issues | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| *Would the project:* | | | | | |
| (a) | Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities? | ☐ | ☐ | ☒ | ☐ |
| (b) | Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)? | ☐ | ☐ | ☒ | ☐ |

| | Environmental Issues | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| (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? | ☐ | ☐ | ☒ | ☐ |

## *Environmental Evaluation*

### a) Would the project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

**Less-than-Significant Impact.** The project would construct a garage for on-site parking of up to two vehicles. The proposed on-site parking would provide adequate parking for the proposed single-family residence and JADU. In addition, the proposed driveway and garage would be used for access and a staging area during project construction. While road closure is not expected, any requests for road closure would be subject to review and approval by the City's Director of Planning and Building, to ensure no interference with emergency response vehicles. Therefore, impacts would be less than significant.

### b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

**Less-than-Significant Impact.** State CEQA Guidelines Section 15064.3(b) focuses on vehicle miles traveled (VMT) adopted pursuant to SB 743 for determining the significance of transportation impacts. Pursuant to SB743, the focus of transportation analysis changes from vehicle delay to VMT.

The City has not yet adopted local VMT criteria; therefore, VMT screening analysis for the proposed project has been provided using guidance included in the California Governor's Office of Planning and Research's (OPR) *Technical Advisory on Evaluating Transportation Impacts in CEQA*.[58] Using the OPR's screening threshold, a land use project that generates fewer than 110 daily trips can be assumed to cause to a less-than-significant impact without conducting a detailed study. The project site would continue to be used for private residential use, with no substantial increase in intensity of use. and would be expected to generate less than 110 trips per day. As such, the proposed project would be considered a small project according to the OPR's screening threshold, which would not warrant a detailed VMT analysis. Therefore, the proposed project would not conflict with or be inconsistent with State CEQA Guidelines Section 15064.3(b), and impacts would be less than significant.

[58] California Governor's Office of Planning and Research (OPR). 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA*. Available at: https://lci.ca.gov/docs/20180416-743_Technical_Advisory_4.16.18.pdf. Accessed September 2024.

### c) Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

**Less-than-Significant Impact.** The project would comply with City Public Works Policy 11.2, *Sight Lines*, which regulates adequate lines of sight at curves and intersections.[59] The project would not alter geometric design of any existing street or intersection. Therefore, the proposed project would not substantially increase hazards due to design features or incompatible use, and impacts would be less than significant.

### d) Would the project result in inadequate emergency access?

**Less-than-Significant Impact.** The project would be designed and constructed in accordance with all applicable provisions of the California Fire Code, which includes requirements for width of emergency access for all areas of the project site and accessibility for emergency responders. Compliance with provisions of fire code would ensure that impacts associated with emergency access of the project would be less than significant.

# XVIII. Tribal Cultural Resources

| Environmental Issues | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| (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: | | | | |
| (i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or | ☐ | ☒ | ☐ | ☐ |
| (ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. | ☐ | ☒ | ☐ | ☐ |

## *Environmental Evaluation*

Impacts to historical and archaeological resources were evaluated for this project based on a field inspection, and subsequent archaeological testing by a qualified professional archaeologist. The information presented in this analysis is based on and supplemented with the Cultural Resources Survey

[59] City of Belvedere. 2019. Public Works Department Policies. Available at: https://www.cityofbelvedere.org/documents/public-works-department-policies/. Accessed September 2024.

Report prepared by Archaeological/Historical Consultants, dated May 2022, the Archaeological Excavation Report of P-21-000066 (CA-MRN-35) prepared by ALTA, dated May 8, 2024, and the Historic Properties Treatment Plan CA-MRN-35 (P-21-000066) prepared by ALTA, dated October 23, 2024. The technical reports prepared for this project are incorporated by reference.

In compliance with current state and federal laws that prohibit the disclosure of certain cultural resources information, that could jeopardize the resource if released to the public, specific descriptive and locational information has been redacted from this IS/MND. A copy of the technical reports cited are available and on file with the City and available for review by qualified cultural resources professionals who meet the U.S. Secretary of the Interior qualifications and recognized by the California Office of Historic Preservation, as required by state law.

Tribal Cultural Resources are generally defined in the California Public Resources Code (PRC) Section 21074 as either a site, feature, place, or 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.

### 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:

#### a-i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?

**Less Than Significant With Mitigation.** As described above in Section V Cultural Resources, archaeological site P-21-00066 (CA-MRN-35) is eligible for listing on the National Register of Historic Places under Criteria A and D. The site is therefore a historical resource as defined in the CEQA Guidelines (14 California Code of Regulations §15064.5). Implementation of Mitigation Measure CUL-1 and CUL-2 would ensure that the project would have less-than-significant impacts on a tribal cultural resource that is listed in or eligible for listing in the California Register, or in a local register of historical resources as defined in PRC Section 5020.1(k).

#### a-ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

**Less Than Significant With Mitigation.** All formal outreach to Native American parties and follow-up consultation is being conducted by the City's of Belvedere's Planning and Building Division, pursuant to PRC Section 21080.3.1, as amended by the provisions of AB 52. The City sent formal consultation letters to all Native American contacts on their AB 52 list on February 13, 2023. This consultation included letters to two individuals with the Federated Indians of Graton Rancheria, one individual from the

Wuksache Indian Tribe/Eshom, and one individual from Guidiville Indian Rancheria. Only the FIGR chose to consult, as described below.

The FIGR responded to the formal AB 52 consultation request via email on April 25, 2023, requesting consultation with the City to review alternatives to the project, recommended mitigation measures, and any significant effects of the project. The FIGR also requested consultation on the significant of the project's impacts on tribal cultural resources, significance of tribal resources, and the type of environmental review necessary for the project. An initial meeting was held on May 31, 2023, where FIGR requested that additional archaeological testing occur prior to completing the IS/MND. Additional meetings occurred on July 12, 2023 and October 16, 2024.

In response to AB 52 consultation, Alta Archaeological Consulting was retained by the project proponent to conduct additional archaeological testing prior to the completion of the IS/MND. ALTA identified disturbed shell midden and isolated human remains on the project site. No intact archaeological deposits were encountered. Based on the results of the testing effort, Alta Archaeological Consulting prepared a Historic Properties Treatment Plan CA-MRN-35 (P-21-000066).

In the event that objects or artifacts that may be tribal cultural resources are encountered during the course of project construction, construction activities would temporarily cease on the project site, as set forth in Mitigation Measure CUL-1 through CUL-8, until the potential tribal cultural resources are properly assessed pursuant to PRC Section 21074 (a)(2). Therefore, impacts to tribal resources cultural resources would be less than significant with implementation of Mitigation Measure CUL-1 through CUL-7.

# XIX. Utilities and Service Systems

| Environmental Issues | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| *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? | ☐ | ☐ | ☒ | ☐ |

## *Environmental Evaluation*

### a) Would the project 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.** The project site is currently served by utility services, including water, wastewater, electricity, natural gas, and telecommunications. Sanitary District No. 5 of Marin County collects and treats wastewater, Marin Municipal Water District supplies potable water, and PG&E delivers electricity and natural gas. The proposed project would connect to the existing utilities infrastructure. Therefore, the project would not require the relocation or expansion of water, wastewater, electric power, natural gas, or telecommunications facilities, and impacts would be less than significant.

### b) Would the project 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.** See Impact Discussion XIX(a). Marin Municipal Water District currently supplies water to the existing residence. Given that the proposed project would continue to be used for private residential use, with no substantial increase in intensity of use, it would not substantially increase water demand at the project site, and impacts would be less than significant.

### c) Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

**Less-than-Significant Impact.** See Impact Discussion XIX(a). The Sanitary District No. 5 of Marin County currently collects and treats wastewater from the existing residence. Given that the proposed project would continue to be used for private residential use, with no substantial increase in intensity of use, it would not substantially increase wastewater generation at the project site. Therefore, impacts would be less than significant.

### d) Would the project 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.** Solid waste, recycling, and green waste services are currently provided to the site by Mill Valley Refuse Service. During construction, the project would result in a short-term increase in construction-related solid waste. Belvedere Municipal Code Chapter 16.30, *Construction and Demolition Debris Diversion*, requires that least 50% of the total construction and demolition debris generated by the project must be diverted through reuse or recycling.[60] Based on required compliance with the Belvedere Municipal Code, construction of the project would not generate solid waste in excess of local infrastructure capacity.

[60] City of Belvedere. 2024. Municipal Code. Available at: https://belvedere.municipal.codes/Code/8.08. Accessed September 2024.

Additionally, given that the proposed project would continue to be used for private residential use, with no substantial increase in intensity of use, it would not substantially increase the generation of solid waste at the project site. According to the California Department of Resources Recycling and Recovery (CalRecycle) Estimated Solid Waste Generation Rates, operation of a single-family residence would result in a limited increase in long-term solid waste of approximately 12.23 pounds per day.[61] In addition, the project would be required to comply with Belvedere Municipal Code Chapter 8.08, *Solid Waste Storage, Collection and Disposal*, which requires participation in the City's recycling and organic waste disposal programs. Therefore, impacts would be less than significant.

### e) Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

**Less-than-Significant Impact.** See Impact Discussion XIX(a). The project would be serviced by Mill Valley Refuse Service, which is fully compliant with existing state and local regulations related to disposal of solid waste. As evaluated above, construction and operation of the project is not expected to generate solid waste in excess of state or county regulations for solid waste. In addition, the project would be required to divert 50% of construction debris and comply with City-implemented recycling and organic waste disposal programs during operation, which would be consistent with federal, state, and local solid waste reduction goals. Therefore, impacts would be less than significant.

# XX. Wildfire

| Environmental Issues | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| *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? | ☐ | ☐ | ☒ | ☐ |

[61] California Department of Resources Recycling and Recovery (CalRecycle). 2006. Estimated Solid Waste Generation Rates. Available at: https://www2.calrecycle.ca.gov/WasteCharacterization/General/Rates. Accessed September 2024.

## *Environmental Evaluation*

### a) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

**Less-than-Significant Impact.** The project site is located in an urban area surrounded by residential development and infrastructure. The project site is within a Local Responsibility Area (LRA) but not in a fire hazard severity zone or wildland urban interface.[62],[63] The TFPD adopted the Marin Community Wildfire Protection Plan, which includes plans for evacuating residents due to wildfire.[64] The project is located on San Rafael Avenue, which is listed as an evacuation route on the City of Belvedere Conceptual Evacuation Map. [65] Although the project would be located on an emergency evacuation route, the construction would be temporary. While road closure is not expected, any requests for road closure would be subject to review and approval by the City's Director of Planning and Building to ensure no interference with emergency response vehicles. Therefore, the project would not impair an adopted emergency response plan or emergency evacuation plan, and impacts would be less than significant.

### b) Due to slope, prevailing winds, and other factors, if located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project 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.** See Impact Discussions XX(a) and IX(a). The project site is located in an urban area surrounded by residential development and infrastructure. The project site is not located in a State Responsibility Area (SRA) or fire hazard severity zone. The closest fire hazard severity zone in an SRA is approximately 1 mile northeast of the project site. [66] All construction would be temporary, and would be in compliance with the 2022 California Fire Code and Belvedere Municipal Code Chapter 16.12, *California Fire Code*.[67] Prior to issuance of a building permit, the project design and plans would be reviewed by the TFPD Fire Prevention Bureau.[68] Furthermore, the TFPD station, located at 1679 Tiburon Boulevard, is approximately 1 mile from the project site and provides 24-hour fire, rescue, and emergency medical services to the city, including the project site. Therefore, impacts would be less than significant.

---

[62] California Department of Forestry and Fire Protection (CAL FIRE). 2024. Fire Hazard Severity Zone Viewer. Available at: https://experience.arcgis.com/experience/03beab8511814e79a0e4eabf0d3e7247. Accessed August 5, 2023.

[63] Tiburon Fire Protection District (TFPD). 2022. Wildland Urban Interface (WUI) Map. Available at: https://www.tiburonfire.org/wuimap2022/. Accessed May 15, 2023.

[64] Marin County Fire Department. 2020. *Marin Community Wildfire Protection Plan*. Available at: https://www.marinwildfire.org/about-mwpa/guiding-documents. Accessed May 15, 2023.

[65] City of Belvedere. 2009. City of Belvedere Conceptual Evacuation Map. Available at: https://www.cityofbelvedere.org/documents/belvedere-evacuation-map/. Accessed September 2024.

[66] California Department of Forestry and Fire Protection (CAL FIRE). 2020. Fire Hazard Severity Zone Viewer. Available at: https://egis.fire.ca.gov/FHSZ/. Accessed May 12, 2023.

[67] Hood Thomas Architects. 2022. *Utting Obradaigh Residence New Construction Design Review Set.*

[68] Tiburon Fire Prevention District (TFPD). 2024. *Project Plan Submittal Review Guidelines*. Available at: https://www.tiburonfire.org/plan-submittal-review-guidelines/. Accessed August 2024.

**c) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project 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.** See Impact Discussion XX(b). Impacts would be less than significant.

**d) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project 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.** See Impact Discussion XX(b). Impacts would be less than significant.

# XXI. Mandatory Findings of Significance

| | Environmental Issues | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| (a) | Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? | ☐ | ☒ | ☐ | ☐ |
| (b) | Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are 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) | Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? | ☐ | ☐ | ☒ | ☐ |

## *Environmental Evaluation*

### 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 with Mitigation Incorporated.** As discussed in Section IV Biological Resources, the project area is currently developed and located within a suburban shoreline community. With the exception of potential nesting birds, the project site does not have the significant potential to host sensitive or special-status species, nor would the proposed project include work in undisturbed terrestrial or aquatic habitat adjacent. The project does contain trees and other vegetation that have the potential to support special-status and nesting birds that are protected under the California Fish and Game Code and under the Migratory Bird Treaty Act. In the event that any such nesting birds are present during construction activities associated with the proposed project, the birds and/or raptors would be protected in accordance with mitigation measure Mitigation Measure BIO-1, which would require a nesting bird survey to be completed if construction occurs during the nesting season. In accordance with mitigation measure Mitigation Measure BIO-1, any nesting birds that are discovered within or near a construction area would be monitored by a qualified biologist, who would have the authority to cease construction if there are state and/or federally listed birds found breeding. Any impacts to biological resources resulting from the proposed project are therefore expected to be less than significant with mitigation incorporated. No further mitigation is required.

As described in Section V Cultural Resources and Section XVIII Tribal Cultural Resources, the project site has a high sensitivity for both surface and buried archaeological deposits. Mitigation Measures CUL-1 through CUL-8 outline the required preconstruction measures and process that would occur if inadvertent discovery of sub-surface cultural or tribal cultural resources occurs. Therefore, the proposed project would not eliminate important examples of the major periods of California history or prehistory. For these reasons, impacts to cultural resources resulting from the project would be less than significant with mitigation incorporated.

### 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**. As described throughout this IS/MND, the project would result in potentially significant impacts involving biological resources, cultural resources, and tribal cultural resources. However, mitigation measures have been identified that would reduce these impacts to less than significant levels. All reasonably foreseeable future development in the City would be subject to the same land use and environmental regulations that have been described throughout this document. Furthermore, all development projects are guided by the policies identified in the City's General Plan and by the regulations established in the Municipal Code.

- **Aesthetics.** Temporary construction impacts to the visual character would be limited to the public view from San Rafael Avenue. Construction impacts would be short-term and temporary, lasting

approximately 12 to 16 months, and would be limited to the presence of construction vehicles, equipment, and staging on the project site. Because of the intervening landscaping and limited duration of project construction, the project would not cause impacts to aesthetics that would be cumulatively considerable.

- **Air Quality and GHG.** According to the BAAQMD CEQA Guidelines, if a project's emissions levels exceed the identified significance thresholds for air quality and GHGs, the emissions would be cumulatively considerable. Construction and operational emissions for the project would not exceed BAAQMD thresholds of significance. Therefore, construction and operations-related air quality and GHG impacts associated with the project would not be cumulatively considerable.
- **Energy.** There are no established thresholds of significance for construction-related energy use. Cumulative impacts on energy resources would occur if the project would add to a substantial aggregation of impacts related to wasteful, inefficient, or unnecessary energy consumption or conflict with a state or local plan for renewable energy or efficiency. Projects in the city are required to comply with BAAQMD and CALGreen standards to reduce construction-related GHG emissions, which also reduces energy use. In addition, all projects in the city are required to comply with Belvedere Municipal Code Chapter 8.08, *Solid Waste Storage, Collection and Disposal*, by recycling at least 50% of all construction waste or demolition material. Therefore, the project would not cause impacts to energy use that would be cumulatively considerable.
- **Hydrology and Water Quality.** Project construction could cause runoff to adjacent ditches and the Belvedere Lagoon that could violate water quality standards and result in erosion or siltation. However, compliance with the SWPPP BMPs, which is a standard condition of approval, would prevent contaminated stormwater runoff from entering adjacent drainages during both construction and operation. Therefore, the project would not contribute to cumulative water quality impacts.
- **Transportation.** The project would not propose modifications to San Rafael Avenue that would redirect traffic or cause lane closures during project construction. Impacts of construction will be short-term and temporary, lasting approximately 12 to 16 months. Once operational, the project would contribute similar numbers of vehicular trips as existing to the surrounding roadways. Given the small size of the project and its limited duration, the project would not cause impacts to transportation that would be cumulatively considerable.

## c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

**Less Than Significant**. As detailed throughout this IS/MND, the proposed project would not exceed any significance thresholds or result in significant impacts in the environmental categories typically associated with indirect or direct effects to human beings, such as aesthetics, air quality, hazards and hazardous materials, or public services. The project would reconstruct a single-family residence and with required adherence to local, regional, and state regulations, the project would not result in any significant impacts. Therefore, the project would not have the potential to result in substantial adverse effects on human beings, and impacts would be less than significant.

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# APPENDIX A

## Design Review Set, Hood Thomas Architects, July 26, 2022

# UTTING OBRADAIGH RESIDENCE

30 SAN RAFAEL AVE | BELVEDERE | CALIFORNIA 94920

## NEW CONSTRUCTION

- DESIGN REVIEW SET -


## INDEX TO DRAWINGS



**TOTAL SHEETS: 31**

## BUILDING CODE DATA

ALL WORK SHALL BE IN COMPLIANCE WITH ALL STATE AND LOCAL CODES, INCLUDING THE FOLLOWING:
2019 CALIFORNIA RESIDENTIAL CODE
2019 CALIFORNIA BUILDING CODE (W/ LOCAL AMENDMENTS)
2019 CALIFORNIA MECHANICAL CODE (W/ LOCAL AMENDMENTS)
2019 CALIFORNIA PLUMBING CODE (W/ LOCAL AMENDMENTS)
2019 CALIFORNIA ELECTRICAL CODE (W/ LOCAL AMENDMENTS)
2019 CALIFORNIA ENERGY CODE (W/ LOCAL AMENDMENTS)
2019 CALIFORNIA FIRE CODE (W/ LOCAL AMENDMENTS)

## PROJECT TEAM


**OWNER**
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ARCHAEOLOGICAL/HISTORICAL CONSULTANTS
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**ARBORIST**
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**IRRIGATION CONSULTANTS**
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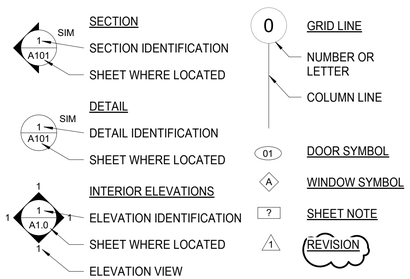
480 ST. JOHN STREET, SUITE 200
PLEASANTON, CA 94566
T. 925.855.0417
OFFICE@BROOKWATER.COM


## SYMBOL LEGEND





HTA!
HOOD THOMAS ARCHITECTS
440 SPEAR STREET SAN FRANCISCO, CALIFORNIA 94105
P:(415)543-5005 F:(415)495-3336
WWW.HOODTHOMAS.COM


LICENSED ARCHITECT MARK S. THOMAS NO. C-9445 EXP. 08-22 STATE OF CALIFORNIA

**UTTING OBRADAIGH RESIDENCE**

**30 SAN RAFAEL AVE**
**BELVEDERE, 94920**
**APN: 060-011-12**

| ISSUE: | DATE: |
|---|---|
| ISSUE FOR REVIEW | 08.19.21 |
| DESIGN REVIEW | 01.27.22 |
| PLAN CHECK #1 | 07.26.22 |

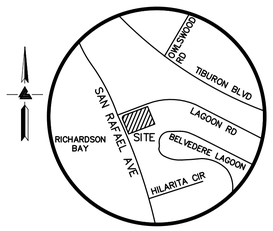
| | |
|---|---|
| DRAWN BY: | TL |
| DATE: | 07.26.22 |
| SHEET TITLE: | |

**COVER SHEET**

**SHEET NUMBER:**

**A0.0**

| REV #: | DATE: |
|---|---|




## VICINITY MAP
NO SCALE

## NOTES
ALL DISTANCES AND DIMENSIONS ARE IN FEET AND DECIMALS OF A FOOT.

BUILDING FOOTPRINTS ARE SHOWN TO FINISHED MATERIAL (STUCCO/SIDING) AT GROUND LEVEL.

FINISH FLOOR ELEVATIONS ARE TAKEN AT DOOR THRESHOLD (EXTERIOR)

THE AREA OF THE SURVEYED LOT IS 6,774± SQUARE FEET / 0.16± ACRE

## FEMA FLOOD NOTE
FLOOD ZONE: AE

100-YEAR BASE FLOOD ELEVATION (BFE): 10' (NAVD88 DATUM)

WAVE RUNUP ELEVATION: 11' (NAVD88 DATUM)

STILLWATER ELEVATION: 9.7' (NAVD88 DATUM)

PER FLOOD INSURANCE STUDY TABLE 9, SAN FRANCISCO BAY AREA COASTAL STUDY TRANSECT DATA TRANSECT "B136"

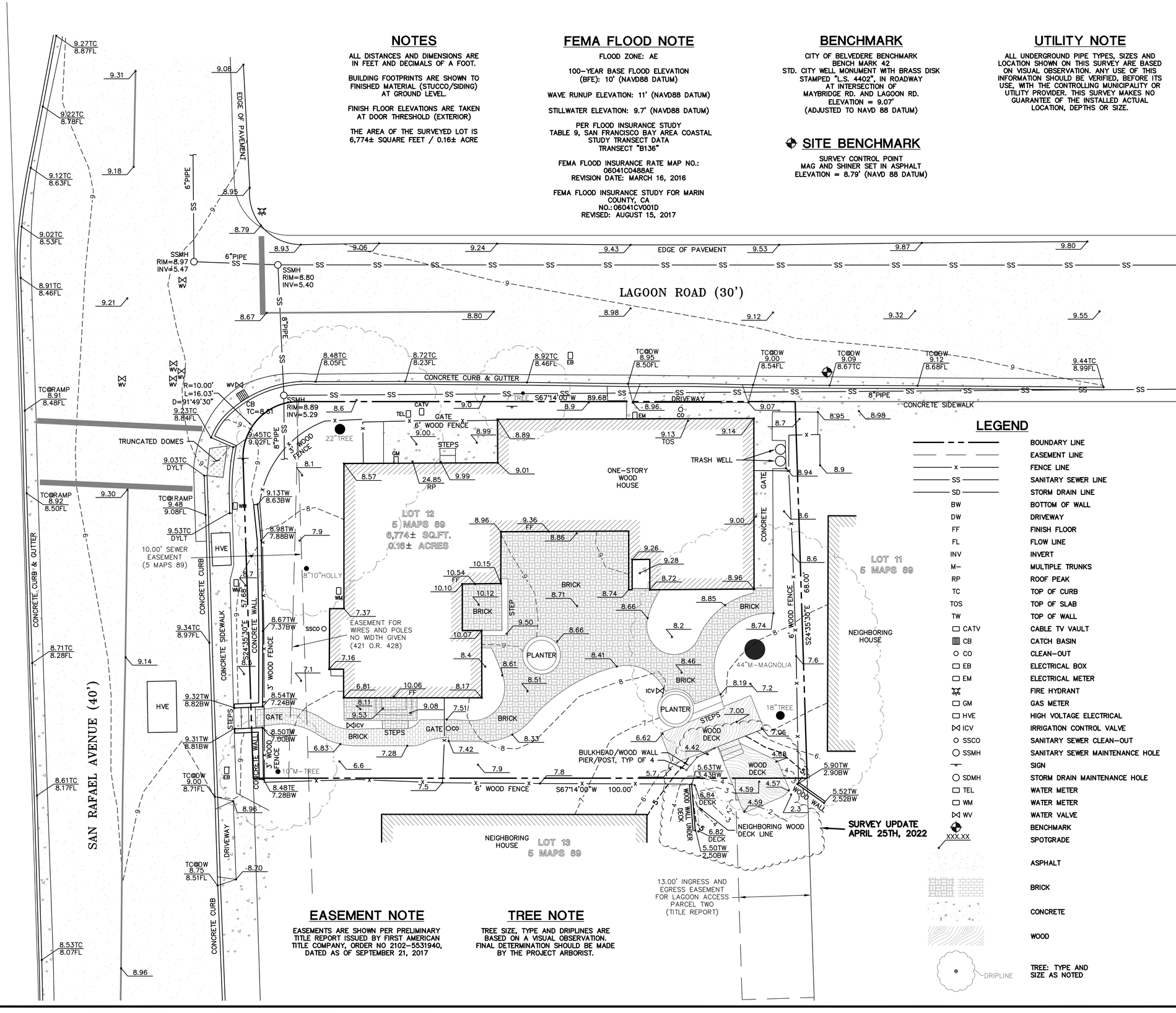
FEMA FLOOD INSURANCE RATE MAP NO.: 06041C0488AE
REVISION DATE: MARCH 16, 2016

FEMA FLOOD INSURANCE STUDY FOR MARIN COUNTY, CA
NO.: 06041CV001D
REVISED: AUGUST 15, 2017

## BENCHMARK
CITY OF BELVEDERE BENCHMARK
BENCH MARK 42
STD. CITY WELL MONUMENT WITH BRASS DISK STAMPED "L.S. 4402", IN ROADWAY AT INTERSECTION OF MAYBRIDGE RD. AND LAGOON RD.
ELEVATION = 9.07'
(ADJUSTED TO NAVD 88 DATUM)

## SITE BENCHMARK
SURVEY CONTROL POINT
MAG AND SHINER SET IN ASPHALT
ELEVATION = 8.79' (NAVD 88 DATUM)

## UTILITY NOTE
ALL UNDERGROUND PIPE TYPES, SIZES AND LOCATION SHOWN ON THIS SURVEY ARE BASED ON VISUAL OBSERVATION. ANY USE OF THIS INFORMATION SHOULD BE VERIFIED, BEFORE ITS USE, WITH THE CONTROLLING MUNICIPALITY OR UTILITY PROVIDER. THIS SURVEY MAKES NO GUARANTEE OF THE INSTALLED ACTUAL LOCATION, DEPTHS OR SIZE.




## EASEMENT NOTE
EASEMENTS ARE SHOWN PER PRELIMINARY TITLE REPORT ISSUED BY FIRST AMERICAN TITLE COMPANY, ORDER NO 2102-5531940, DATED AS OF SEPTEMBER 21, 2017

## TREE NOTE
TREE SIZE, TYPE AND DRIPLINES ARE BASED ON A VISUAL OBSERVATION. FINAL DETERMINATION SHOULD BE MADE BY THE PROJECT ARBORIST.

## LEGEND

| | |
|---|---|
| | BOUNDARY LINE |
| | EASEMENT LINE |
| x | FENCE LINE |
| SS | SANITARY SEWER LINE |
| SD | STORM DRAIN LINE |
| BW | BOTTOM OF WALL |
| DW | DRIVEWAY |
| FF | FINISH FLOOR |
| FL | FLOW LINE |
| INV | INVERT |
| M- | MULTIPLE TRUNKS |
| RP | ROOF PEAK |
| TC | TOP OF CURB |
| TOS | TOP OF SLAB |
| TW | TOP OF WALL |
| CATV | CABLE TV VAULT |
| CB | CATCH BASIN |
| CO | CLEAN-OUT |
| EB | ELECTRICAL BOX |
| EM | ELECTRICAL METER |
| | FIRE HYDRANT |
| GM | GAS METER |
| HVE | HIGH VOLTAGE ELECTRICAL |
| ICV | IRRIGATION CONTROL VALVE |
| SSCO | SANITARY SEWER CLEAN-OUT |
| SSMH | SANITARY SEWER MAINTENANCE HOLE |
| | SIGN |
| SDMH | STORM DRAIN MAINTENANCE HOLE |
| TEL | WATER METER |
| WM | WATER METER |
| WV | WATER VALVE |
| | BENCHMARK |
| XXX.XX | SPOTGRADE |
| | ASPHALT |
| | BRICK |
| | CONCRETE |
| | WOOD |
| DRIPLINE | TREE: TYPE AND SIZE AS NOTED |

0 4 8 16
SCALE: 1" = 8'

LICENSED LAND SURVEYOR
GREGORY F. BRAZE
No. 7623
STATE OF CALIFORNIA

LEA & BRAZE ENGINEERING, INC.
CIVIL ENGINEERS I LAND SURVEYORS
MAIN OFFICE: 2495 INDUSTRIAL PKWY WEST HAYWARD, CALIFORNIA 94545 (510) 887-4086
REGIONAL OFFICES: ROSEVILLE DUBLIN SAN JOSE
WWW.LEABRAZE.COM

30 SAN RAFAEL BOULEVARD
TIBURON BEVEDERE
CALIFORNIA
APN: 060-011-12
MARIN COUNTY

# TOPOGRAPHIC SURVEY

| | |
|---|---|
| – | – |
| – | – |
| – | – |
| – | – |
| DECK UPDATE 4-25-22 | DDR |
| REVISIONS | BY |
| JOB NO: | 2210436 |
| DATE: | 5-4-21 |
| SCALE: | 1" = 8' |
| FIELD BY: | ES |
| DRAWN BY: | JN |
| SHEET NO: | SU1 |

1 OF 1 SHEETS

## VICINITY MAP


## PROJECT DESCRIPTION

THE APPLICANT REQUESTS PLANNING COMMISSION REVIEW AND APPROVAL OF THE FOLLOWING ENTITLEMENTS: DEMOLITION, DESIGN REVIEW, VARIANCE, TOTAL FLOOR AREA EXCEPTION, AND CUA FOR NEW JADU.

THE APPLICANT PROPOSES TO CONSTRUCT A NEW 2-STORY RESIDENCE TO INCLUDE AN ATTACHED GARAGE AND A NEW JUNIOR ACCESSORY DWELLING UNIT ABOVE THE GARAGE. THE PROJECT ALSO INCLUDES SITE AND LANDSCAPING IMPROVEMENTS INCLUDING NEW PATIO AREAS, DECKS, AN OUTDOOR DINING AREA, AND OUTDOOR KITCHEN. LANDSCAPING IS PROPOSED THROUGHOUT THE PROPERTY. THE VARIANCE IS REQUIRED FOR THE GARAGE, NEW JADU, AND ROOF EAVES TO ENCROACH INTO THE REAR AND SIDE YARD SETBACKS ABUTTING ANOTHER LOT.

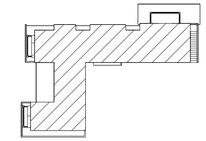
## PROJECT DATA

| | | | |
|---|---|---|---|
| ADDRESS | 30 SAN RAFAEL AVE. | | |
| A.P.N. | 060-011-12 | | |
| ZONING | R-1L | | |
| | ALLOWABLE | EXISTING | PROPOSED |
| GROSS LOT AREA | 7,500 SF | 6,306 SF | 6,306 SF |
| LOT COVERAGE | 40% (3,000SF) | 40% (2,551 SF) | 41% (2,572 SF) |
| TOTAL FLOOR AREA | 3,750 SF (.50 LOT AREA) | 2,284 SF (.36 LOT AREA) | 3,988 SF (.63 LOT AREA) |
| FRONT YARD SETBACK (BUILDING LESS THAN 25 FEET HIGH) | 10 FEET | 15 FEET | 15 FEET |
| LEFT SIDE YARD SETBACK | | | |
| FIRST STORY | 5 FEET | 2 FEET | 1'-4" @ GARAGE<br>10'-6" @ MAIN HOUSE |
| SECOND STORY | 10 FEET | N/A | 8'-6" @ JADU<br>11'-6" @ MAIN HOUSE |
| RIGHT SIDE YARD SETBACK | | | |
| FIRST STORY | 5 FEET | 10 FEET | 7 FEET |
| SECOND STORY | 10 FEET | N/A | 8'-6" FEET |
| REAR YARD SETBACK | 20 FEET | 5 FEET | 2'-6" @ GARBAGE ALCOVE<br>4'-6" @ EXT. STAIRS |
| BUILDING HEIGHT MAXIMUM | 22 FEET | 15 FEET | 22 FEET |
| PARKING SPACES | 2 | 2 | 2 |

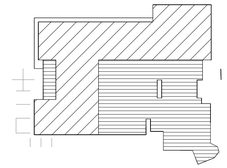
## FLOOR AREA CALCULATIONS

EXISTING

2ND FLOOR

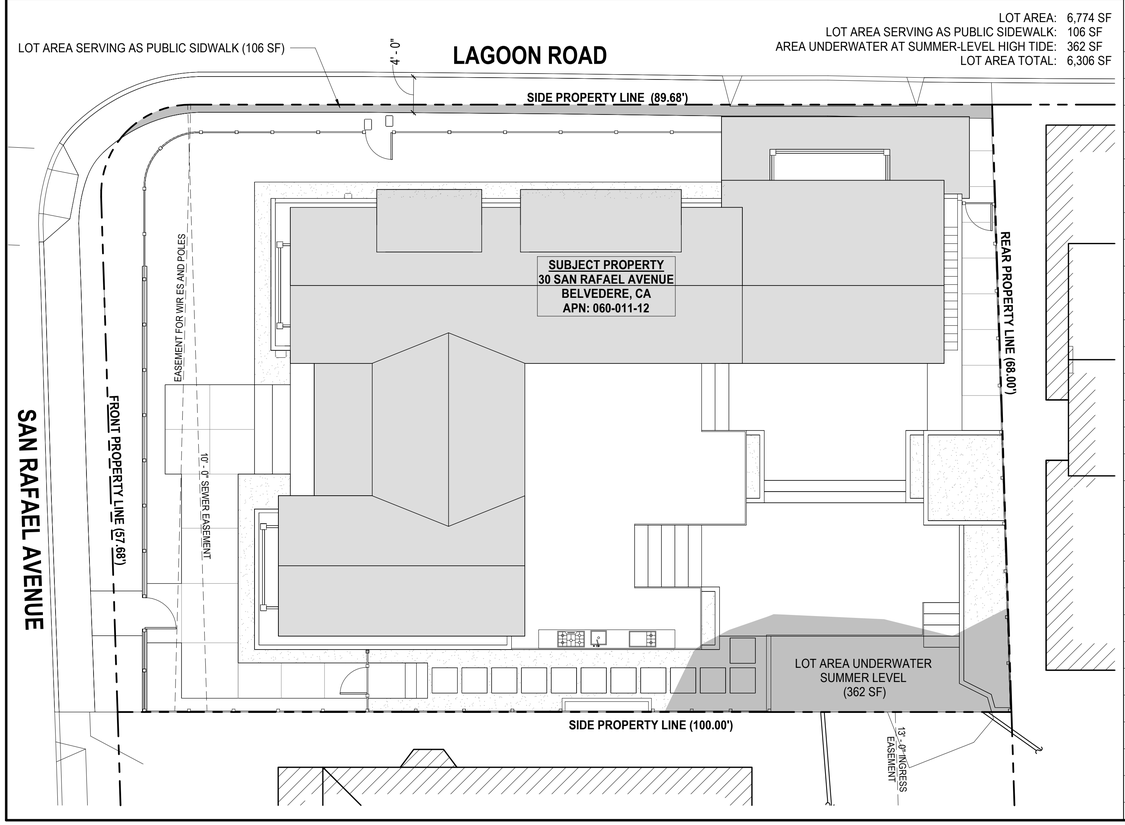


1ST FLOOR




| | EXISTING | PROPOSED |
|---|---|---|
| FIRST FLOOR AREA | 1,611 SF | 1,695 SF |
| GARAGE | 553 SF | 499 SF |
| COVERED BAR AREA | 0 SF | 86 SF |
| COVERED BATHROOM | 68 SF | 0 SF |
| COVERED STORAGE | 52 SF | 27 SF |
| SECOND FLOOR AREA | 0 SF | 1,347 SF |
| JADU | 0 SF | 335 SF |
| TOTAL | 2,284 SF | 3,988 SF |
| ALLOWABLE (.50 TO LOT AREA) | 3,153 SF | 3,153 SF |
| VARIANCE | | 835 SF |

## LOT AREA CALCULATION

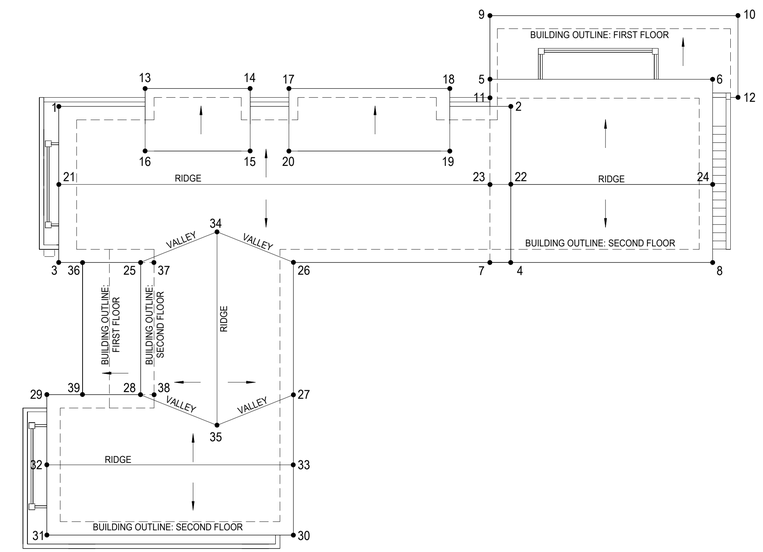



## STORY POLE HEIGHTS

(ABOVE EXISTING GRADE AT TOP OF CURB AT CENTER OF LOT)

| | | | |
|---|---|---|---|
| 1 | 19' - 5" | 29 | 19' - 5" |
| 2 | 19' - 5" | 30 | 19' - 5" |
| 3 | 19' - 5" | 31 | 19' - 5" |
| 4 | 19' - 5" | 32 | 22' - 8" |
| 5 | 16' - 9" | 33 | 22' - 8" |
| 6 | 16' - 9" | 34 | 20' - 10" |
| 7 | 16' - 9" | 35 | 20' - 10" |
| 8 | 16' - 9" | 36 | 10' - 10" |
| 9 | 9' - 2" | 37 | 12' - 10" |
| 10 | 9' - 2" | 38 | 12' - 10" |
| 11 | 13' - 2" | 39 | 10' - 10" |
| 12 | 13' - 2" | | |
| 13 | 20' - 4" | | |
| 14 | 20' - 4" | | |
| 15 | 21' - 6" | | |
| 16 | 21' - 6" | | |
| 17 | 20' - 4" | | |
| 18 | 20' - 4" | | |
| 19 | 21' - 6" | | |
| 20 | 21' - 6" | | |
| 21 | 23' - 1" | | |
| 22 | 23' - 1" | | |
| 23 | 21' - 7" | | |
| 24 | 21' - 7" | | |
| 25 | 19' - 5" | | |
| 26 | 19' - 5" | | |
| 27 | 19' - 5" | | |
| 28 | 19' - 5" | | |

## STORY POLE PLAN





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LICENSED ARCHITECT MARK S. THOMAS NO. C-29445 EXP. 08-22 STATE OF CALIFORNIA

**UTTING OBRADAIGH RESIDENCE**

**30 SAN RAFAEL AVE BELVEDERE, 94920 APN: 060-011-12**

| ISSUE: | DATE: |
|---|---|
| ISSUE FOR REVIEW | 08.19.21 |
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| PLAN CHECK #1 | 07.26.22 |

| | |
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| DRAWN BY: | TL |
| DATE: | 07.26.22 |
| SHEET TITLE: | |

**PROJECT INFORMATION**

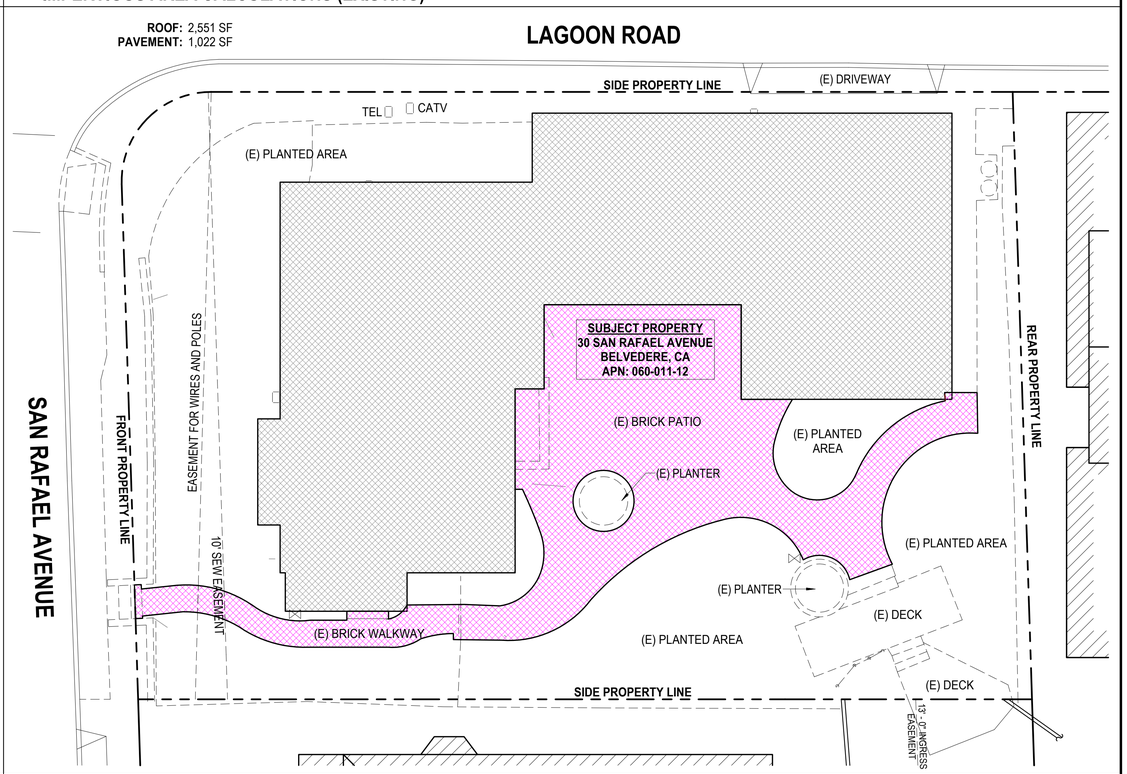
SHEET NUMBER:

# A0.1

REV #: DATE:

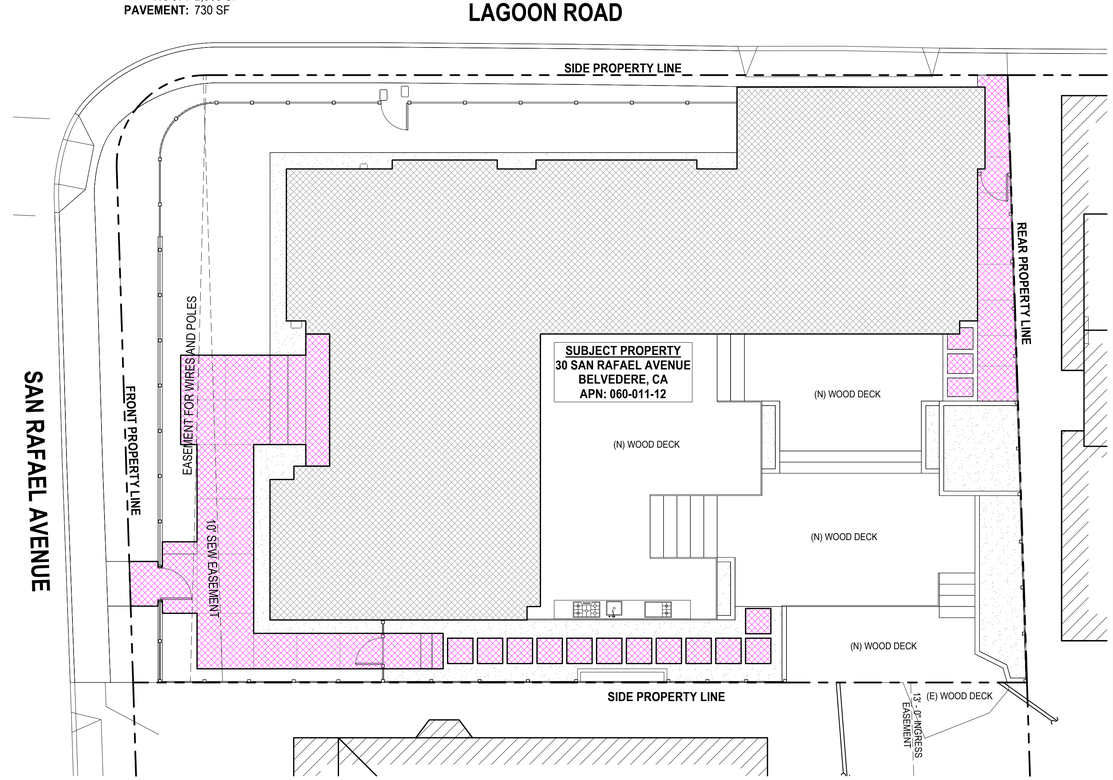
## IMPERVIOUS AREA CALCULATIONS (EXISTING)

**ROOF:** 2,551 SF
**PAVEMENT:** 1,022 SF




## IMPERVIOUS AREA CALCULATIONS (NEW)

**ROOF:** 2,569 SF
**PAVEMENT:** 730 SF





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# UTTING OBRADAIGH RESIDENCE

30 SAN RAFAEL AVE
BELVEDERE, 94920
APN: 060-011-12

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## PROJECT INFORMATION

SHEET NUMBER:

# A0.2

REV #: DATE:

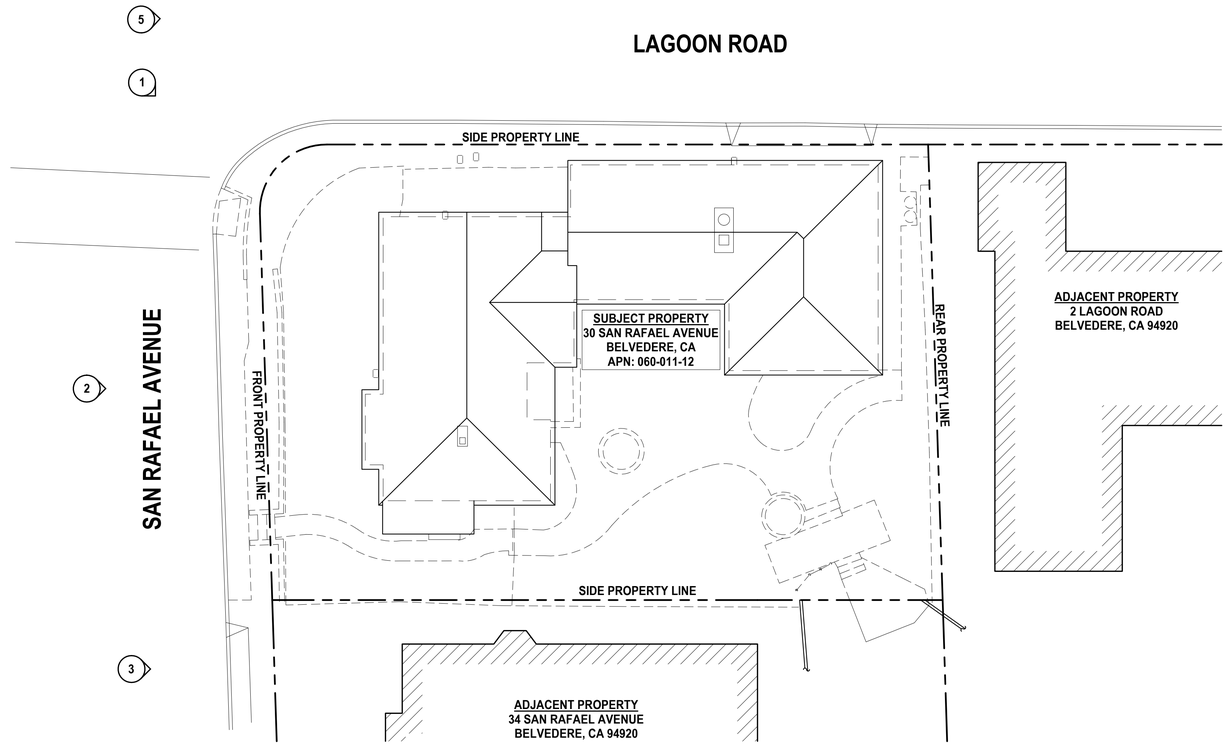
1 - NORTHEAST FACADE OF EXISTING BUILDING

2 - EAST (FRONT) FACADE OF EXISTING BUILDING

3 - EAST (FRONT) FACADE OF SOUTH NEIGHBOR

4 - AERIAL VIEW SAN RAFAEL AVENUE


5 - SOUTHEAST FACADE OF NEIGHBOR ACROSS LAGOON ROAD




1 EXISTING SITE PHOTO KEY PLAN
SCALE: 3/32" = 1'-0"

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**UTTING OBRADAIGH RESIDENCE**

**30 SAN RAFAEL AVE BELVEDERE, 94920 APN: 060-011-12**

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**EXISTING SITE PHOTOS & KEYMAP**

SHEET NUMBER:

**A0.3**

REV #: DATE:

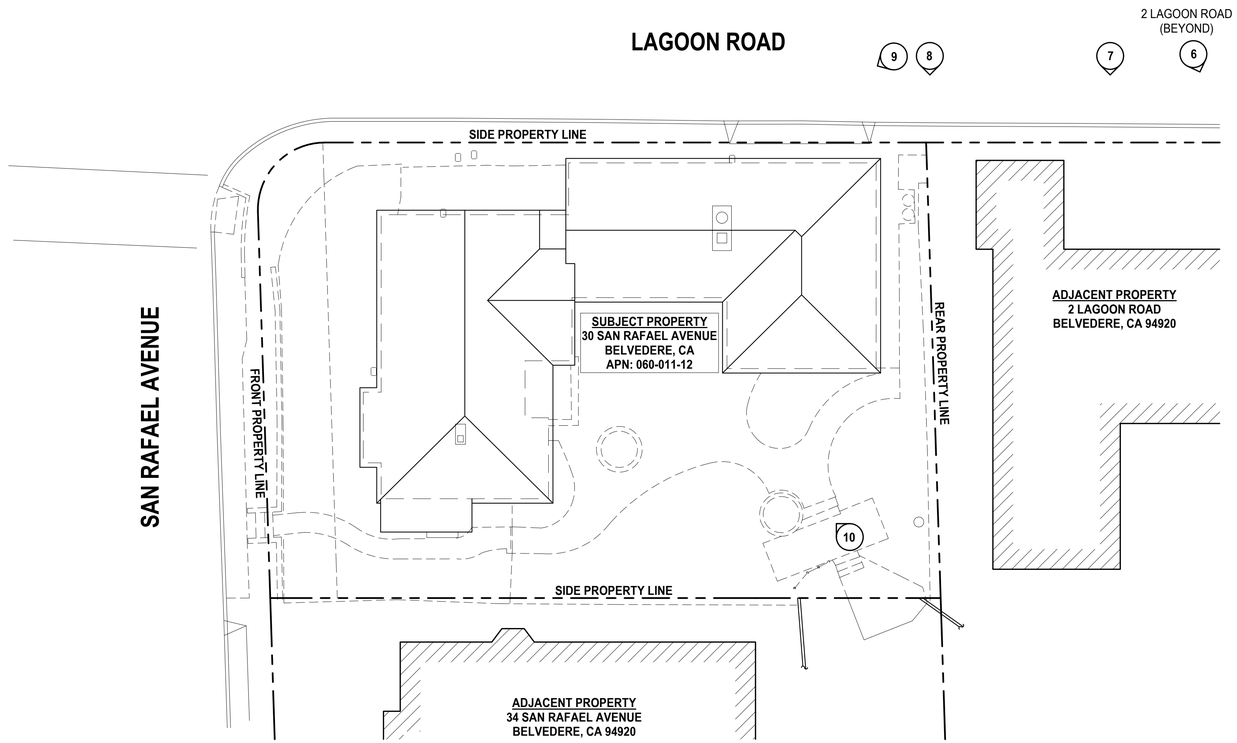
6 - FRONT FACADE OF 2 LAGOON ROAD

7 - FRONT FACADE OF 4 LAGOON ROAD

8 - NORTH (SIDE) FACADE OF EXISTING GARAGE & DRIVEWAY

9 - NORTH (SIDE) FACADE OF EXISTING BUILDING

10 - SOUTHWEST FACADE OF EXISTING BUILDING




1 EXISTING SITE PHOTO KEY PLAN
SCALE: 3/32" = 1'-0"

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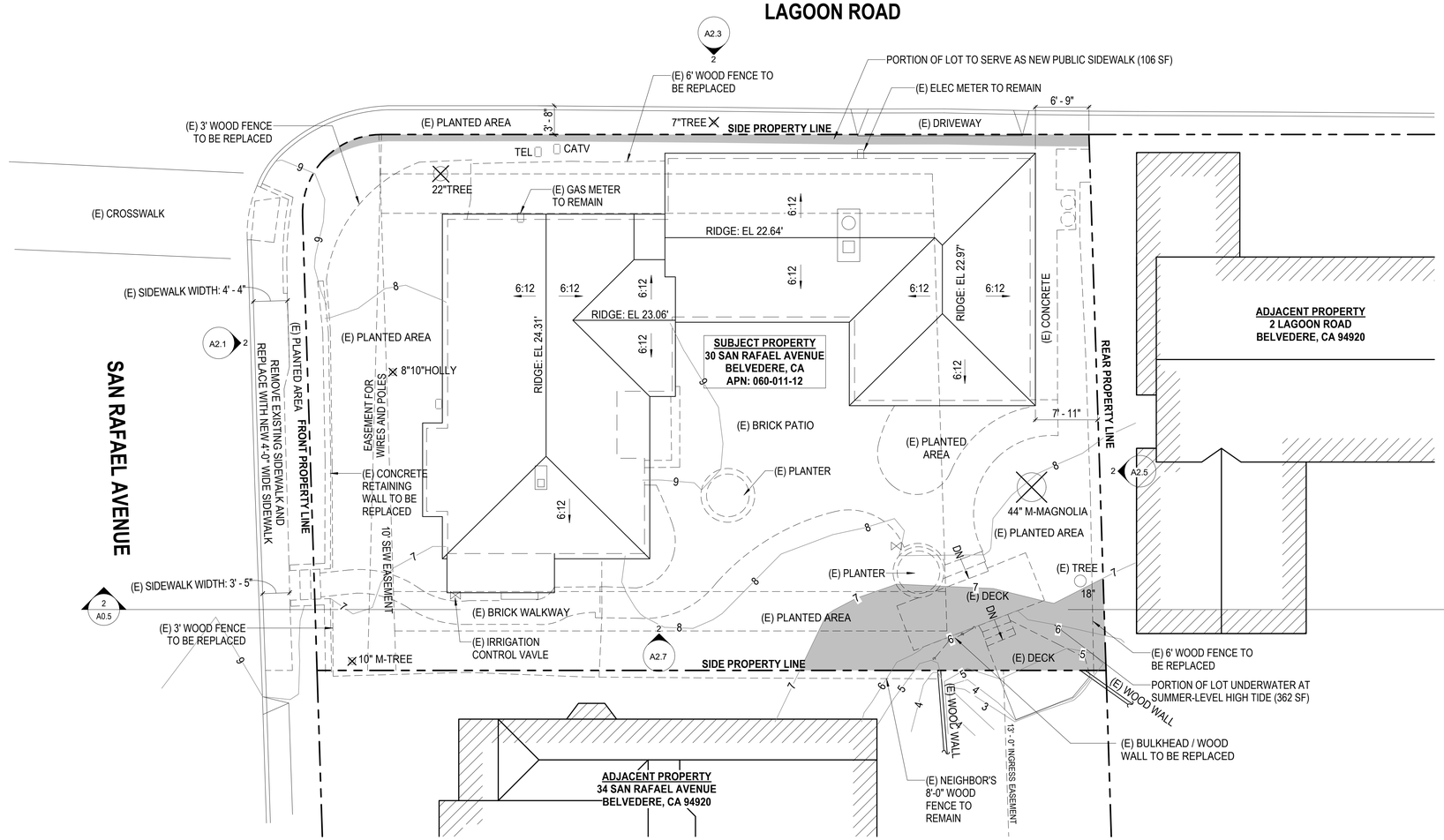
**EXISTING SITE PHOTOS & KEYMAP**

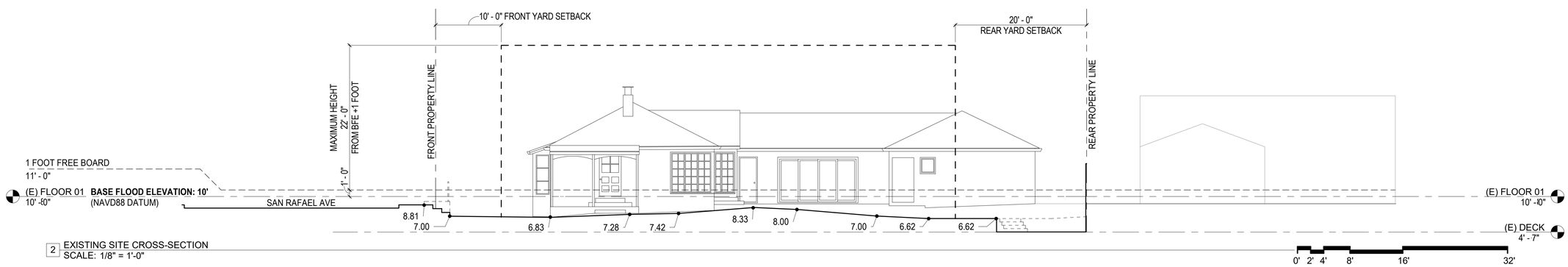
SHEET NUMBER:

**A0.4**

REV #: DATE:




1 EXISTING SITE / ROOF PLAN
SCALE: 1/8" = 1'-0"




2 EXISTING SITE CROSS-SECTION
SCALE: 1/8" = 1'-0"

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**UTTING OBRADAIGH RESIDENCE**

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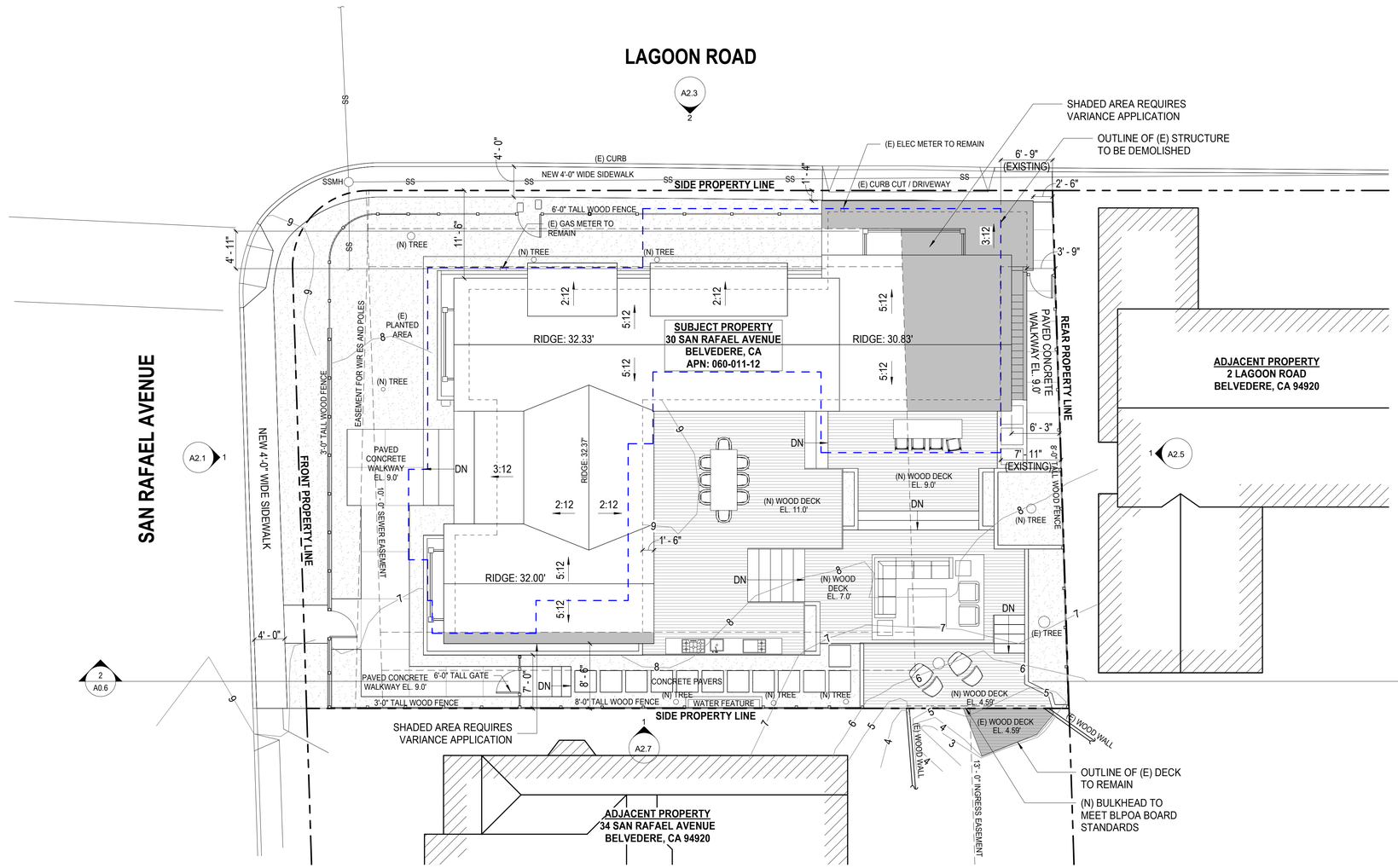
**EXISTING SITE PLAN**

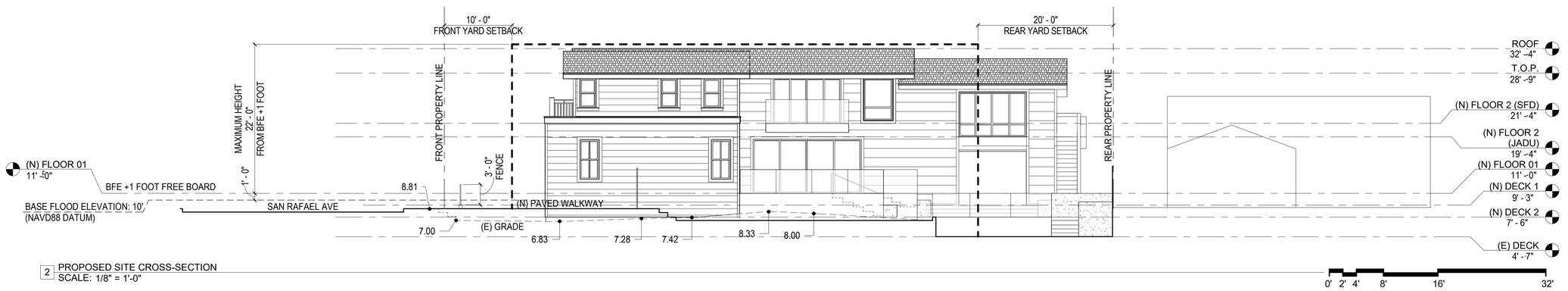
SHEET NUMBER:

# A0.5

REV #: DATE:




1 SITE PLAN - PROPOSED
SCALE: 1/8" = 1'-0"




2 PROPOSED SITE CROSS-SECTION
SCALE: 1/8" = 1'-0"

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LICENSED ARCHITECT MARK A. THOMAS NO. C-29445 EXP. 08-22 STATE OF CALIFORNIA

# UTTING OBRADAIGH RESIDENCE

**30 SAN RAFAEL AVE**
**BELVEDERE, 94920**
**APN: 060-011-12**

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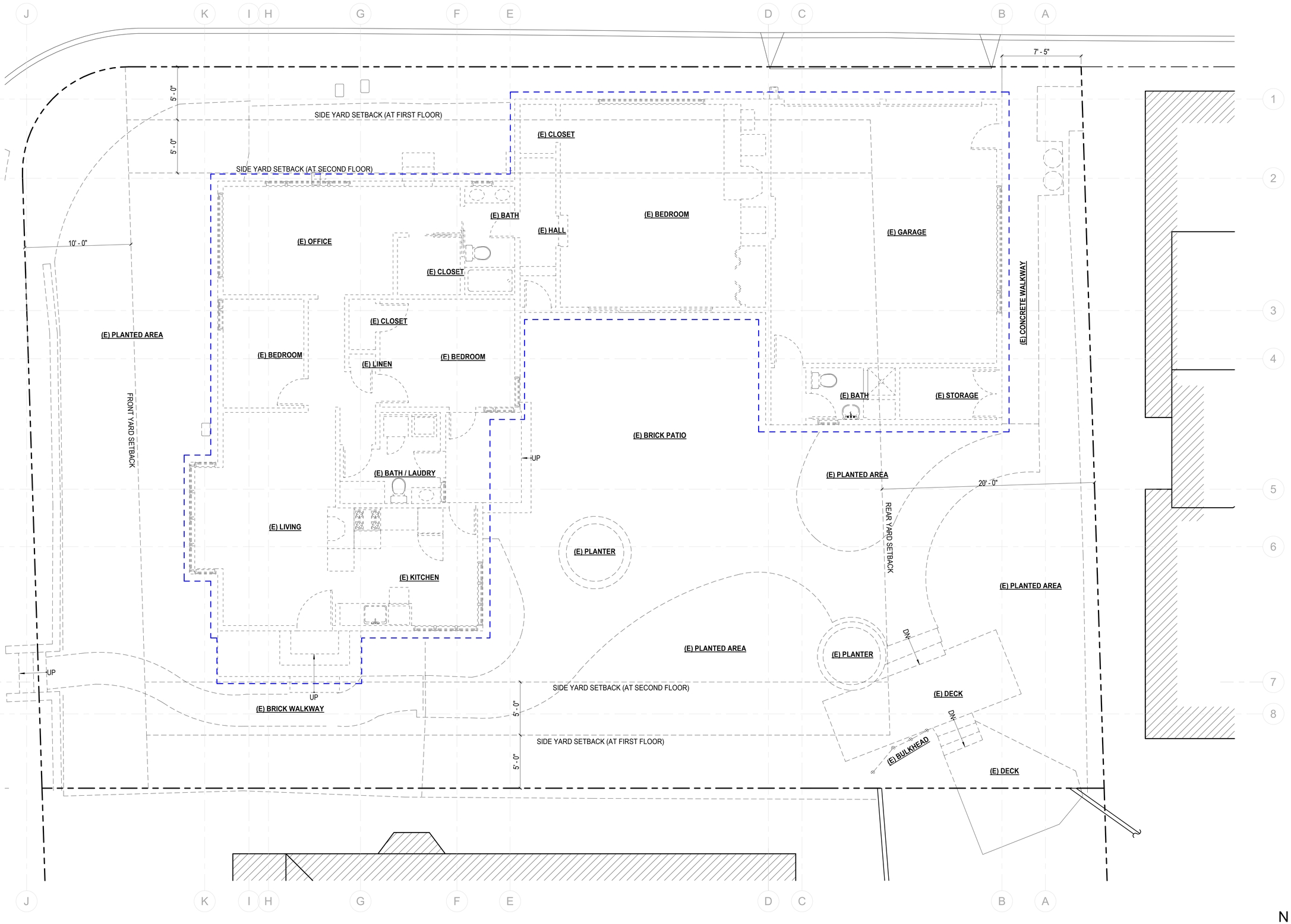
## PROPOSED SITE PLAN

SHEET NUMBER:

# A0.6

REV #: DATE:




1 FLOOR 01 - EXISTING & DEMOLITION FLOOR PLAN
SCALE: 1/4" = 1'-0"

0' 1' 2' 4' 8' 16'

N

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# UTTING OBRADAIGH RESIDENCE

30 SAN RAFAEL AVE
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## FLOOR 01 EXISTING AND DEMOLITION PLAN

SHEET NUMBER:

# A1.1

REV #: DATE:

BROKEN LINE INDICATES OUTLINE OF EXISTING RESIDENCE TO BE DEMOLISHED, TYP.

SIDE YARD SETBACK (AT FIRST FLOOR)

SIDE YARD SETBACK (AT SECOND FLOOR)

FRONT YARD SETBACK

REAR YARD SETBACK

AREA OF REAR YARD VARIANCE REQUEST (SHADED IN GRAY)

**DINING**
12'-6" X 16'
EL. 11.0'

**LIVING ROOM**
14' X 16'
EL. 11.0'

F.P.

**KITCHEN**
18' X 16'
EL. 11.0'

PANTRY

REFR

FREZ

**GARAGE**
21'-6" X 19'
EL. 9.0'

C

R

T

WINE

**ENTRY HALL**
18' X 12'
EL. 11.0'

UP

DN

**(N) CONCRETE PATIO**
EL. 11.0'

**CLO.**

**CLO.**
4' X 5'

**BATH 4**
9'-6" X 5'

**DEN / BEDROOM 4**
18' X 15'
EL. 11.0'

**HOME OFFICE**
8' X 15'
EL. 11.0'

PAVED CONCRETE WALKWAY EL. 9.0'

PAVED CONCRETE WALKWAY EL. 9.0'

**(N) WOOD DECK**
EL. 11.0'

**(N) WOOD DECK**
EL. 9.0'

**(N) WOOD DECK**
EL. 7.0'

**(N) WOOD DECK**
EL. 4.59'

**(E) WOOD DECK**
EL. 4.59'

**OUTDOOR KITCHEN**

SIDE YARD SETBACK (AT SECOND FLOOR)

SIDE YARD SETBACK (AT FIRST FLOOR)
CONCRETE PAVERS

(E) WOOD WALL

(E) WOOD WALL

13'-0" INGRESS EASEMENT

(N) BULKHEAD TO MEET BLPOA BOARD STANDARDS

1 FLOOR 01 - PROPOSED FLOOR PLAN
SCALE: 1/4" = 1'-0"

0' 1' 2' 4' 8' 16'

N


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LICENSED ARCHITECT MARK C. THOMAS NO. C-29445 EXP. 08-31-22 STATE OF CALIFORNIA

# UTTING OBRADAIGH RESIDENCE

30 SAN RAFAEL AVE
BELVEDERE, 94920
APN: 060-011-12

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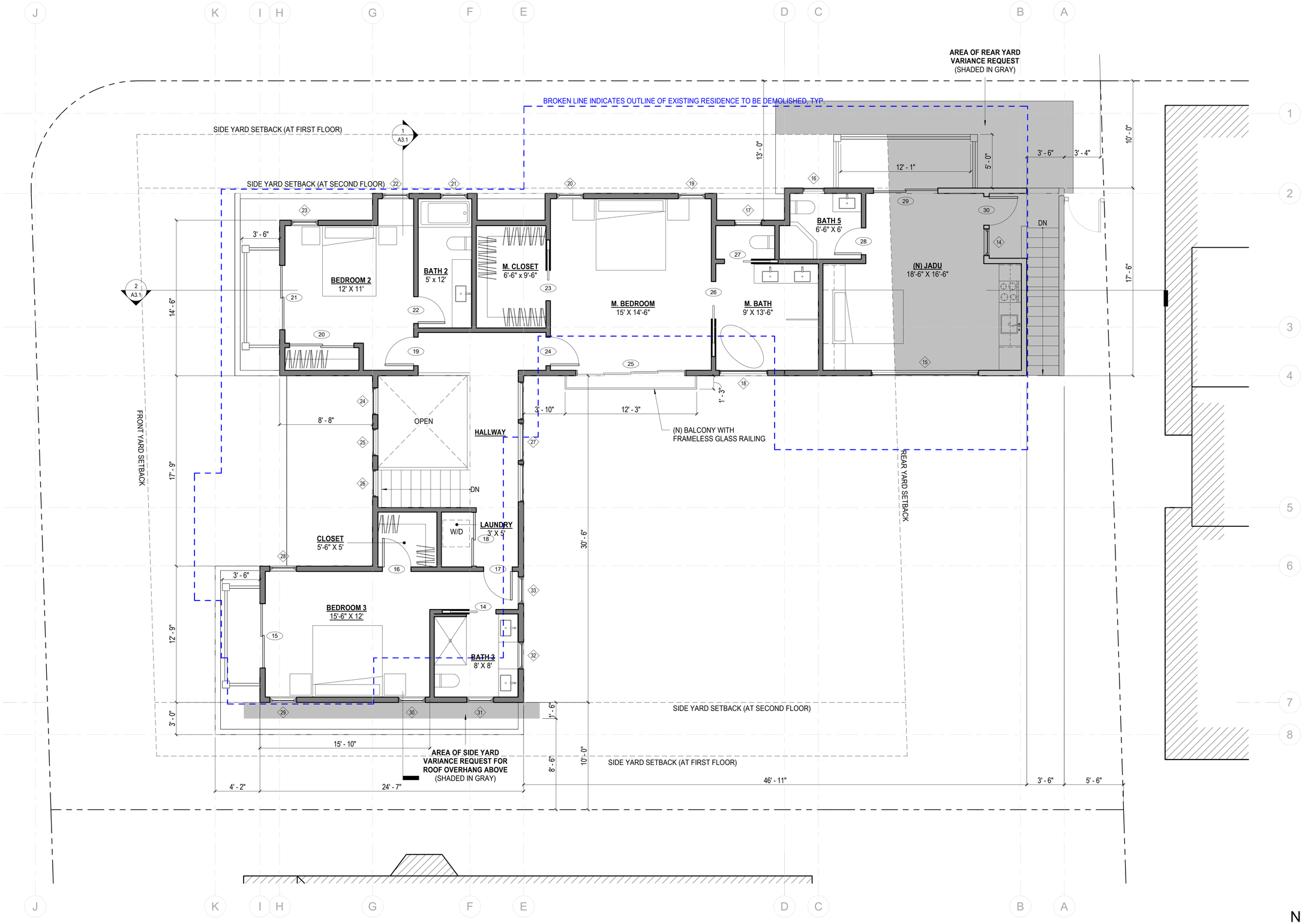
SHEET TITLE:

## FLOOR 01 PROPOSED PLAN

SHEET NUMBER:

# A1.2

REV #: DATE:




1 FLOOR 02 - PROPOSED FLOOR PLAN
SCALE: 1/4" = 1'-0"

0' 1' 2' 4' 8' 16'

N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LICENSED ARCHITECT MARK S. THOMAS NO. C-9445 EXP. 08-31-22 STATE OF CALIFORNIA

# UTTING OBRADAIGH RESIDENCE

**30 SAN RAFAEL AVE**
**BELVEDERE, 94920**
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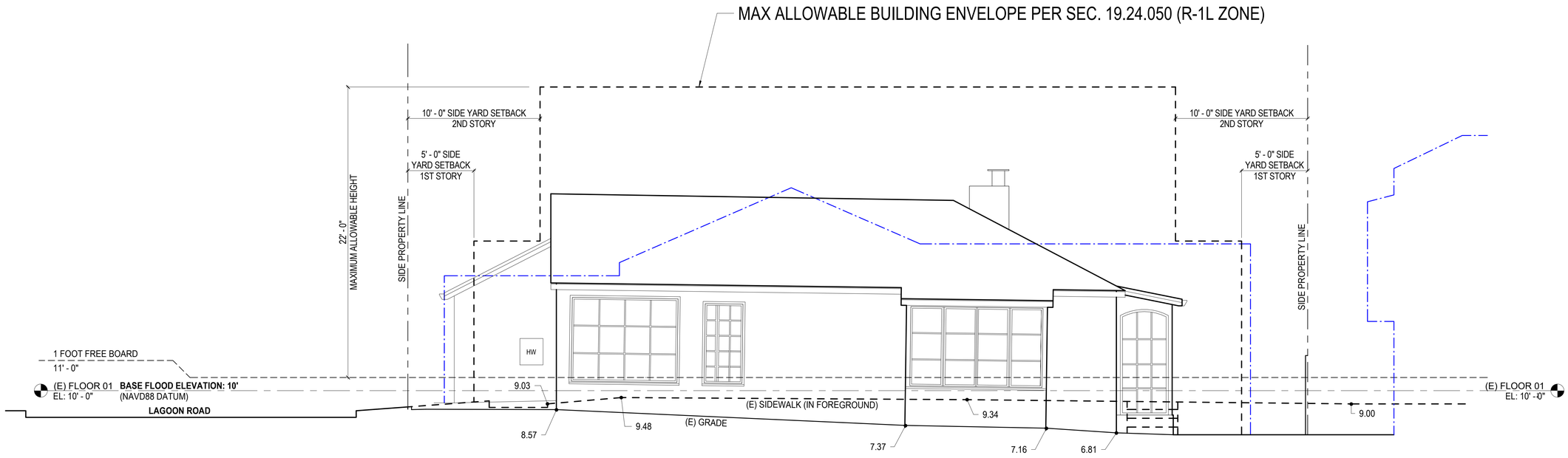
## FLOOR 02 PROPOSED PLAN

SHEET NUMBER:

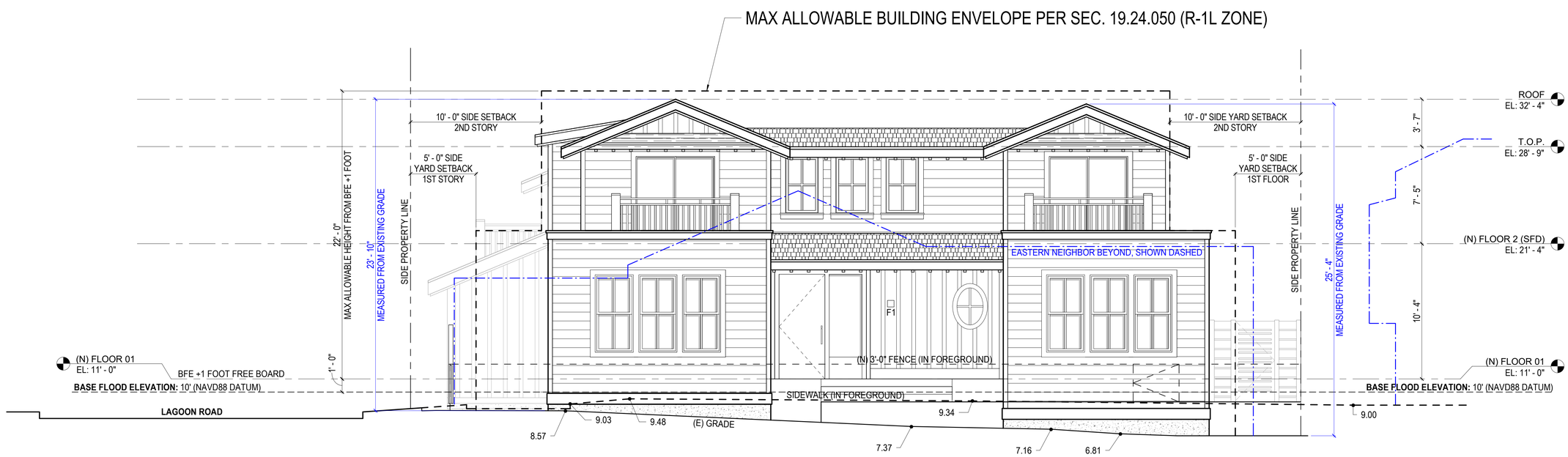
# A1.3

REV #: DATE:




2 EXISTING & DEMO WEST EXTERIOR ELEVATION
SCALE: 1/4" = 1'-0"

0' 1' 2' 4' 8' 16'




1 PROPOSED WEST EXTERIOR ELEVATION
SCALE: 1/4" = 1'-0"

0' 1' 2' 4' 8' 16'

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**UTTING OBRADAIGH RESIDENCE**

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**WEST ELEVATION - EXISTING & PROPOSED**

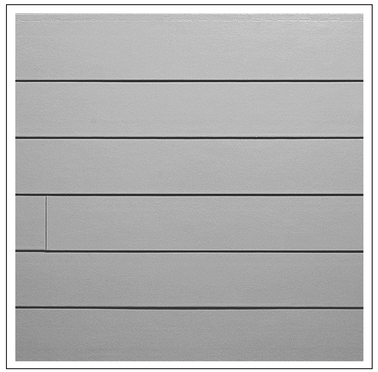
SHEET NUMBER:

**A2.1**

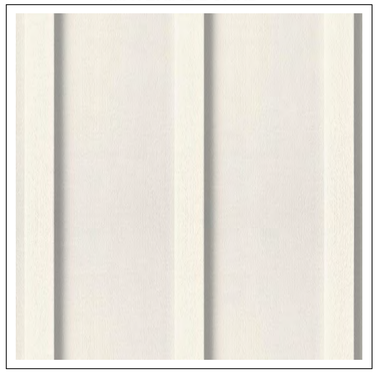
REV #: DATE:

## MATERIAL BOARD

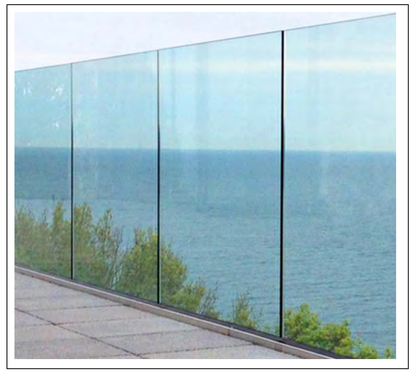
COMP. ASPHALT SHINGLE ROOF, TYP. (CHARCOAL)



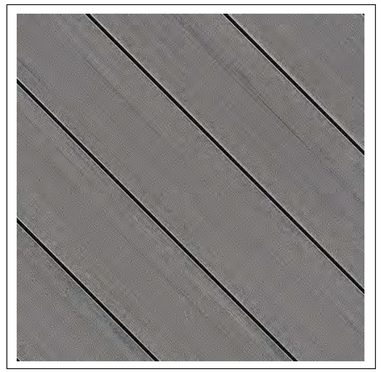
1 X 8 WOOD BOARD SIDING (PAINT)



1 X 4 BOARD & BATTEN VERTICAL SIDING (PAINT)



FRAMELESS GLASS RAILS WITH PAINTED S.S. SHOES



THERMORY ASH DECKING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**UTTING OBRADAIGH RESIDENCE**

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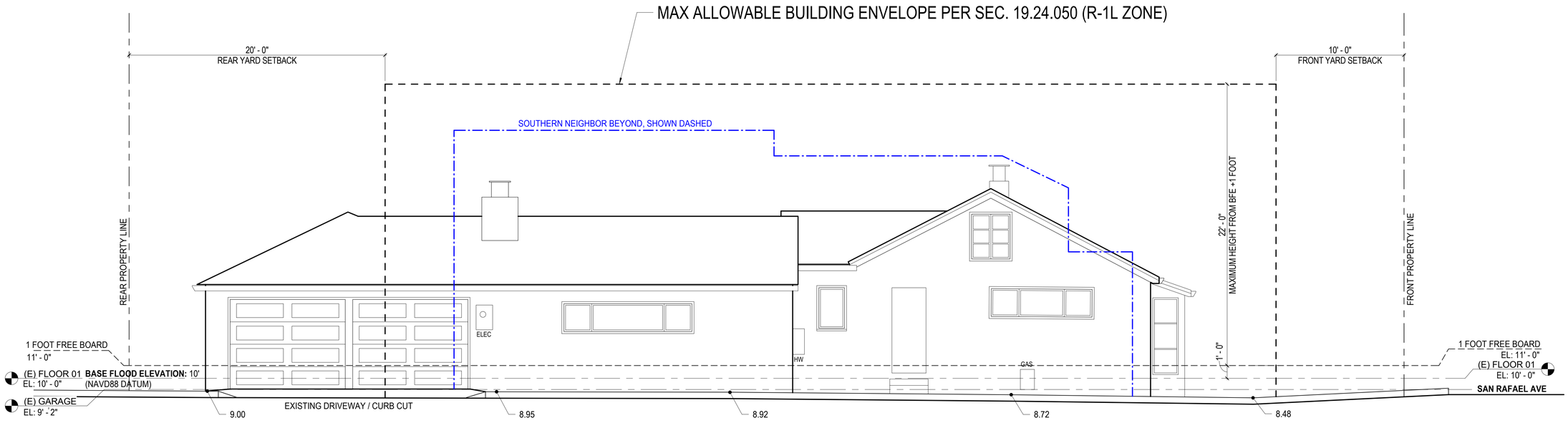
**WEST ELEVATION - COLORED RENDERING**

SHEET NUMBER:

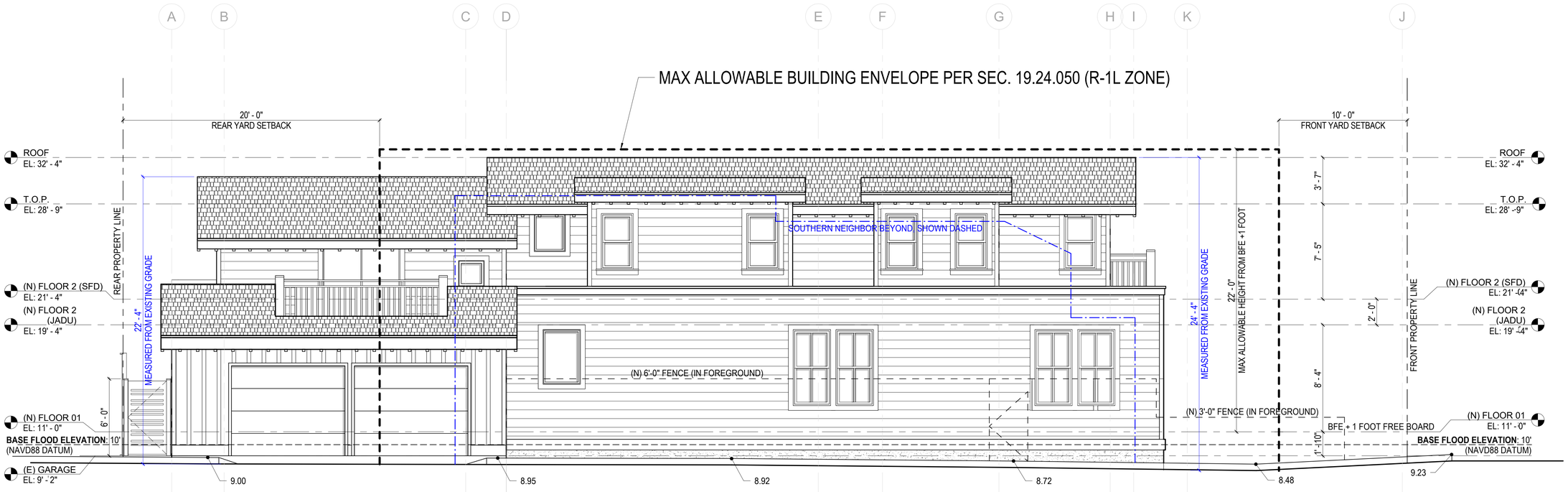
# A2.2

REV #: DATE:




2 EXISTING & DEMO NORTH EXTERIOR ELEVATION
SCALE: 1/4" = 1'-0"

0' 1' 2' 4' 8' 16'




1 PROPOSED NORTH EXTERIOR ELEVATION
SCALE: 1/4" = 1'-0"

0' 1' 2' 4' 8' 16'

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**UTTING OBRADAIGH RESIDENCE**

**30 SAN RAFAEL AVE**
**BELVEDERE, 94920**
**APN: 060-011-12**

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**NORTH ELEVATION - EXISTING & PROPOSED**

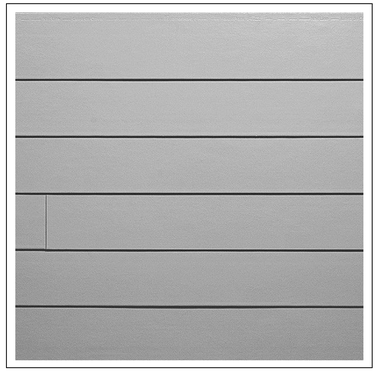
SHEET NUMBER:

# A2.3

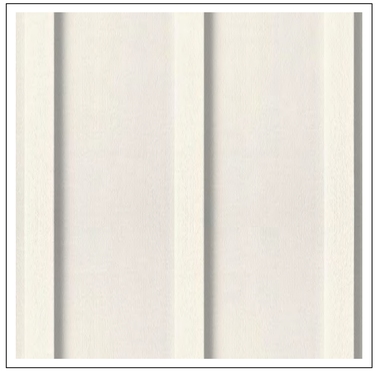
| REV #: | DATE: |
|---|---|

## MATERIAL BOARD

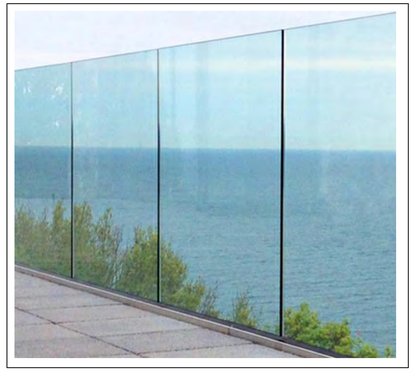
COMP. ASPHALT SHINGLE ROOF, TYP. (CHARCOAL)



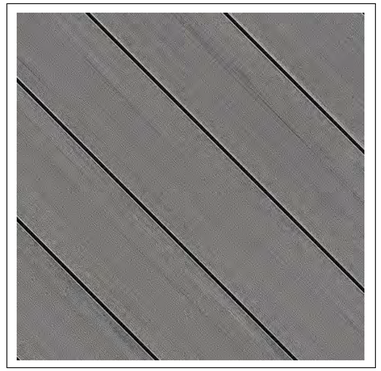
1 X 8 WOOD BOARD SIDING (PAINT)



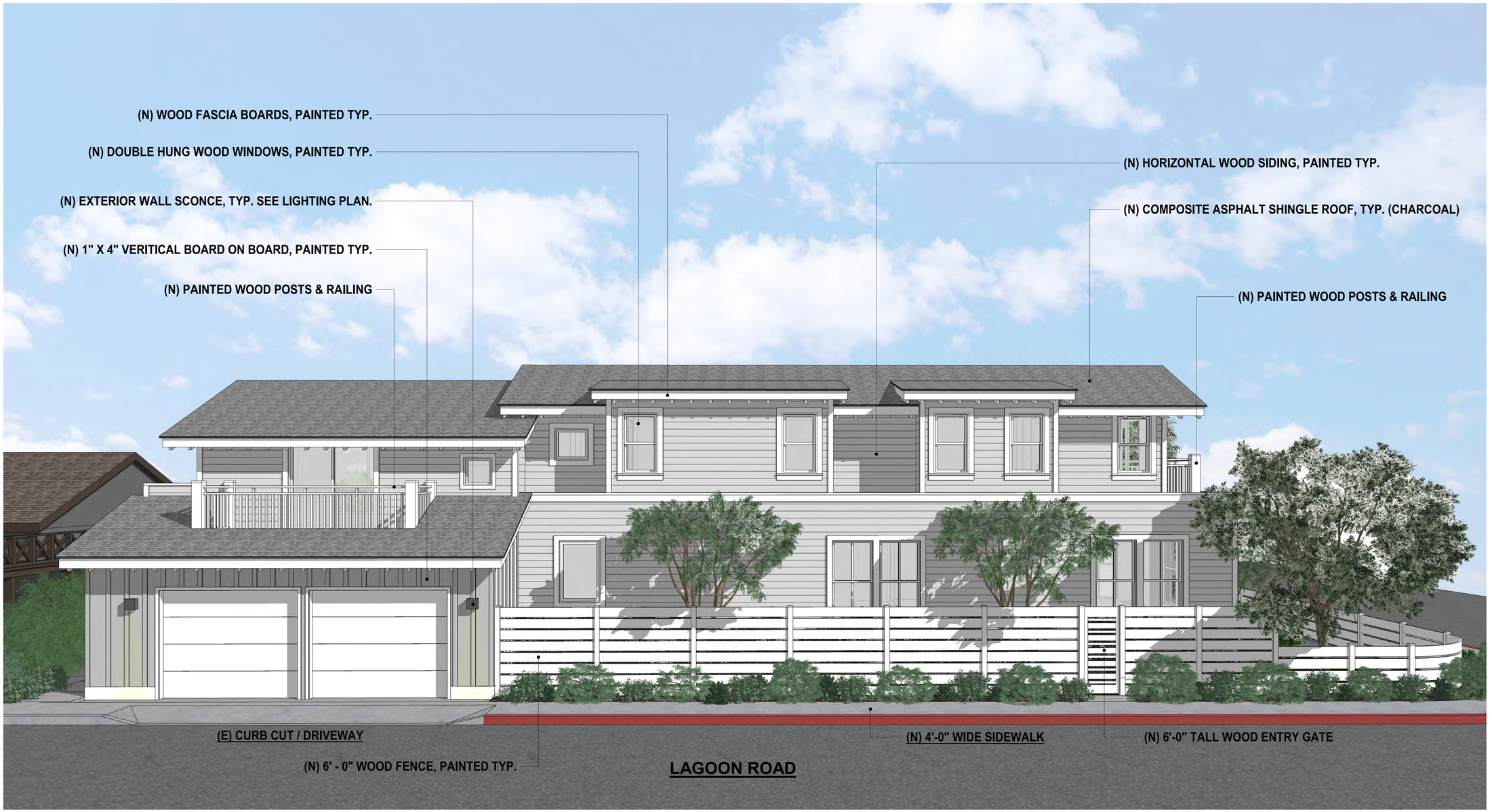
1 X 4 BOARD & BATTEN VERTICAL SIDING (PAINT)



FRAMELESS GLASS RAILS WITH PAINTED S.S. SHOES



THERMORY ASH DECKING

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LICENSED ARCHITECT MARK S. THOMAS NO. C-9445 EXP. 08-22 STATE OF CALIFORNIA

**UTTING OBRADAIGH RESIDENCE**

30 SAN RAFAEL AVE
BELVEDERE, 94920
APN: 060-011-12

| ISSUE: | DATE: |
|---|---|
| ISSUE FOR REVIEW | 08.19.21 |
| DESIGN REVIEW | 01.27.22 |
| PLAN CHECK #1 | 07.26.22 |

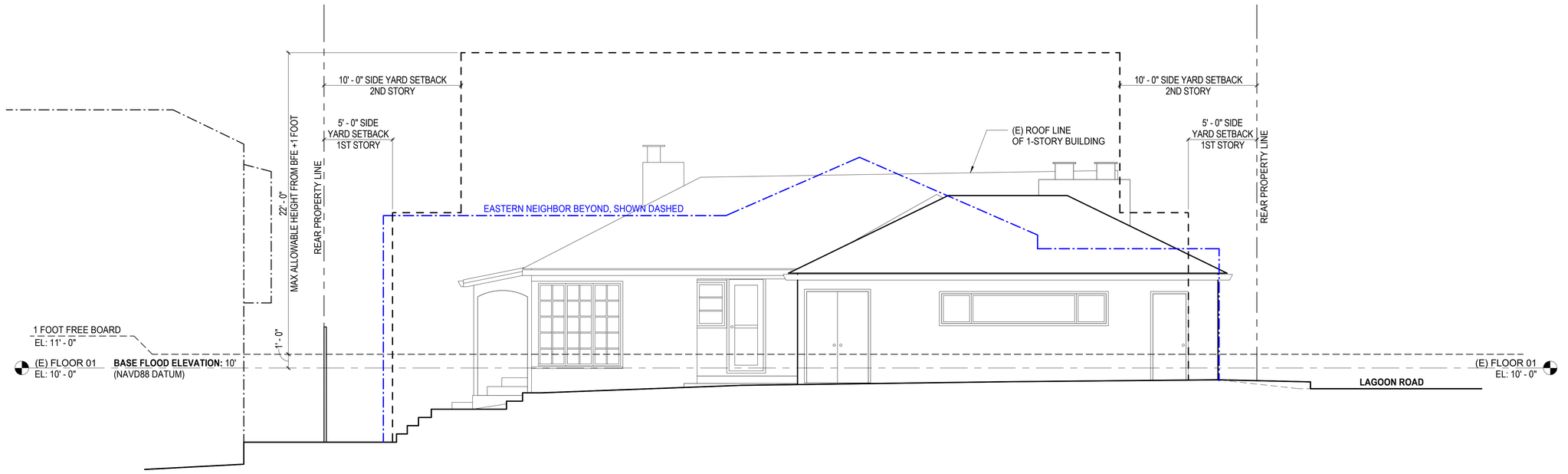
| | |
|---|---|
| DRAWN BY: | TL |
| DATE: | 07.26.22 |
| SHEET TITLE: | |

**NORTH ELEVATION - COLORED RENDERING**

SHEET NUMBER:

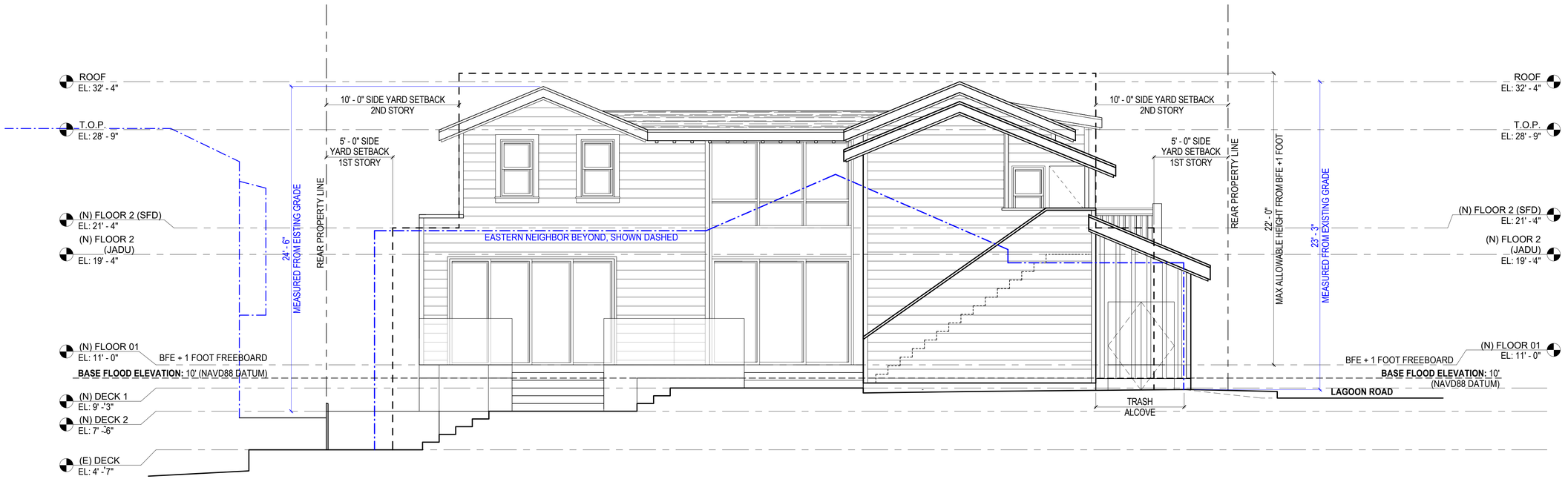
**A2.4**

REV #: DATE:




2 EXISTING & DEMO EAST EXTERIOR ELEVATION
SCALE: 1/4" = 1'-0"

0' 1' 2' 4' 8' 16'




1 PROPOSED EAST EXTERIOR ELEVATION
SCALE: 1/4" = 1'-0"

0' 1' 2' 4' 8' 16'

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LICENSED ARCHITECT MARK S. THOMAS NO. C-9445 EXP. 08-31-22 STATE OF CALIFORNIA

# UTTING OBRADAIGH RESIDENCE

30 SAN RAFAEL AVE
BELVEDERE, 94920
APN: 060-011-12

| ISSUE: | DATE: |
|---|---|
| ISSUE FOR REVIEW | 08.19.21 |
| DESIGN REVIEW | 01.27.22 |
| PLAN CHECK #1 | 07.26.22 |

DRAWN BY: TL
DATE: 07.26.22
SHEET TITLE:

## EAST ELEVATIONS - EXISTING & PROPOSED

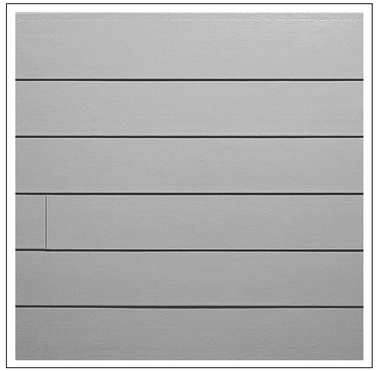
SHEET NUMBER:

# A2.5

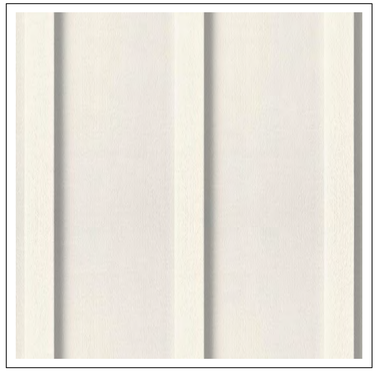
REV #: DATE:

MATERIAL BOARD

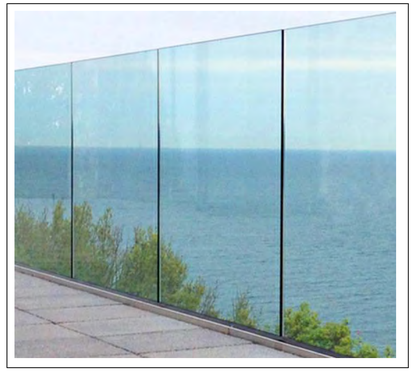
COMP. ASPHALT SHINGLE ROOF, TYP. (CHARCOAL)



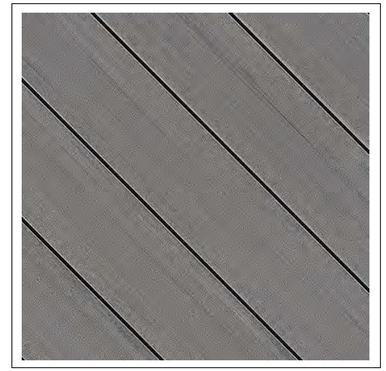
1 X 8 WOOD BOARD SIDING (PAINT)



1 X 4 BOARD & BATTEN VERTICAL SIDING (PAINT)



FRAMELESS GLASS RAILS WITH PAINTED S.S. SHOES



THERMORY ASH DECKING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LICENSED ARCHITECT MARK S. THOMAS NO. C-29445 EXP. 08-22 STATE OF CALIFORNIA

**UTTING OBRADAIGH RESIDENCE**

**30 SAN RAFAEL AVE BELVEDERE, 94920 APN: 060-011-12**

| ISSUE: | DATE: |
|---|---|
| ISSUE FOR REVIEW | 08.19.21 |
| DESIGN REVIEW | 01.27.22 |
| PLAN CHECK #1 | 07.26.22 |

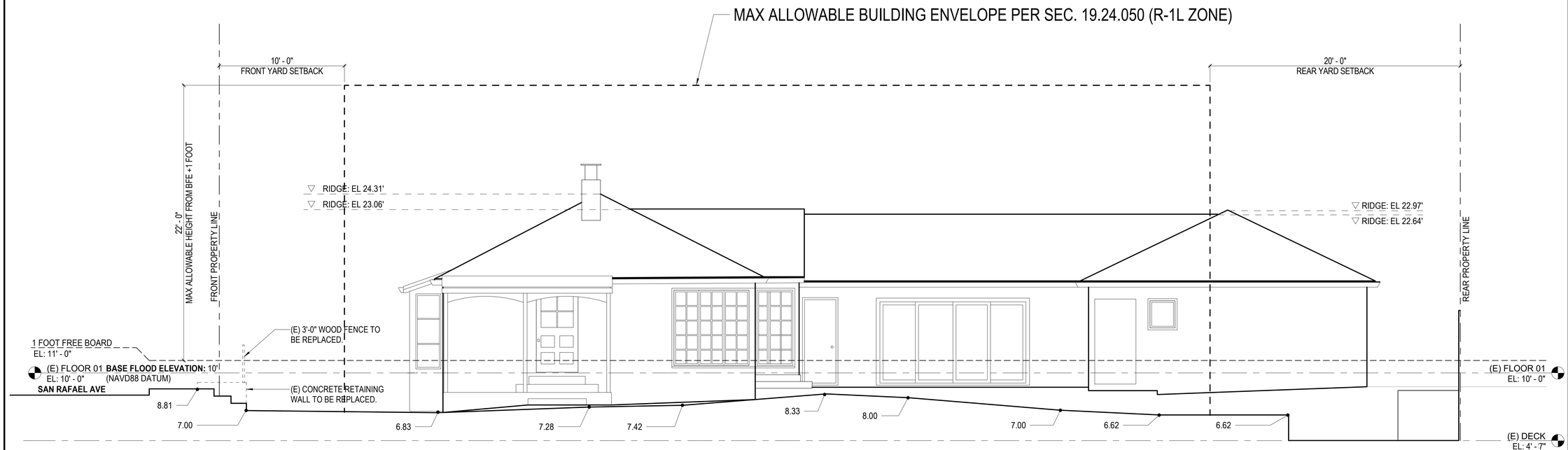
| | |
|---|---|
| DRAWN BY: | TL |
| DATE: | 07.26.22 |
| SHEET TITLE: | |

**EAST ELEVATION - COLORED RENDERING**

SHEET NUMBER:

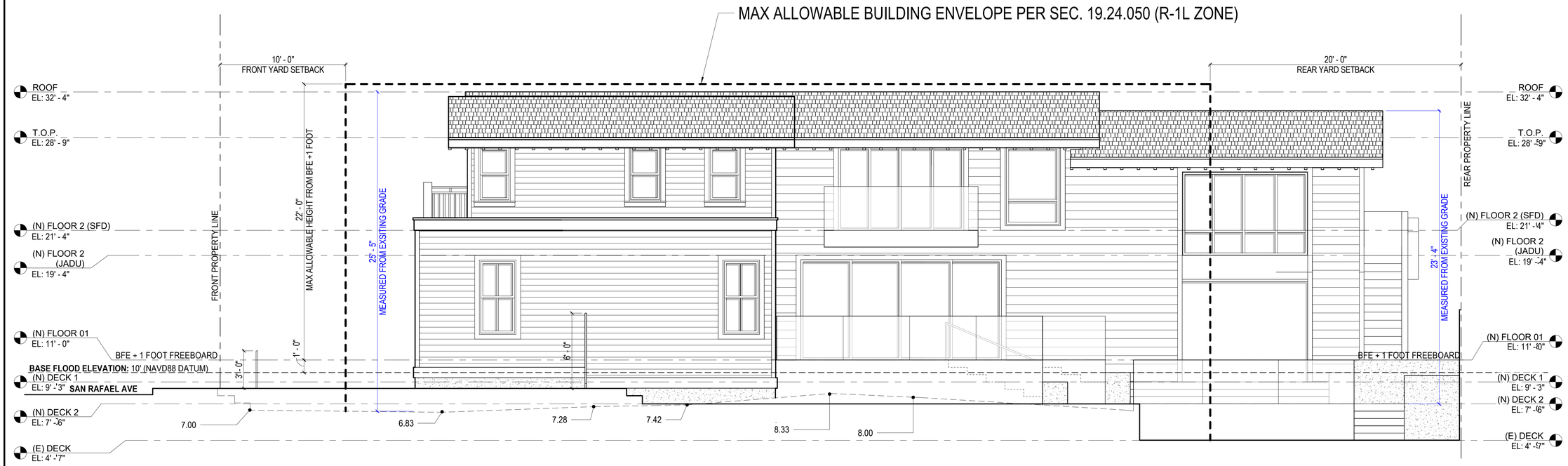
**A2.6**

REV #: DATE:




2 EXISTING & DEMO SOUTH EXTERIOR ELEVATION
SCALE: 1/4" = 1'-0"

0' 1' 2' 4' 8' 16'




1 PROPOSED SOUTH EXTERIOR ELEVATION
SCALE: 1/4" = 1'-0"

0' 1' 2' 4' 8' 16'

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**UTTING OBRADAIGH RESIDENCE**

**30 SAN RAFAEL AVE**
**BELVEDERE, 94920**
**APN: 060-011-12**

| ISSUE: | DATE: |
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| | |
|---|---|
| DRAWN BY: | TL |
| DATE: | 07.26.22 |
| SHEET TITLE: | |

**SOUTH ELEVATION - EXISTING & PROPOSED**

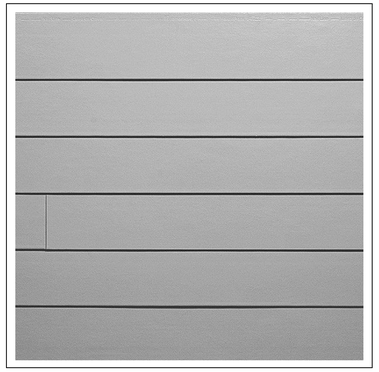
SHEET NUMBER:

# A2.7

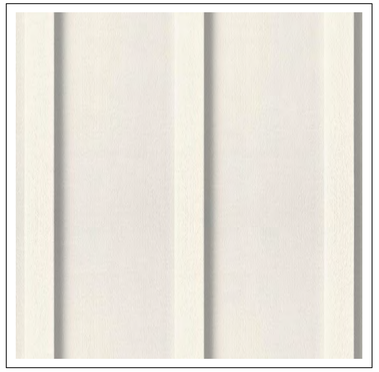
REV #: DATE:

## MATERIAL BOARD

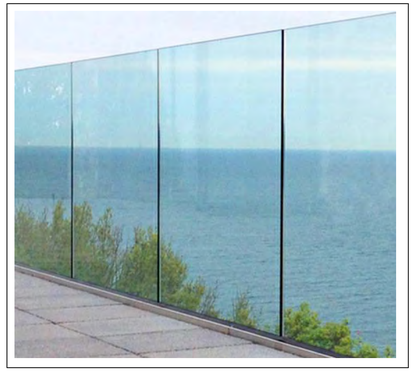
COMP. ASPHALT SHINGLE ROOF, TYP. (CHARCOAL)



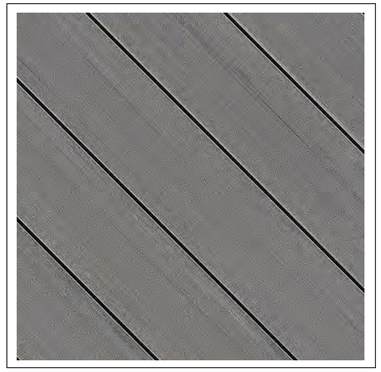
1 X 8 WOOD BOARD SIDING (PAINT)



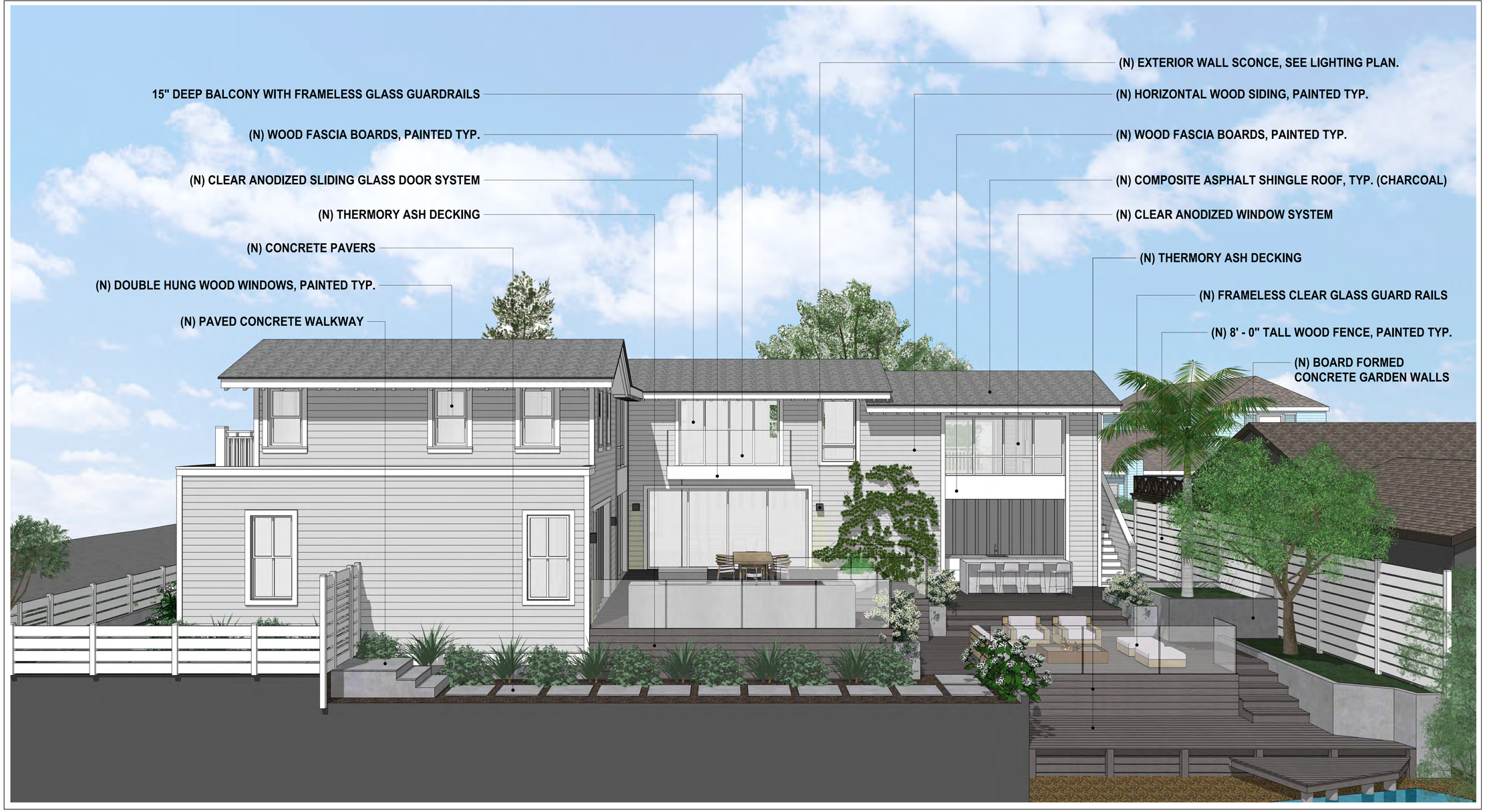
1 X 4 BOARD & BATTEN VERTICAL SIDING (PAINT)



FRAMELESS GLASS RAILS WITH PAINTED S.S. SHOES



THERMORY ASH DECKING

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**UTTING OBRADAIGH RESIDENCE**

30 SAN RAFAEL AVE
BELVEDERE, 94920
APN: 060-011-12

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| DRAWN BY: | TL |
| DATE: | 07.26.22 |

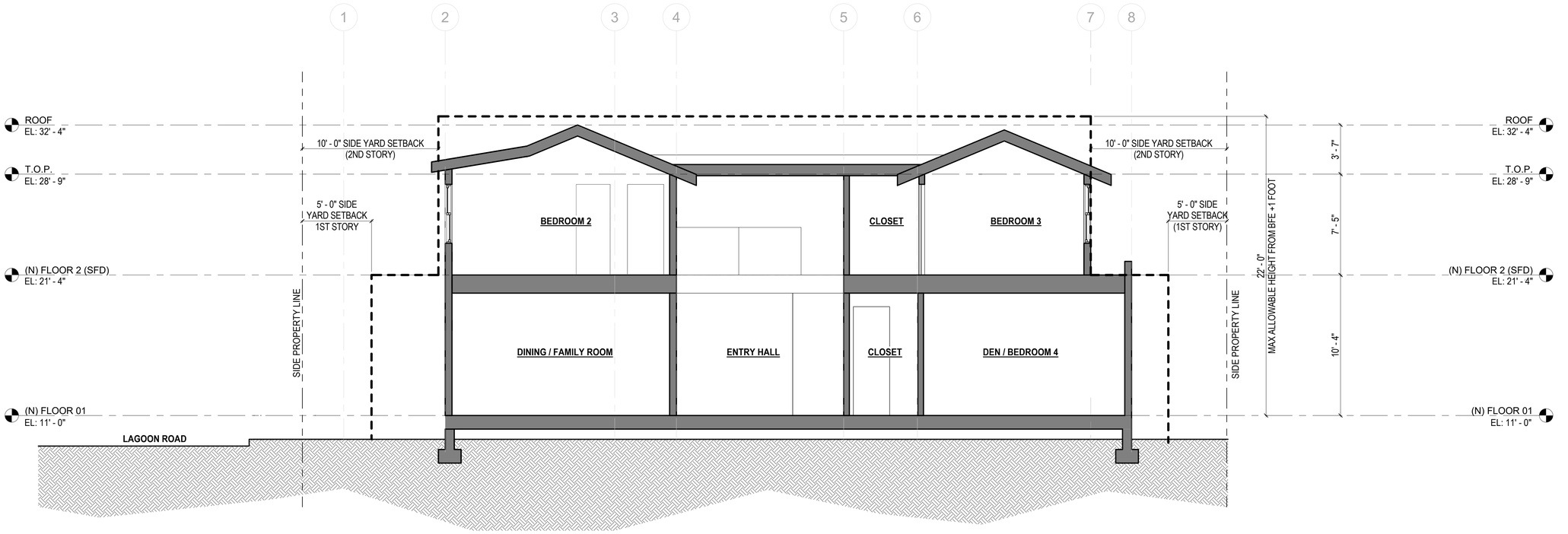
SHEET TITLE:

**SOUTH ELEVATION - COLORED RENDERING**

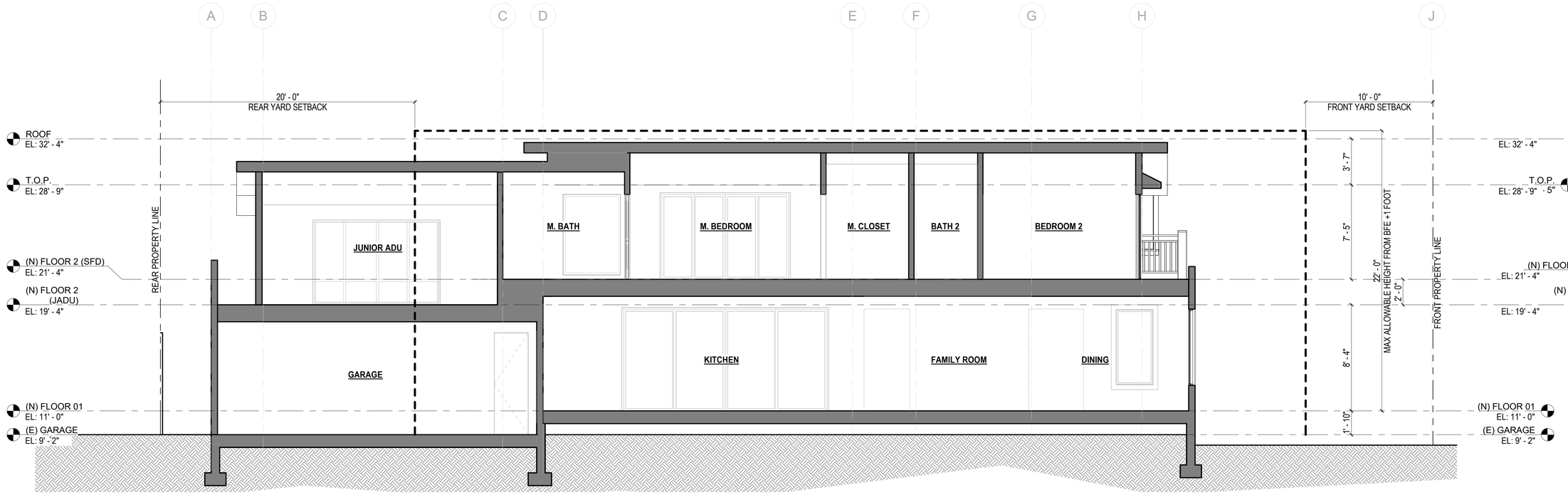
SHEET NUMBER:

# A2.8

REV #: DATE:




1 LATERAL SECTION
SCALE: 1/4" = 1'-0"




2 LONGITUDINAL SECTION
SCALE: 1/4" = 1'-0"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LICENSED ARCHITECT MARK S. THOMAS NO. C-9445 EXP. 08-31 STATE OF CALIFORNIA

# UTTING OBRADAIGH RESIDENCE

30 SAN RAFAEL AVE
BELVEDERE, 94920
APN: 060-011-12

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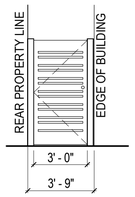
| DRAWN BY: | TL |
| DATE: | 07.26.22 |
| SCALE: | 1/4" = 1'-0" |

## PROPOSED BUILDING SECTIONS

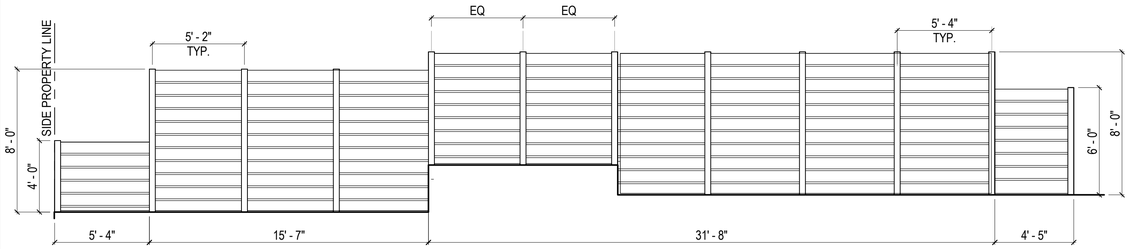
SHEET NUMBER:

# A3.1

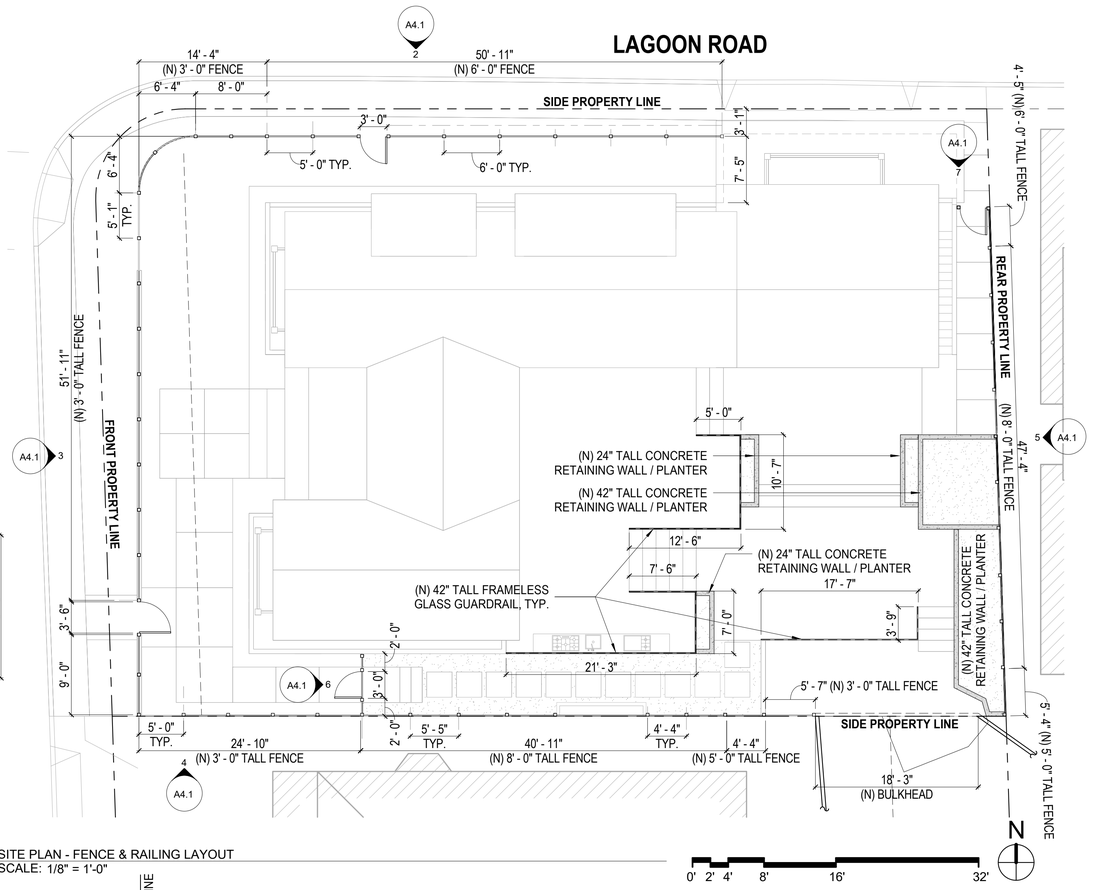
REV #: DATE:



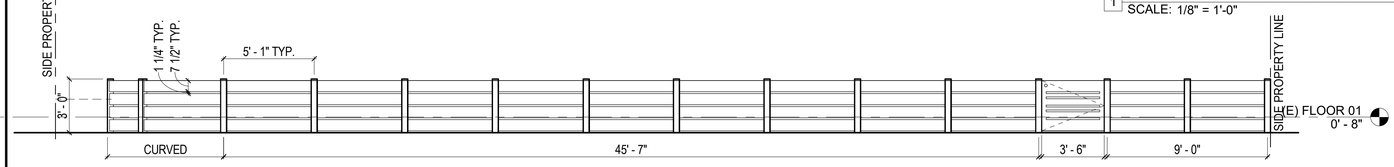

7 FENCE - ENTRY GATE AT REAR YARD
SCALE: 1/4" = 1'-0"



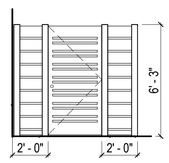

5 FENCE - EAST ELEVATION
SCALE: 1/4" = 1'-0"



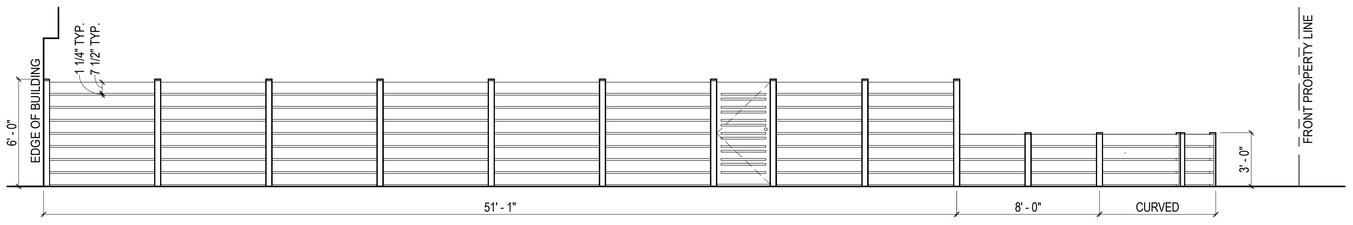

1 SITE PLAN - FENCE & RAILING LAYOUT
SCALE: 1/8" = 1'-0"



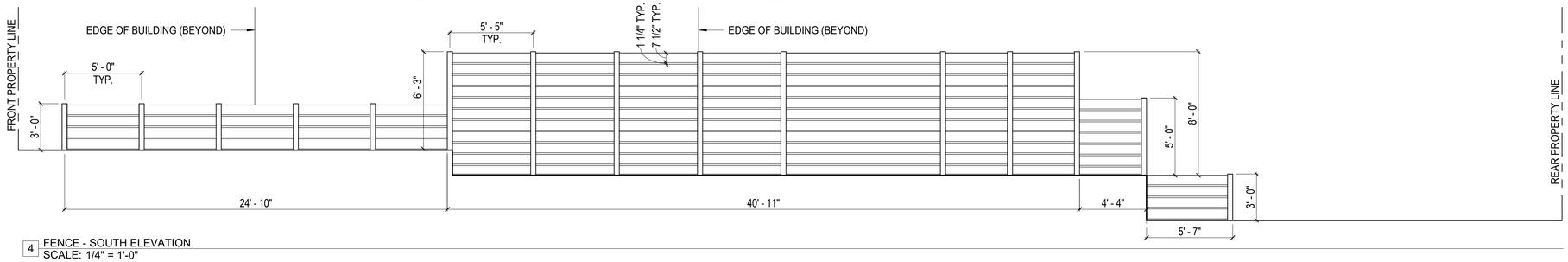

3 FENCE - WEST ELEVATION
SCALE: 1/4" = 1'-0"




6 FENCE - ENTRY GATE AT SIDE YARD (SOUTH)
SCALE: 1/4" = 1'-0"




2 FENCE - NORTH ELEVATION
SCALE: 1/4" = 1'-0"




4 FENCE - SOUTH ELEVATION
SCALE: 1/4" = 1'-0"

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LICENSED ARCHITECT MARK C. THOMAS NO. C-29445 EXP. 08-31-22 STATE OF CALIFORNIA

**UTTING OBRADAIGH RESIDENCE**

**30 SAN RAFAEL AVE**
**BELVEDERE, 94920**
**APN: 060-011-12**

| ISSUE: | DATE: |
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| DRAWN BY: | TL |
| DATE: | 07.26.22 |
| SHEET TITLE: | |

**FENCE ELEVATIONS AND DETAILS**

SHEET NUMBER:

**A4.1**

REV #: DATE:

# WINDOW SCHEDULE

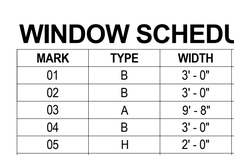
| MARK | TYPE | WIDTH | HEIGHT | HEAD HT | SILL HT | MATERIAL | FINISH | TEMPER | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| 01 | B | 3' - 0" | 6' - 0" | 8' - 0" | 2' - 0" | | | | |
| 02 | B | 3' - 0" | 6' - 0" | 8' - 0" | 2' - 0" | | | | |
| 03 | A | 9' - 8" | 6' - 0" | 8' - 0" | 2' - 0" | | | | |
| 04 | B | 3' - 0" | 6' - 0" | 8' - 0" | 2' - 0" | | | | |
| 05 | H | 2' - 0" | 3' - 0" | 7' - 0" | 4' - 0" | | | | |
| 06 | D | 2' - 6" | 7' - 8" | 8' - 0" | 0' - 4" | | | | |
| 07 | B | 3' - 0" | 6' - 0" | 8' - 0" | 2' - 0" | | | | |
| 08 | A | 9' - 8" | 6' - 0" | 8' - 0" | 2' - 0" | | | | |
| 09 | B | 3' - 0" | 6' - 0" | 8' - 0" | 2' - 0" | | | | |
| 10 | B | 3' - 0" | 6' - 0" | 8' - 0" | 2' - 0" | | | | |
| 11 | B | 3' - 0" | 6' - 0" | 8' - 0" | 2' - 0" | | | | |
| 12 | B | 3' - 0" | 6' - 0" | 8' - 0" | 2' - 0" | | | | |
| 13 | D | 3' - 0" | 4' - 4" | 8' - 0" | 3' - 8" | | | | |
| 14 | C | 2' - 6" | 4' - 4" | 4' - 8" | 0' - 4" | | | | |
| 15 | J | 10' - 0" | 6' - 8" | 6' - 8" | 0' - 0" | | | | |
| 16 | D | 2' - 0" | 2' - 0" | 3' - 0" | 1' - 0" | | | | |
| 17 | D | 2' - 6" | 3' - 0" | 6' - 8" | 3' - 8" | | | | |
| 18 | K | 4' - 6" | 6' - 4" | 6' - 8" | 0' - 4" | | | | |
| 19 | C | 2' - 6" | 4' - 4" | 6' - 8" | 2' - 4" | | | | |
| 20 | C | 2' - 6" | 4' - 4" | 6' - 8" | 2' - 4" | | | | |
| 21 | C | 2' - 6" | 4' - 4" | 6' - 8" | 2' - 4" | | | | |
| 22 | C | 2' - 6" | 4' - 4" | 6' - 8" | 2' - 4" | | | | |
| 23 | C | 2' - 6" | 4' - 4" | 6' - 8" | 2' - 4" | | | | |
| 24 | G | 2' - 6" | 4' - 4" | 6' - 8" | 2' - 4" | | | | |
| 25 | G | 8' - 2" | 4' - 4" | 6' - 8" | 2' - 4" | | | | |
| 26 | G | 2' - 6" | 4' - 4" | 6' - 8" | 2' - 4" | | | | |
| 27 | I | 11' - 2" | 6' - 8" | 6' - 8" | 0' - 0" | | | | |
| 28 | C | 2' - 6" | 4' - 4" | 6' - 8" | 2' - 4" | | | | |
| 29 | C | 2' - 6" | 4' - 4" | 6' - 8" | 2' - 4" | | | | |
| 30 | C | 2' - 6" | 4' - 4" | 6' - 8" | 2' - 4" | | | | |
| 31 | C | 2' - 6" | 4' - 4" | 6' - 8" | 2' - 4" | | | | |
| 32 | C | 2' - 6" | 4' - 4" | 6' - 8" | 2' - 4" | | | | |
| 33 | C | 2' - 6" | 4' - 4" | 6' - 8" | 2' - 4" | | | | |

# DOOR SCHEDULE

| MARK | LOCATION | TYPE | WIDTH | HEIGHT | MATERIAL | FINISH | RATING | NOTES |
|---|---|---|---|---|---|---|---|---|
| 01 | ENTRY HALL | A | 3' - 6" | 8' - 0" | WD | STAIN | N/A | |
| 02 | CLOSET | A | 2' - 4" | 8' - 0" | WD | PAINT | N/A | |
| 03 | DEN / BEDROOM 4 | A | 3' - 6" | 8' - 0" | WD | PAINT | N/A | |
| 04 | BATH 4 | A | 2' - 8" | 8' - 0" | WD | PAINT | N/A | |
| 05 | BATH 4 | B | 2' - 3" | 8' - 0" | WD | PAINT | N/A | |
| 06 | CLOSET | A | 2' - 6" | 8' - 0" | WD | PAINT | N/A | |
| 07 | DEN / BEDROOM 4 | D | 12' - 0" | 7' - 9 1/2" | ALUM/GLASS | MFR | N/A | |
| 08 | ENTRY HALL | D | 10' - 6" | 8' - 0" | ALUM/GLASS | MFR | N/A | |
| 09 | KITCHEN | E | 16' - 0" | 8' - 0" | ALUM/GLASS | MFR | N/A | |
| 10 | KITCHEN | A | 2' - 8" | 8' - 0" | WD | PAINT | 20 MIN. | |
| 11 | GARAGE | H | 8' - 10" | 7' - 0" | WD | PAINT | N/A | |
| 12 | GARAGE | H | 8' - 10" | 7' - 0" | WD | PAINT | N/A | |
| 13 | REAR YARD | I | 5' - 0" | 6' - 8" | WD | PAINT | N/A | |
| 14 | REAR YARD | B | 2' - 6" | 6' - 8" | WD | PAINT | N/A | |
| 15 | BEDROOM 3 | F | 6' - 0" | 6' - 8" | WD/GLASS | PAINT | N/A | |
| 16 | BEDROOM 3 | A | 2' - 8" | 6' - 8" | WD | PAINT | N/A | |
| 17 | BEDROOM 3 | A | 2' - 8" | 6' - 8" | WD | PAINT | N/A | |
| 18 | LAUNDRY | C | 5' - 0" | 6' - 8" | WD | PAINT | N/A | |
| 19 | BEDROOM 2 | A | 2' - 8" | 6' - 8" | WD | PAINT | N/A | |
| 20 | CLOSET | C | 6' - 0" | 6' - 8" | WD | PAINT | N/A | |
| 21 | BEDROOM 2 | F | 6' - 0" | 6' - 8" | WD/GLASS | PAINT | N/A | |
| 22 | BEDROOM 2 | A | 2' - 6" | 6' - 8" | WD | PAINT | N/A | |
| 23 | M. CLOSET | B | 2' - 10" | 6' - 8" | WD | PAINT | N/A | |
| 24 | M. BEDROOM | A | 2' - 8" | 6' - 8" | WD | PAINT | N/A | |
| 25 | M. BEDROOM | E | 10' - 0" | 6' - 8" | ALUM/GLASS | MFR | N/A | |
| 26 | M. BATH | B | 3' - 6" | 6' - 8" | WD | PAINT | N/A | |
| 27 | M. BATH | B | 2' - 6" | 6' - 8" | WD | PAINT | N/A | |
| 28 | BATH 5 | A | 2' - 6" | 6' - 8" | WD | PAINT | N/A | |
| 29 | (N) JADU | F | 6' - 0" | 6' - 8" | WD/GLASS | PAINT | N/A | |
| 30 | (N) JADU | A | 2' - 8" | 6' - 8" | WD | PAINT | N/A | |

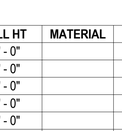
WINDOW GENERAL NOTES

1. NEW WINDOW OPENINGS TO BE ENERGY EFFICIENT.
2. WINDOW DIMENSIONS INDICATED ABOVE ARE APPROXIMATE FRAME DIMENSIONS. GENERAL CONTRACTOR TO FIELD VERIFY TRUE WINDOW SIZE REQUIREMENTS PRIOR TO ORDERING WINDOWS.
3. WINDOW SYMBOLS SHOW VIEW FROM EXTERIOR.



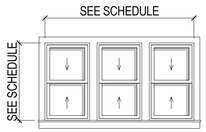
A DOUBLE HUNG (MOULDED)

B DOUBLE HUNG (DIVIDED)

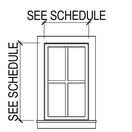


C DOUBLE HUNG

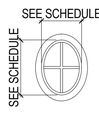
D CASEMENT



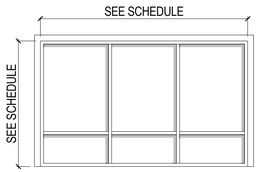
E DOUBLE HUNG (MOULDED)



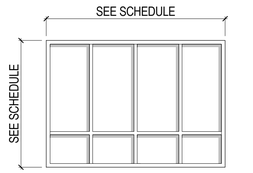
G FIXED (DIVIDED)



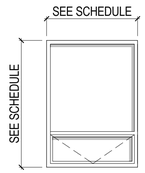
H FIXED (OVAL)



I FIXED



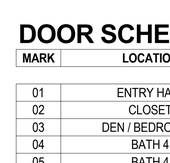
J FIXED



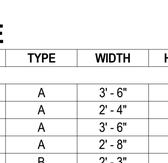
K FIXED / HOPPER

DOOR GENERAL NOTES

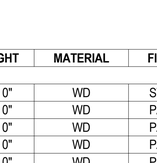
1. DIMENSIONS INDICATED ARE OF APPROXIMATE LEAF SIZE OR IN SOME INSTANCES, FINISHED OPENING SIZE.
2. STANDARD DOOR THICKNESS TO BE 2-1/4" UNLESS NOTED OTHERWISE.
3. ALL FIRE-RATED DOORS SHALL HAVE SMOKE-TIGHT GASKETS AND SELF-CLOSING DEVICES.



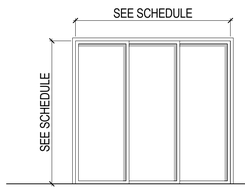
A SINGLE DOOR



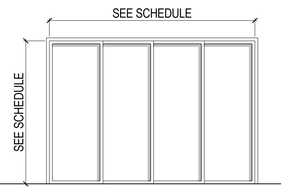
B POCKET DOOR



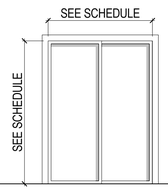
C SLIDING DOUBLE DOOR



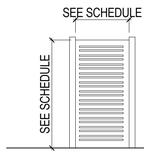
D SLIDING ALUM/GLASS DOOR



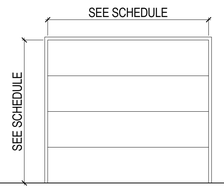
E SLIDING ALUM/GLASS DOOR



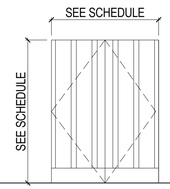
F SLIDING WOOD/GLASS DOOR



G ENTRY GATE



H GARAGE DOOR



I DOUBLE DOOR

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**30 SAN RAFAEL AVE BELVEDERE, 94920 APN: 060-011-12**

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| PLAN CHECK #1 | 07.26.22 |

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DATE: 07.26.22
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**DOOR & WINDOW SCHEDULES**

SHEET NUMBER:

**A6.1**

REV #: DATE:


1 LANDSCAPING PLAN - PROPOSED
SCALE: 1/4" = 1'-0"

N

0' 1' 2' 4' 8' 16'

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| SHEET TITLE: | |

**LANDSCAPING CONCEPT PLAN**

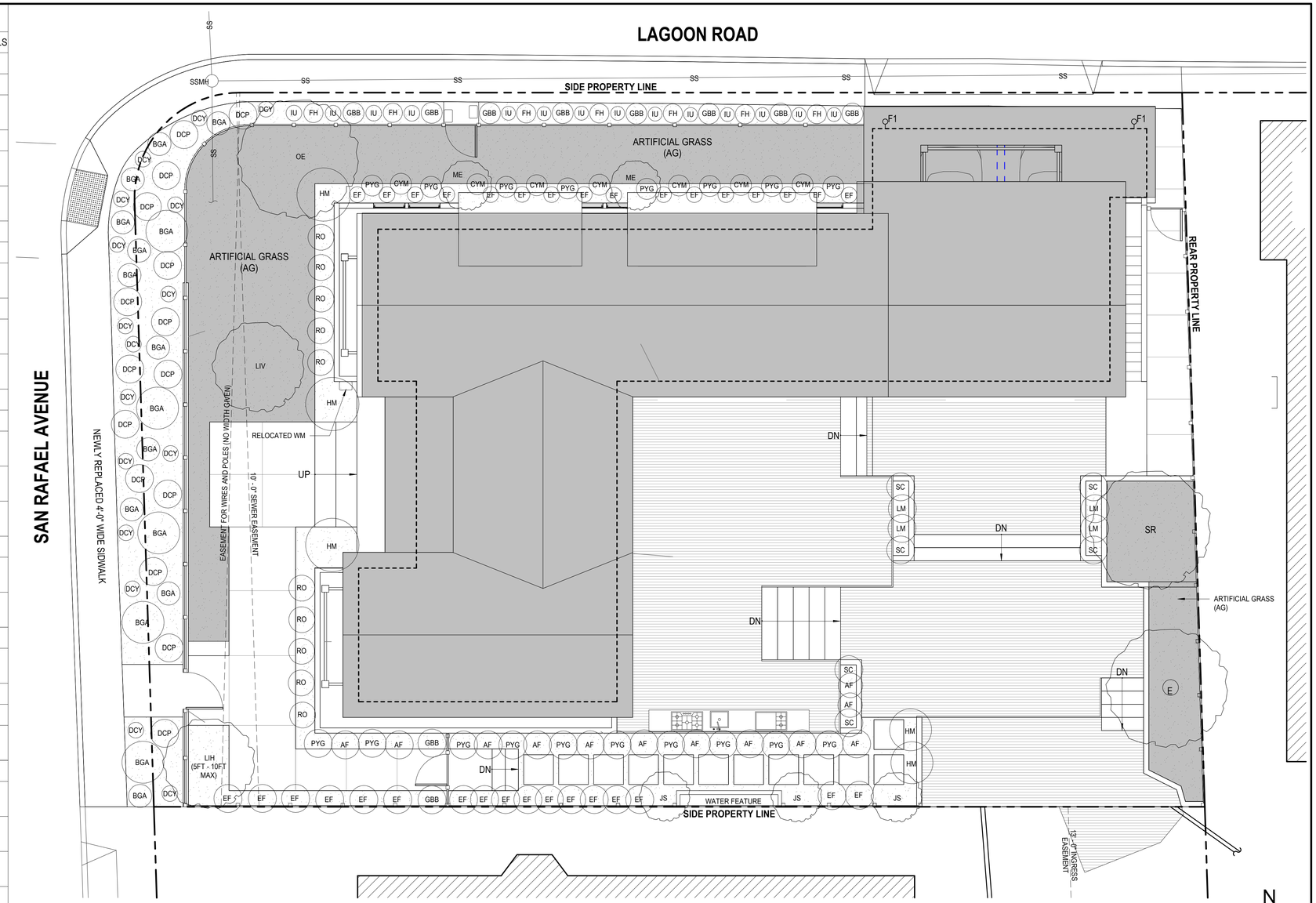
SHEET NUMBER:

**L1.0**

REV #: DATE:

# PLANTING SCHEDULE

| SYMBOL | KEY | BOTANICAL NAME | COMMON NAME | SIZE | SPACING | QTY. | WUCOLS |
|---|---|---|---|---|---|---|---|
| **PLANTING ZONE A - SAN RAFAEL AVENUE FRONTAGE** | | | | | | | |
| SUCCULENTS | | | | | | | |
| BGA | BGA | AGAVE | BLUE GLOW AGAVE | | PER PLAN | 15 | |
| PERENNIAL | | | | | | | |
| DCY | DCY | DELOSPERMA COOPERI | YELLOW ICE PLANT | | PER PLAN | 16 | |
| DCP | DCP | DELOSPERMA COOPERI | DARK PINK ICE PLANT | | PER PLAN | 14 | |
| **PLANTING ZONE B - LAGOON ROAD FRONTAGE** | | | | | | | |
| SHRUB | | | | | | | |
| GBB | GBB | GRAHAM BLANDY | AMERICAN BOXWOOD | | PER PLAN | 9 | |
| PERENNIAL | | | | | | | |
| IU | IU | IBERIS UMBELLATA | CANDY TUFT | | PER PLAN | 14 | |
| HF | HF | HOSTA FRANCEE | PLANTAIN LILY | | PER PLAN | 7 | |
| **PLANTING ZONE C - FRONT YARD** | | | | | | | |
| TREE | | | | | | | |
| OE | OE | OLEA EUROPAEA WILSONII | PLANTAIN LILY | | PER PLAN | 1 | |
| LIV | LIV | LAGERSTROEMIA INDICA (VELOUR) | PINK VELOUR CRAPE MYRTLE PINK | | PER PLAN | 1 | |
| LIH | LIH | LAGERSTROEMIA INDICA (HOPI) | HOPI CRAPE MYRTLE PINK | | PER PLAN | 1 | |
| SHRUB | | | | | | | |
| HM | HM | HYDRANGEA MACROPHYLLA | HYDRANGEA | | PER PLAN | 3 | |
| RO | RO | ROSA | HEIRLOOM ROSES | | PER PLAN | 10 | |
| ARTIFICIAL GRASS | | | | | | | |
| | AG | ARTIFICIAL GRASS | ARTIFICIAL GRASS | | PER PLAN | | |
| **PLANTING ZONE D - SIDE YARD (NORTH)** | | | | | | | |
| TREE | | | | | | | |
| ME | ME | METROSIDEROS EXCELSA | NEW ZEALAND CHRISTMAS TREE | | PER PLAN | 2 | |
| SHRUB | | | | | | | |
| EF | EF | EUONYMUS FORTUNEI | JAPANESE GREEN SPRUCE | | PER PLAN | 16 | |
| PYG | PYG | PHORMIUM YELLOW WAVE | NEW ZEALAND FLAX | | PER PLAN | 8 | |
| CYM | CYM | COPROSMA | GOLDEN MARBLE | | PER PLAN | 7 | |
| ARTIFICIAL GRASS | | | | | | | |
| | AG | ARTIFICIAL GRASS | ARTIFICIAL GRASS | | PER PLAN | | |
| **PLANTING ZONE E - SIDE YARD (SOUTH)** | | | | | | | |
| TREE | | | | | | | |
| JS | JS | JUNIPERUS SCOPULORUM | SKYROCKET JUNIPER | | PER PLAN | 3 | |
| SHRUB | | | | | | | |
| EF | EF | EUONYMUS FORTUNEI | JAPANESE GREEN SPRUCE | | PER PLAN | 17 | |
| PYG | PYG | PHORMIUM YELLOW WAVE | NEW ZEALAND FLAX | | PER PLAN | 10 | |
| AF | AF | ASPARAGUS DENSIFLORUS | ASPARAGUS FERNS | | PER PLAN | 10 | |
| GBB | GBB | GRAHAM BLANDY | AMERICAN BOXWOOD | | PER PLAN | 2 | |
| HM | HM | HYDRANGEA MACROPHYLLA | HYDRANGEA | | PER PLAN | 2 | |
| | | | | | | | |
| | | | | | | | |




1 PLANTING PLAN
SCALE: 3/16" = 1'-0"

| **PLANTING ZONE F - REAR YARD** | | | | | | | |
|---|---|---|---|---|---|---|---|
| TREE | | | | | | | |
| E | E | EXISTING TREE | | | PER PLAN | 1 | |
| SR | SR | SYAGRUS ROMANZOFFIANA | QUEEN PALM | | PER PLAN | 1 | |
| SHRUB | | | | | | | |
| SC | SC | SUTERA CORDATA | BACOPA | | PER PLAN | 6 | |
| AF | AF | ASPARAGUS DENSIFLORUS | ASPARAGUS FERNS | | PER PLAN | 2 | |
| LM | LM | LOBULARIA MARITIMA | SWEET ALYSSUM WHITE | | PER PLAN | 4 | |
| ARTIFICIAL GRASS | | | | | | | |
| | AG | ARTIFICIAL GRASS | ARTIFICIAL GRASS | | PER PLAN | | |
| | | | | | | | |

**VEGETATION MANAGEMENT NOTES:**

1. MAINTAIN DEFENSIBLE SPACE / GRAVEL MULCH IN ALL PLANTING AREAS WITHIN 5 FT OF THE BUILDING.
2. REMOVE ALL EXISTING LANDSCAPE SPECIES.
3. ONE EXISTING TREE TO REMAIN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**PLANTING PLAN & SCHEDULE**

SHEET NUMBER:

**L2.0**

REV #: DATE:

## PERENIALS

*DELOSPERMA COOPERI*
YELLOW ICE PLANT

*DELOSPERMA COOPERI*
HOT PINK ICE PLANT

*IBERIS UMBELLATA*
CANDYTUFT

*HYDRANGEA MACROPHYLLA*
WHITE HYDRANGEA

*ROSA*
HEIRLOOM WHITE ROSES

*SUTERA CORDATA*
BACOPA

*LOBULARIA MARITIMA*
SWEET ALYSSUM WHITE

## SHRUBS

*AGAVE*
BLUE GLOW AGAVE

*GRAHAM BLANDY*
AMERICAN BOXWOOD

*HOSTA FRANCEE*
PLANTAIN LILY

*PHORMIUM YELLOW WAVE*
NEW ZEALAND FLAX

*EUONYMUS FORTUNEI*
JAPANESE GREEN SPRUCE

## GROUND COVERS

*ARTIFICIAL GRASS*

## TREES

*OLEA EUROPAEA WILSONII*
FRUITLESS OLIVE TREE

*METROSIDEROS EXCELSA*
NEW ZEALAND CHRISTMAS TREE

*LAGERSTOEMIA INDICA*
PINK VELOUR CRAPE MYRTLE

*LAGERSTOEMIA INDICA*
HOPI CRAPE MYRTLE

*JUNIPERUS SCOPULORUM*
SKYROCKET JUNIPER

*SYAGRUS ROMANZOFFIANA*
QUEEN PALM


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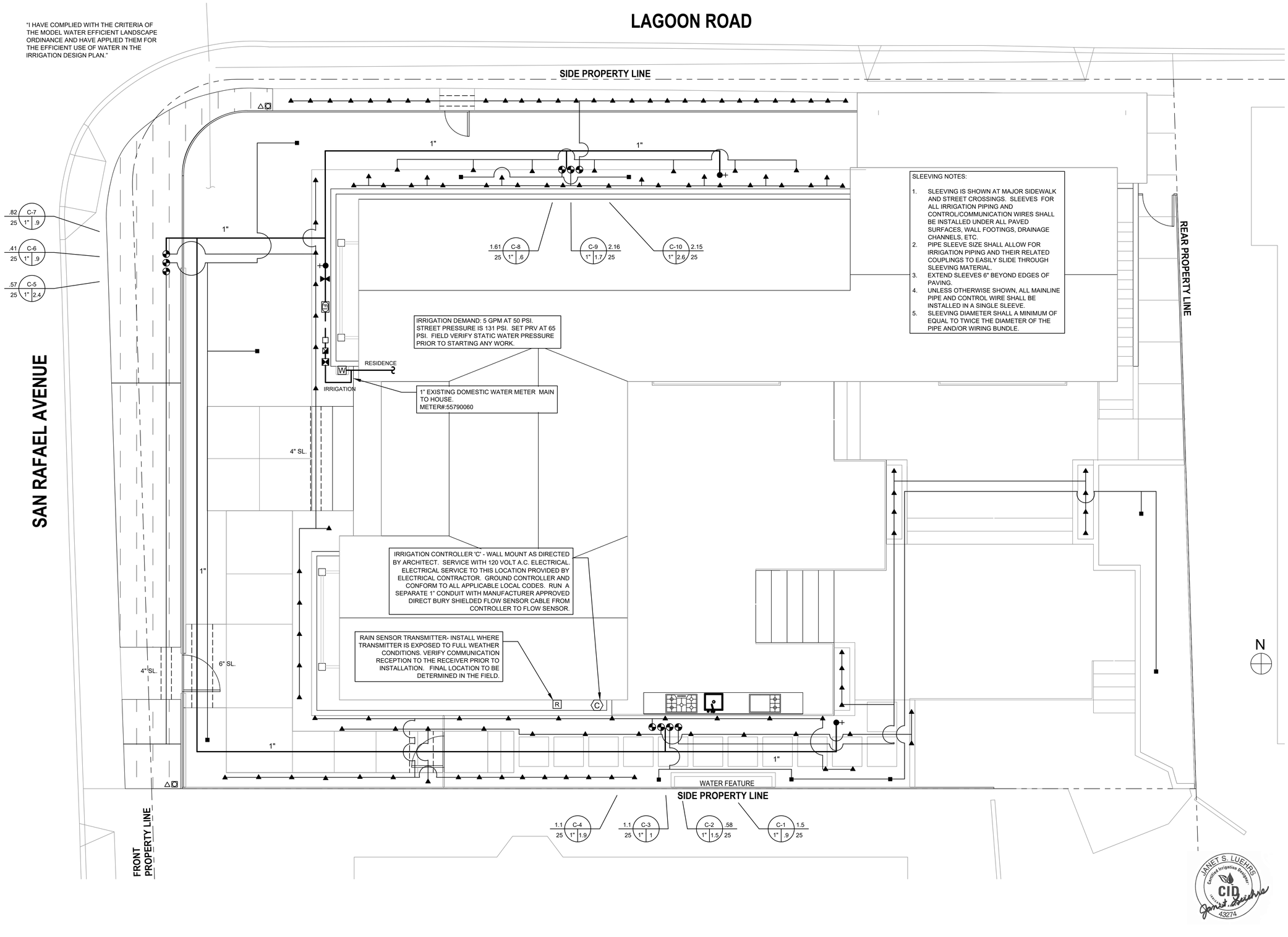
**LANDSCAPE CONCEPT PALETTE**

SHEET NUMBER:

# L3.0

REV #: DATE:

"I HAVE COMPLIED WITH THE CRITERIA OF THE MODEL WATER EFFICIENT LANDSCAPE ORDINANCE AND HAVE APPLIED THEM FOR THE EFFICIENT USE OF WATER IN THE IRRIGATION DESIGN PLAN."




SLEEVING NOTES:

1. SLEEVING IS SHOWN AT MAJOR SIDEWALK AND STREET CROSSINGS. SLEEVES FOR ALL IRRIGATION PIPING AND CONTROL/COMMUNICATION WIRES SHALL BE INSTALLED UNDER ALL PAVED SURFACES, WALL FOOTINGS, DRAINAGE CHANNELS, ETC.
2. PIPE SLEEVE SIZE SHALL ALLOW FOR IRRIGATION PIPING AND THEIR RELATED COUPLINGS TO EASILY SLIDE THROUGH SLEEVING MATERIAL.
3. EXTEND SLEEVES 6" BEYOND EDGES OF PAVING.
4. UNLESS OTHERWISE SHOWN, ALL MAINLINE PIPE AND CONTROL WIRE SHALL BE INSTALLED IN A SINGLE SLEEVE.
5. SLEEVING DIAMETER SHALL A MINIMUM OF EQUAL TO TWICE THE DIAMETER OF THE PIPE AND/OR WIRING BUNDLE.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**IRRIGATION PLAN**

SHEET NUMBER:

**L4.0**

REV #: DATE:

JANET S. LUEHRS Certified Irrigation Designer CID 43274

## IRRIGATION NOTES

1. THE CONTRACTOR SHALL REVIEW RELATED DRAWINGS AND SHALL ENSURE COORDINATION WITH ALL APPLICABLE TRADES PRIOR TO SUBMITTING BID.

2. THE IRRIGATION SYSTEM SHALL BE INSTALLED IN CONFORMANCE WITH ALL APPLICABLE STATE AND LOCAL CODES AND ORDINANCES BY LICENSED CONTRACTORS AND EXPERIENCED WORKERS. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS AND FEES RELATING TO THEIR WORK.

3. THIS DESIGN IS DIAGRAMMATIC. ALL PIPING, VALVES, ETC. SHOWN WITHIN PAVED AREAS IS FOR DESIGN CLARIFICATION ONLY AND SHALL BE INSTALLED IN PLANTING AREAS WHERE POSSIBLE. AVOID ANY CONFLICTS BETWEEN THE IRRIGATION SYSTEM, PLANTING AND ARCHITECTURAL FEATURES.

4. PARALLEL PIPES MAY BE INSTALLED IN COMMON TRENCH. PIPES ARE NOT TO BE INSTALLED DIRECTLY ABOVE ONE ANOTHER. TRENCHES SHALL BE AMPLE SIZE TO PERMIT THE PIPES TO BE LAID AT THE ELEVATIONS INTENDED AND TO PERMIT SPACE FOR JOINING.

5. CONTRACTOR SHALL RESTORE SURFACES, EXISTING UNDERGROUND INSTALLATIONS, ETC., DAMAGED OR CUT AS A RESULT OF EXCAVATIONS, TO ORIGINAL CONDITIONS IN A MANNER APPROVED BY THE OWNER'S REPRESENTATIVE.

6. DO NOT WILLFULLY INSTALL THE IRRIGATION SYSTEM AS SHOWN ON THE DRAWINGS WHEN IT IS OBVIOUS IN THE FIELD THAT OBSTRUCTIONS, GRADE DIFFERENCES OR DIFFERENCES IN THE AREA DIMENSIONS EXIST THAT MIGHT NOT HAVE BEEN CONSIDERED IN THE ENGINEERING. SUCH OBSTRUCTIONS OR DIFFERENCES SHOULD BE BROUGHT TO THE ATTENTION OF THE OWNER'S AUTHORIZED REPRESENTATIVE. IN THE EVENT THAT THIS NOTIFICATION IS NOT PERFORMED, THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY REVISIONS NECESSARY.

7. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BECOME FAMILIAR WITH ALL GRADE DIFFERENCES, LOCATION OF WALLS, RETAINING WALLS, ETC. COORDINATE WORK WITH THE GENERAL CONTRACTOR AND OTHER SUBCONTRACTORS FOR THE LOCATION AND THE INSTALLATION OF PIPE SLEEVES THROUGH WALLS, UNDER ROADWAYS, PAVING, STRUCTURES, ETC. CONTRACTOR TO VERIFY THE LOCATION OF EXISTING UNDERGROUND UTILITIES AND STRUCTURES PRIOR TO THE EXCAVATION OF TRENCHES. CONTRACTOR IS TO REPAIR ANY DAMAGE CAUSED BY THEIR WORK AT NO ADDITIONAL COST TO THE OWNER.

8. DUE TO THE SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS, SLEEVES, ETC., WHICH MAY BE REQUIRED. CAREFULLY INVESTIGATE THE STRUCTURAL AND FINISHED CONDITIONS AFFECTING ALL WORK AND PLAN WORK ACCORDINGLY, FURNISHING SUCH FITTINGS, ETC., AS MAY BE REQUIRED TO MEET SUCH CONDITIONS. DRAWINGS ARE GENERALLY DIAGRAMMATIC AND INDICATIVE OF THE WORK TO BE INSTALLED. THE WORK SHALL BE INSTALLED IN SUCH A MANNER AS TO AVOID CONFLICTS BETWEEN IRRIGATION SYSTEMS, PLANTING, AND ARCHITECTURAL FEATURES.

9. ELECTRICAL CONTRACTOR TO SUPPLY 120 VAC (2.5 AMP) SERVICE TO CONTROLLER LOCATION. IRRIGATION CONTRACTOR TO MAKE FINAL CONNECTION FROM ELECTRICAL STUB-OUT TO CONTROLLER. IRRIGATION CONTROL WIRE SHALL BE #14, U.L. APPROVED FOR DIRECT BURIAL. COMMON WIRE SHALL BE #12 U.L. APPROVED AND SHALL BE WHITE IN COLOR. WIRING TO INDIVIDUAL REMOTE CONTROL VALVES SHALL BE COLOR OTHER THAN WHITE.

10. EACH CONTROLLER SHALL HAVE ITS OWN INDEPENDENT GROUND WIRE.

11. REMOTE CONTROL VALVES SHALL BE WIRED TO CONTROLLER IN SEQUENCE AS SHOWN ON PLANS. RUN WIRE FROM EACH RCV TO THE CONTROLLER. SPLICING WIRES TOGETHER OUTSIDE OF VALVE BOXES WILL NOT BE PERMITTED. ATTACH A LABEL TO CONTROL WIRE AT THE CONTROLLER AND ATTACH AN ID TAG AT EACH REMOTE CONTROL VALVE INDICATING CONTROLLER AND STATION NUMBER.

12. SPLICING OF 24-VOLT WIRES WILL NOT BE PERMITTED EXCEPT IN VALVE BOXES. LEAVE A 36" COIL OF EXCESS WIRE AT EACH SPLICE AND 100 FEET ON CENTER ALONG WIRE RUN. TAPE WIRE IN BUNDLES 10 FEET ON CENTER. NO TAPING PERMITTED INSIDE SLEEVES.

13. WIRE CONNECTORS SHALL BE 3M-DBR/Y-6 DIRECT BURY UNLESS OTHERWISE NOTED.

14. INSTALL TWO (2) SPARE CONTROL WIRES ALONG THE ENTIRE MAIN LINE. SPARE WIRES SHALL BE THE SAME COLOR (ONE WITH A WHITE STRIPE) AND OF A DIFFERENT COLOR THAN OTHER CONTROL WIRES. LOOP 36" EXCESS WIRE INTO EACH SINGLE VALVE BOX AND INTO ONE VALVE BOX IN EACH GROUP OF VALVES.

15. VALVE LOCATIONS SHOWN ARE DIAGRAMMATIC. INSTALL IN GROUND COVER/SHRUB AREAS WHERE POSSIBLE.

16. INSTALL VALVE BOXES MINIMUM 12" FROM AND PERPENDICULAR TO WALK, CURB, BUILDING OR LANDSCAPE FEATURE. AT MULTIPLE VALVE BOX GROUPS, EACH BOX SHALL BE AN EQUAL DISTANCE FROM THE WALK, CURB, ETC. AND EACH BOX SHALL BE MINIMUM 12" APART. SHORT SIDE OF VALVE BOXES SHALL BE PARALLEL TO WALK, CURB, ETC.

17. PRESSURE REGULATING DEVICES ARE REQUIRED IF WATER PRESSURE EXCEEDS THE RECOMMENDED PRESSURE OF THE SPECIFIED IRRIGATION DEVICES.

18. LOCATE QUICK COUPLING VALVE 12" FROM HARDSCAPE AREA.

19. FOR DRIP OR BUBBLER CIRCUITS, INSTALL KING BROS. CV SERIES CHECK VALVES IN LATERAL LINES FOR EVERY 10' OF ELEVATION CHANGE.

20. ALL MAIN LINES SHALL BE FLUSHED PRIOR TO THE INSTALLATION OF IRRIGATION BUBBLERS AND DRIP TUBING. AT 30 DAYS AFTER INSTALLATION EACH SYSTEM SHALL BE FLUSHED TO ELIMINATE GLUE AND DIRT PARTICLES FROM THE LINES.

21. FOR PROPER SOLVENT WELD OF PVC A SUITABLE PRIMER AND SOLVENT CEMENT SHALL BE USED. APPLICATION PRACTICE AND TECHNIQUE SHALL BE IN ACCORDANCE WITH THE PRIMER/CEMENT MANUFACTURER'S RECOMMENDATIONS. THE JOINING SURFACES MUST BE SOFTENED (WITH PRIMER/CEMENT) AND THE PIPE AND FITTING MUST BE ASSEMBLED WHILE THE SURFACES ARE STILL WET AND FLUID.

22. NOTIFY ARCHITECT OF ANY ASPECTS OF LAYOUT THAT WILL PROVIDE INCOMPLETE OR INSUFFICIENT WATER COVERAGE OF PLANT MATERIAL AND DO NOT PROCEED UNTIL HIS/HER INSTRUCTIONS ARE OBTAINED.

23. LOCATE BUBBLERS ON UPHILL SIDE OF TREES. TREE BUBBLERS ARE FOR ESTABLISHMENT AND DROUGHT CONDITIONS. THEY ARE TO BE TURNED OFF AFTER TREES ARE ESTABLISHED AND TURNED ON DURING DROUGHT CONDITIONS.

24. IN ADDITION TO THE SLEEVES AND CONDUITS SHOWN ON THE DRAWINGS, THE IRRIGATION CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE INSTALLATION OF SLEEVES AND CONDUITS OF SUFFICIENT SIZE UNDER ALL PAVED AREAS.

25. ALL EXCAVATIONS ARE TO BE FILLED WITH COMPACTED BACKFILL. BACKFILL MATERIAL SHALL BE THE EARTH EXCAVATED FROM THE TRENCH AND FREE OF ROCKS AND OTHER FOREIGN COURSE MATERIAL. COMPACT BACKFILL TO A MINIMUM OF 90 PERCENT OF ORIGINAL SOIL DENSITY. REPAIR ALL SETTLED TRENCHES PROMPTLY, FOR A PERIOD OF 1 YEAR AFTER COMPLETION OF WORK.

26. CONTRACTOR SHALL WARRANT THAT THE IRRIGATION SYSTEM WILL BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF 1 YEAR AFTER FINAL ACCEPTANCE OF WORK.

27. ALL CONSTANT PRESSURE PIPES SHALL BE TESTED AT A MINIMUM OF 125 PSI FOR TWO HOURS. CENTER LOAD PIPING WITH A SMALL AMOUNT OF BACKFILL TO PREVENT ARCHING OR SLIPPING UNDER PRESSURE. NO FITTINGS SHALL BE COVERED. REPAIR FAULTY JOINTS WITH NEW MATERIALS. DO NOT USE CEMENT OR CAULKING TO REPAIR LEAKS.

28. WHERE IT IS NECESSARY TO EXCAVATE ADJACENT TO EXISTING TREES, USE ALL POSSIBLE CARE TO AVOID INJURY TO TREES, AND TREE ROOTS. EXCAVATION IN AREAS WHERE 2 INCH AND LARGER ROOTS OCCUR SHALL BE DONE BY HAND. ROOTS 2 INCHES AND LARGER IN DIAMETER SHALL BE WRAPPED IN A PLASTIC BAG AND SECURED WITH A RUBBER BAND. TRENCHES ADJACENT TO TREE SHOULD BE CLOSED WITHIN 24 HOURS; WHERE THIS IS NOT POSSIBLE, THE SIDE OF THE TRENCH ADJACENT TO THE TREE SHALL BE KEPT SHADED WITH BURLAP OR CANVAS.

29. THE IRRIGATION SYSTEM DESIGN IS BASED ON THE MINIMUM OPERATING PRESSURE SHOWN ON THE IRRIGATION DRAWINGS. VERIFY WATER PRESSURE PRIOR TO CONSTRUCTION. REPORT ANY DIFFERENCE BETWEEN THE WATER PRESSURE INDICATED ON THE DRAWINGS AND THE ACTUAL PRESSURE READING AT THE IRRIGATION POINT OF CONNECTION TO THE OWNER'S AUTHORIZED REPRESENTATIVE.

30. IRRIGATION DEMAND: REFER TO IRRIGATION POINTS OF CONNECTION.

31. CONTRACTOR SHALL VERIFY REMOTE AND WEATHER SENSOR RECEPTION TO THE RECEIVER PRIOR TO INSTALLING THE CONTROLLER. IF SIGNAL IS TOO WEAK, EXTEND THE RECEIVER OUT TO A MAXIMUM OF 10' FROM THE CONTROLLER USING A 6 PIN PHONE CABLE WITH FEMALE ADAPTER. IF RECEPTION IS STILL TOO WEAK, CONTACT THE LANDSCAPE ARCHITECT FOR FURTHER INSTRUCTION.

32. OPERATE IRRIGATION CONTROLLER(S) BETWEEN THE HOURS OF 10:00 PM AND 7:00 AM.

33. NOTIFY ALL LOCAL JURISDICTIONS FOR INSPECTION AND TESTING OF INSTALLED BACKFLOW PREVENTION DEVICE.

34. NOTIFY UNDERGROUND SERVICE ALERT AT 811 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION.

35. AT LEAST 10 DAYS PRIOR TO COMPLETION OF CONSTRUCTION, PROVIDE THE OWNER WITH A MAINTENANCE MANUAL. DATA SHALL BE ON 8 1/2" X 11" SHEETS, IN A 3-RING BINDER AND SHALL INCLUDE:
    - INDEX SHEET WITH CONTRACTOR'S CONTACT INFORMATION AND LIST OF EQUIPMENT WITH LOCAL MANUFACTURER'S REPRESENTATIVES.
    - CATALOG AND PARTS SHEET OF ALL MATERIAL AND EQUIPMENT.
    - COMPLETE OPERATING AND MAINTENANCE INSTRUCTIONS FOR ALL EQUIPMENT.
    - COMPLETE AND DATED MANUFACTURER'S WARRANTIES.

36. AT COMPLETION OF MAINTENANCE PERIOD, PROVIDE OWNER WITH THREE (3) EACH OF ALL OPERATING AND SERVICING KEYS AND WRENCHES REQUIRED FOR COMPLETE MAINTENANCE AND OPERATION OF ALL HEADS AND VALVES. PROVIDE TWO (2) EACH OF KEYS TO CONTROLLER CABINETS.

37. A DIAGRAM OF THE IRRIGATION PLAN SHOWING HYDROZONES SHALL BE KEPT WITH THE IRRIGATION CONTROLLER FOR SUBSEQUENT MANAGEMENT PURPOSES.

38. A CERTIFICATE OF COMPLETION SHALL BE FILLED OUT AND CERTIFIED BY EITHER THE DESIGNER OF THE LANDSCAPE PLANS, IRRIGATION PLANS, OR THE LICENSED LANDSCAPE CONTRACTOR FOR THE PROJECT.

39. AN IRRIGATION AUDIT REPORT SHALL BE COMPLETED AT THE TIME OF FINAL INSPECTION. THE IRRIGATION CONTRACTOR SHALL ARRANGE AND PAY FOR THE AUDIT. THE AUDIT MUST BE PERFORMED BY A THIRD PARTY CERTIFIED LANDSCAPE IRRIGATION AUDITOR.

## IRRIGATION LEGEND

| SYMBOL | MODEL NUMBER | DESCRIPTION | PSI | FLOW RATE (GPM) | MAX. RADIUS | MAX. SPACING | DETAIL # |
|---|---|---|---|---|---|---|---|
| ▲ | DB-04-PC | TORO PRESSURE COMPENSATING DRIP BUBBLER INSTALL ONE BUBBLER PER SHRUB | 40 | 4 GPH | - | - | L4.2/11 |
| ■ | DB-09-PC | TORO PRESSURE COMPENSATING DRIP BUBBLER INSTALL TWO BUBBLERS PER TREE | 40 | 9 GPH | - | - | L4.2/10 |
| △ | EBV-0500-S | NDS 1/2" BALL VALVE FOR FLUSHING | | | | | L4.3/15 |
| NOT SHOWN | T-YD-500-34 | TORO DL2000 AIR VENT | | | | | L4.3/17 |
| ◘ | T-DL-MP9 | TORO DL2000 POP-UP OPERATION INDICATOR | | | | | L4.3/16 |
| | 700DK-1-LF / LT-1000-T | IRRITROL DRIP ZONE VALVE KIT - INCL. REMOTE CONTROL VALVE, WYE FILTER WITH 150 MESH SCREEN, AND PRESET PRESSURE REGULATOR / NDS SCH 80 PVC BALL VALVE | | | | | L4.2/4 |
| | HQ-3DLRC / HK-33 / HS-0 | HUNTER QUICK COUPLING VALVE WITH 3/4" KEY AND HOSE SWIVEL | | | | | L4.2/9 |
| | T-113-LF | NIBCO LEAD FREE GATE VALVE (LINE SIZE) | | | | | L4.2/8 |
| EZ | EZ001-CX-CBV-100 | EZ-FLO 1.0 GALLON FERTILIZER INJECTION SYSTEM WITH 1" BALL VALVE COUPLING | | | | | L4.3/13 |
| | 975XL2-1" | WILKINS LEAD-FREE REDUCED PRESSURE BACKFLOW PREVENTER | | | | | L4.2/1 |
| | 600L-1" | 1" WILKINS PRESSURE REGULATING VALVE | | | | | L4.2/1 |
| | MODEL 70 | BADGER 1" WATER METER (SUB-METER FOR IRRIGATION) | | | | | L4.3/14 |
| R | RAIN-CLIK | HUNTER WIRELESS RAIN SENSOR | | | | | L4.2/12 |
| C | PHC-1200 / HC-PLAN-HOME | HUNTER HC WIFI 12 STATION CONTROLLER - WALL MOUNT WITH HYDRAWISE SOFTWARE | | | | | L4.2/2 |
| C-1 1.6 / 1" 15 30 | | CONTROLLER AND STATION NUMBER<br>APPLICATION RATE (INCHES)<br>OPERATING PRESSURE (PSI)<br>APPROXIMATE GALLONS PER MINUTE<br>REMOTE CONTROL VALVE SIZE | | | | | |
| | | MAIN LINE: 1120-SCHEDULE 40 PVC SOLVENT WELD PIPE WITH SCHEDULE 40 PVC SOLVENT WELD FITTINGS. 18" COVER. | | | | | L4.2/6 |
| | | LATERAL LINE: 1120-CLASS 200 PSI PVC SOLVENT WELD PIPE WITH SCHEDULE 40 PVC SOLVENT WELD FITTINGS. 12" COVER. | | | | | L4.2/6 |
| | | SUB-SURFACE DRIPLINE: TORO DL2000 RGP-212-10 DRIPLINE WITH ROOT GUARD. USE ONLY DL2000 DRIPLINE INSERT BARB FITTINGS. 2" COVER. (12" EMITTER SPACING; .53 GPH PER EMITTER) | | | | | L4.3/18 |
| | | SLEEVE (SL): 1120-CLASS 200 PVC PLASTIC PIPE. 24" COVER. | | | | | L4.2/6 |

## DRIPLINE NOTES:

1. PLANS ARE DIAGRAMMATIC. INSTALL DRIPLINE AND COMPONENTS PER MANUFACTURERS INSTRUCTIONS AND INSTALLATION DETAILS.
2. INSTALL DRIPLINE A MAXIMUM OF 18" APART (12" IN BIORETENTION/TURF AREAS) WITH EMITTERS TRIANGULARLY SPACED. INSTALL 2" FROM PERIMETER OF PLANTED AREA. THERE SHOULD BE A MINIMUM OF TWO DRIPLINE LATERALS IN EACH PLANTED AREA. DRIPLINE SHALL BE INSTALLED AT A CONSISTANT DEPTH THROUGHOUT THE CIRCUIT.
3. PLACE AIR/VACUUM RELIEF VALVES AT THE HIGHEST POINTS OF EACH ZONE AND JUST BELOW CHECK VALVES ON SLOPES. INSTALL ONE AIR/VACUUM RELIEF VALVE FOR EVERY 1125' OF TOTAL DRIPLINE PER ZONE
4. PLACE FLUSH VALVES AT THE HYDRAULIC CENTER OF THE EXHAUST HEADER OR AT LOW POINT ON SLOPES. INSTALL MINIMUM OF ONE FOR EVERY 15 GPM.
5. INSTALL IN-LINE CHECK VALVES ON SLOPES GREATER THAN 3% AND WHERE LOW-LINE DRAINAGE COULD CAUSE WET AREAS IN THE LOWEST AREAS OF AN IRRIGATION ZONE. CHECK VALVES SHALL BE PLACED EVERY 4-5 FEET BETWEEN DRIPLINE LATERALS AND BEFORE THE FLUSH VALVE.
6. ON ALL SLOPES AND MOUNDS, PLACE THE DRIPLINE LATERALS PARALLEL TO THE SLOPE CONTOUR WHERE POSSIBLE. INCREASE THE LATERAL SPACING BY 25% ON THE LOWER ONE-THIRD OF THE SLOPE TO AVOID EXCESS DRAINAGE.
7. PVC SUPPLY AND FLUSH LINE SIZING GUIDE (ALL SUPPLY AND FLUSH LINES SHALL BE THE SAME SIZE FOR THE ENTIRE ZONE):
    - 0-8 GPM - 3/4"
    - 8.1-15 GPM - 1"
    - 15.1-25 GPM - 1 1/4"
8. FITTINGS SHALL BE OF THE SAME MANUFACTURER AS DRIPLINE. TO PREVENT LEAKING AND FITTING BLOW OUTS, CAREFULLY FOLLOW THE FITTING MANUFACTURER'S INSTALLATION INSTRUCTIONS.
9. STAPLE DRIPLINE TO GROUND EVERY 3 FEET. USE ADDITIONAL STAPLES OVER EACH TEE, ELBOW OR CROSS. USE U-SHAPED STAPLES TO AVOID PINCHING THE DRIPLINE.
10. THOROUGHLY FLUSH EACH INSTALLATION SEGMENT TO ENSURE NO DEBRIS CONTAMINATION OCCURS.
11. IN TURF OR NOW-MOW GRASS AREAS, A TEMPORARY OVERHEAD SPRAY SYSTEM WILL NEED TO BE PROVIDED UNTIL THE TURF SEED OR SOD IS ESTABLISHED. OVERHEAD WATERING CAN BE DISCONTINUED WHEN EDGES OF THE SOD CANNOT BE PULLED UP. RUN THE DRIPLINE SYSTEM SEVERAL TIMES DAILY IN ADDITION TO THE TEMPORARY OVERHEAD SYSTEM.
12. RUN THE DRIPLINE SYSTEM EVERY DAY OR EVERY OTHER DAY TO ESTABLISH PLANT MATERIAL. MAINTAIN A CONSISTENT MOISTURE BALANCE IN THE SOIL. IT IS IMPORTANT TO KEEP THE SOIL MOIST WITHOUT SATURATION.

## LATERAL LINE SIZING CHART

| SPRINKLER TYPE | GPM | NO. OF BUBBLERS* | PIPE SIZE |
|---|---|---|---|
| BUBBLERS - 4 GPH | 1-5<br>5.1-15 | 1-75<br>76-225 | 3/4"<br>1" |
| BUBBLERS - 9 GPH | 1-5<br>5.1-15 | 1-32<br>33-96 | 3/4"<br>1" |

* QUANTITY INDICATES NO. OF BUBBLERS, NOT NO. OF TREES. THERE ARE TWO BUBBLERS PER TREE AND ONE BUBBLER PER SHRUB. LATERAL LINE FROM REMOTE CONTROL VALVE TO FIRST BUBBLER SHALL BE 1" MINIMUM.

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**30 SAN RAFAEL AVE BELVEDERE, 94920 APN: 060-011-12**

| ISSUE: | DATE: |
|---|---|
| ISSUE FOR REVIEW | 08.19.21 |
| DESIGN REVIEW | 01.27.22 |
| REVISION 01 | 04.25.22 |

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|---|---|
| DRAWN BY: | TL |
| DATE: | 01.27.22 |
| SHEET TITLE: | |

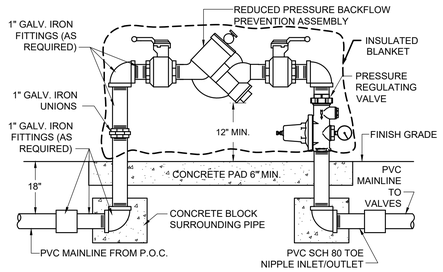
**IRRIGATION NOTES AND LEGEND**

SHEET NUMBER:

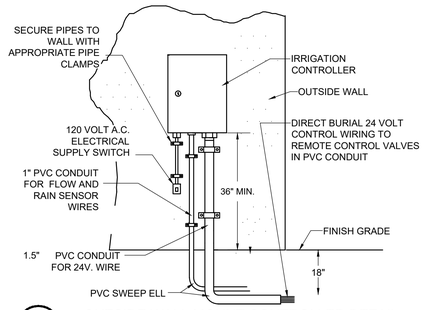
# L4.1

REV #: DATE:

NOTE: EVENLY COAT METAL FITTINGS EXPOSED TO SOIL AND CONCRETE WITH 3M SCOTCHRAP PIPE PRIMER AND THEN WRAP WITH 3M SCOTCHRAP NO. 51 BLACK TAPE (3/4" OVERLAP). USE DIELECTRIC FITTINGS WHERE DISSIMILAR METALS COME INTO CONTACT.

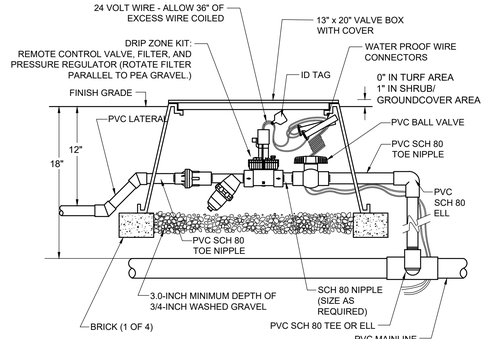



1 REDUCED PRESSURE BACKFLOW ASSEMBLY
NOT TO SCALE

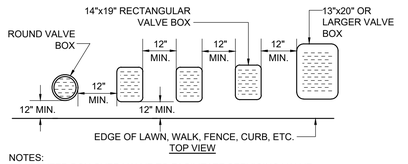



2 OUTSIDE WALL MOUNT CONTROLLER DETAIL
NOT TO SCALE

3 NOT USED
NOT TO SCALE

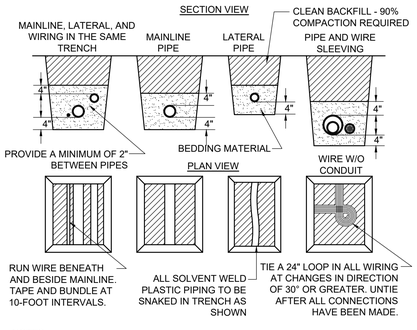



4 TORO DRIP ZONE KIT
NOT TO SCALE



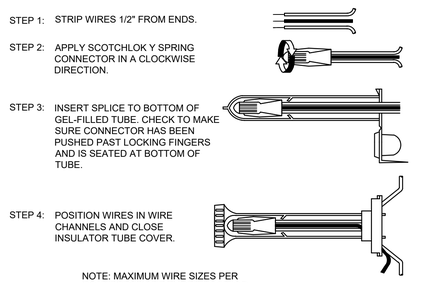

NOTES:
1. CENTER BOX OVER VALVE TO FACILITATE SERVICING VALVE.
2. SET BOXES 1" ABOVE FINISH GRADE OR MULCH COVER IN GROUND COVER/SHRUB AREA AND FLUSH WITH FINISH GRADE IN TURF AREA.
3. SET VALVE BOX ASSEMBLY IN GROUND COVER/SHRUB AREA WHERE POSSIBLE. INSTALL IN LAWN AREA ONLY IF GROUND COVER/SHRUB AREA DOES NOT EXIST ADJACENT TO LAWN.
4. SET BOXES PARALLEL TO EACH OTHER AND PERPENDICULAR TO EDGE.
5. AVOID HEAVILY COMPACTING SOIL AROUND VALVE BOX EDGES TO PREVENT COLLAPSE AND DEFORMATION OF VALVE BOX SIDES.
6. VALVE BOXES SHALL HAVE BOLT DOWN LIDS WITH BOLTS INSTALLED.
7. VALVE BOXES SHALL BE BY NDS, CARSON, OR EQUAL.

5 VALVE BOX INSTALLATION DETAIL
NOT TO SCALE



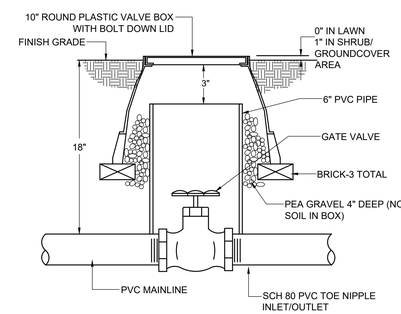

NOTES:
1. SLEEVE BELOW ALL HARDSCAPE ELEMENTS WITH SPECIFIED PVC PIPE TWICE THE DIAMETER OF THE PIPE OR WIRE BUNDLE WITHIN.
2. FOR PIPE AND WIRE BURIAL DEPTHS REFER TO IRRIGATION LEGEND AND SPECIFICATIONS.

6 PIPE AND WIRE TRENCHING
NOT TO SCALE

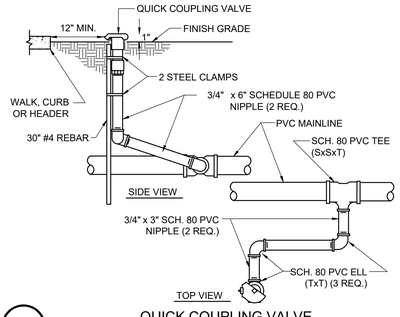



NOTE: MAXIMUM WIRE SIZES PER CONNECTOR ARE THREE # 14'S OR TWO #12'S.

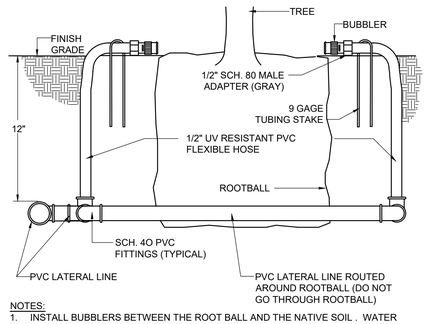
7 WIRE CONNECTION DETAIL
NOT TO SCALE




8 GATE VALVE DETAIL - 2" & SMALLER
NOT TO SCALE

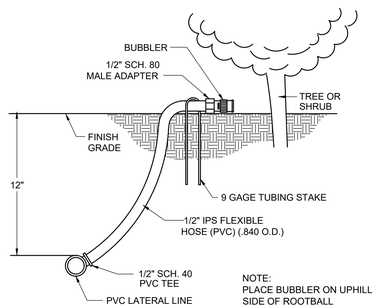



9 QUICK COUPLING VALVE
NOT TO SCALE




NOTES:
1. INSTALL BUBBLERS BETWEEN THE ROOT BALL AND THE NATIVE SOIL . WATER SHOULD NOT BE HITTING THE TRUNK OF THE TREE.
2. USE WELD-ON 795 FOR ALL FLEXIBLE HOSE CONNECTIONS.

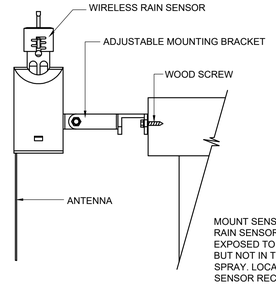
10 TREE BUBBLER DETAIL
NOT TO SCALE




NOTE:
PLACE BUBBLER ON UPHILL SIDE OF ROOTBALL

NOTE:
1. USE WELD-ON 795 FOR ALL FLEXIBLE HOSE CONNECTIONS.

11 BUBBLER ON FLEX HOSE DETAIL
NOT TO SCALE




MOUNT SENSOR VERTICALLY. MOUNT RAIN SENSOR WHERE IT WILL BE EXPOSED TO UNOBSTRUCTED RAINFALL BUT NOT IN THE PATH OF SPRINKLER SPRAY. LOCATE WITHIN 300 FEET OF SENSOR RECEIVER AND CONTROLLER.

12 WIRELESS RAIN SENSOR INSTALLATION DETAIL
NOT TO SCALE

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| ISSUE FOR REVIEW | 08.19.21 |
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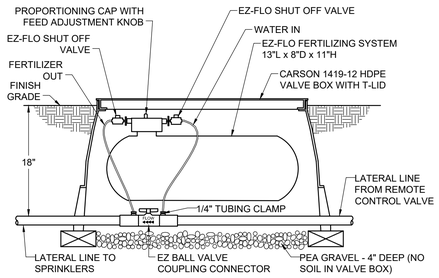
**IRRIGATION DETAILS**

SHEET NUMBER:

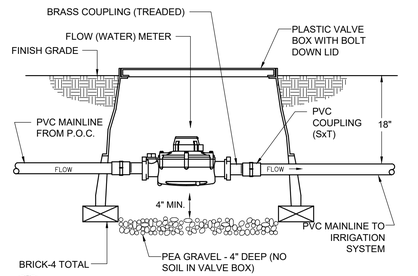
**L4.2**

REV #: DATE:

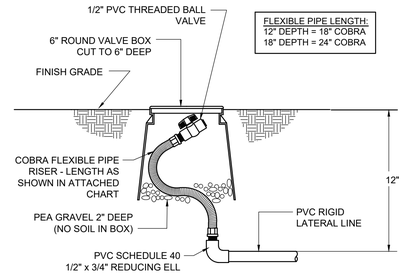



NOTE: EZ-FLO FERTILIZING SYSTEM TO BE INSTALLED ADJACENT TO LATERAL LINE. CONTRACTOR TO ENSURE EZ-COUPLING CONNECTOR IS ACCESSIBLE WITHIN VALVE BOX FOR MAINTENANCE.

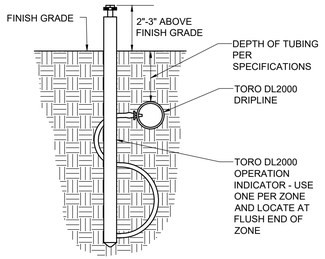
13 EZ-FLO FERTILIZING SYSTEM (EZ001CX)
NOT TO SCALE



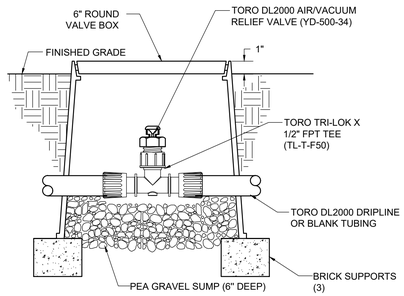

14 WATER METER (SUB-METER)
NOT TO SCALE




15 MANUAL FLUSH VALVE DETAIL
NOT TO SCALE

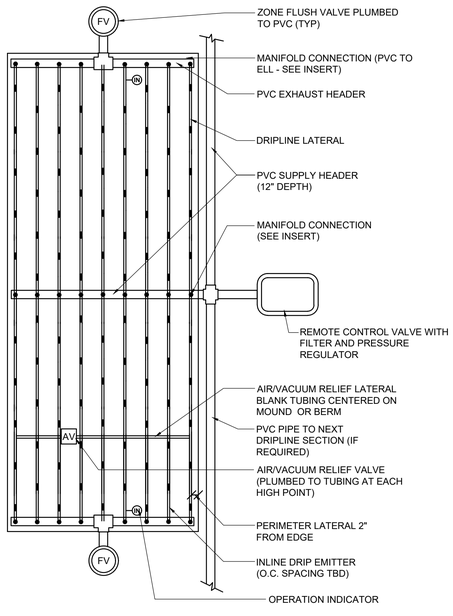



16 TORO DL2000 OPERATION INDICATOR
NOT TO SCALE

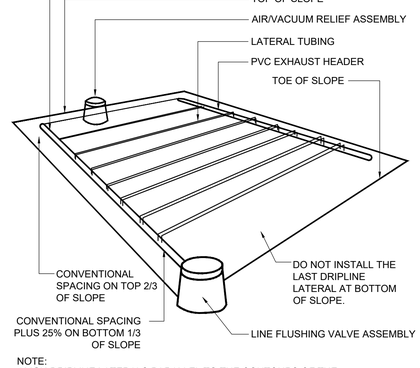



NOTE:
AIR/VACUUM RELIEF VALVE CANNOT BE CONNECTED LOWER THAN DRIPLINE LATERALS.

17 TORO DL2000 AIR/VACUUM RELIEF VALVE - PLUMBED TO TUBING
NOT TO SCALE




18 CENTER FEED INLINE DRIP LAYOUT
NOT TO SCALE




NOTE:
ALIGN DRIPLINE LATERALS PARALLEL TO THE CONTOURS OF THE SLOPE

19 INLINE DRIP SPACING LAYOUT ON SLOPE
NOT TO SCALE

"I HAVE COMPLIED WITH THE CRITERIA OF THE MODEL WATER EFFICIENT LANDSCAPE ORDINANCE AND HAVE APPLIED THEM FOR THE EFFICIENT USE OF WATER IN THE IRRIGATION DESIGN PLAN."

JANET S. LUEHRS Certified Irrigation Designer CID 43274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**UTTING OBRADAIGH RESIDENCE**

**30 SAN RAFAEL AVE**
**BELVEDERE, 94920**
**APN: 060-011-12**

| ISSUE: | DATE: |
|---|---|
| ISSUE FOR REVIEW | 08.19.21 |
| DESIGN REVIEW | 01.27.22 |
| REVISION 01 | 04.25.22 |

| | |
|---|---|
| DRAWN BY: | TL |
| DATE: | 01.27.22 |
| SHEET TITLE: | |

**IRRIGATION DETAILS**

SHEET NUMBER:

# L4.3

REV #: DATE:

## MARIN WATER
## WATER BUDGET & WATER USE CALCULATOR

| | |
|---|---|
| **Zip Code:** | 94920 |
| **Date:** | 6/15/2022 |
| **Project Name:** | UTTING OBRADAIGH RESIDENCE |
| **Project Address:** | 30 SAN RAFAEL AVE |
| **Project Contact:** | Brandon Farnworth-Komar |
| **Project Contact Email:** | brandon@brookwater.com |

| Maximum Applied Water Allowance (MAWA) | Project Type | ETo | ETAF | Special Landscape Area (SLA) | Total Landscape Area including SLA | MAWA (CCF/yr) |
|---|---|---|---|---|---|---|
| | Residential | 26.33 | 0.55 | - | 1,505 | **18** |

| Estimated Total Water Use (ETWU) | ETo | (SF * PF) / IE | SLA | ETWU (CCF/yr) |
|---|---|---|---|---|
| | 26.3 | 651 | - | **14** |

**Project meets water budget.** Difference between MAWA and ETWU: **4**

| ETWU Calculation (Regular landscape areas) | Zone # | Description | Irrigation Type | Hydrozone Area (SF) | Plant Water Use Classification | Irrigation Efficiency (IE) | (SF * PF) / IE |
|---|---|---|---|---|---|---|---|
| | 1 | Shrubs & Trees | Drip | 1,135 | Low | 0.81 | 420 |
| | 2 | Shrubs & Trees | Drip | 360 | Moderate | 0.81 | 222 |
| | 3 | Water Feature Water Feature or Po | | 10 | High | 1.00 | 8 |
| | 4 | | | | | | - |
| | 5 | | | | | | - |
| | 6 | | | | | | - |
| | | **Landscape area (not including SLA)** | | **1,505** | | | **651** |

| ETWU Calculation Special Landscape Areas (SLA) | Description | Hydrozone Area (SF) | Plant Factor / Irrigation Efficiency (PF/IE) | (SF * PF) / IE |
|---|---|---|---|---|
| | Edible planting area | | 1.0 | - |
| | Multi-use and sports field turf area | | 1.0 | - |
| | Area irrigated with recycled water | | 1.0 | - |
| | **Total SLA** | **00** | | |

| | |
|---|---|
| **Total Landscape Area (including SLA) from ETWU Calculation** | **1,505** |

| Water Use Table | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **ETWU** | Gallons: | 10,473 | Units: | 14 | AF: | 0.01 |
| | **Billing Period** | Jan/Feb | Mar/Apr | May/Jun | Jul/Aug | Sep/Oct | Nov/Dec |
| | **Baseline (CCF)** | 0 | 14 | 40 | | | |

**1 CCF (hundred cubic feet) = 748.05 gallons; 1 AF (acre foot) = 435.6 CCF**

MarinWater.org

### HYDROZONE SUMMARY

| *Hydrozone Description | Total Sq. Ft. | % of Landscape |
|---|---|---|
| Cool Season Turf (CST) | 0 | 0.0% |
| Warm Season Turf (WST) | 0 | 0.0% |
| High Water Use Plants (HW) | 0 | 0.0% |
| Bioretention Plants (BR) | 0 | 0.0% |
| Medium Water Use Plants (MW) | 360 | 23.9% |
| Low Water Use Plants (LW) | 1,135 | 75.4% |
| Very Low Water Use Plants (VLW) | 0 | 0.0% |
| Water Feature | 10 | 0.7% |
| Special Landscape Area (SLA) | 0 | 0.0% |
| **TOTAL** | 1,505 | 100.0% |

| **Irrigation Method | Total Sq. Ft. | % of Landscape |
|---|---|---|
| Rotor (FC-R, PC-R) | 0 | 0.0% |
| Multi-Stream Rotator (MR) | 0 | 0.0% |
| Spray (S) | 0 | 0.0% |
| Bubbler (B) | 1,099 | 73.5% |
| Drip (D) | 0 | 0.0% |
| In-Line Drip (DL) | 396 | 26.5% |
| Micro Spray (MS) | 0 | 0.0% |
| Other (O) | 0 | 0.0% |

### WATER EFFICIENT LANDSCAPE WORKSHEET

**Reference Evapotranspiration (Eto) 35.7**

| ZONE NO. | PLANT TYPE | HYDROZONE* (PLANT WATER USE) | PLANT FACTOR (PF) | IRRIGATION METHOD** | IRRIGATION EFFICIENCY (IE) | ETAF (PF/IE) | HYDROZONE ETAF x AREA (HA) (Sq Ft) | HA | ESTIMATED TOTAL WATER USE (ETWU) | % LANDSCAPE AREA |
|---|---|---|---|---|---|---|---|---|---|---|
| **REGULAR LANDSCAPE AREA** | | | | | | | | | | |
| C-1 | SHRUB | MW | 0.50 | B | 0.81 | 0.62 | 54 | 33 | 738 | 3.6% |
| C-2 | TREE | LW | 0.30 | B | 0.81 | 0.37 | 250 | 93 | 2,049 | 16.6% |
| C-3 | SHRUB | MW | 0.50 | B | 0.81 | 0.62 | 86 | 53 | 1,175 | 5.7% |
| C-4 | SHRUB | LW | 0.30 | B | 0.81 | 0.37 | 166 | 61 | 1,361 | 11.0% |
| C-5 | SHRUB | LW | 0.30 | DL | 0.81 | 0.37 | 396 | 147 | 3,246 | 26.3% |
| C-6 | TREE | LW | 0.30 | B | 0.81 | 0.37 | 212 | 79 | 1,738 | 14.1% |
| C-7 | SHRUB | MW | 0.50 | B | 0.81 | 0.62 | 107 | 66 | 1,462 | 7.1% |
| C-8 | TREE | LW | 0.30 | B | 0.81 | 0.37 | 36 | 13 | 295 | 2.4% |
| C-9 | SHRUB | LW | 0.30 | B | 0.81 | 0.37 | 75 | 28 | 615 | 5.0% |
| C-10 | SHRUB | MW | 0.50 | B | 0.81 | 0.62 | 113 | 70 | 1,544 | 7.5% |
| FOUNTAIN | | WF | 0.80 | | 1.00 | 0.80 | 10 | 8 | 177 | 0.7% |
| **TOTALS (REGULAR LANDSCAPE AREAS)** | | | | | | | **1,505** | **651** | **14,400** | **100.0%** |
| **SPECIAL LANDSCAPE AREA** | | | | | | | | | | |
| | 0 | | | 0 | | 1.00 | 0 | 0 | 0 | 0.0% |
| **TOTALS (SPECIAL LANDSCAPE AREAS)** | | | | | | | **0** | **0** | **0** | **0.0%** |

N

JANET S. LUEHRS Certified Irrigation Designer CID 4327A


# HTA!

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**UTTING OBRADAIGH RESIDENCE**

**30 SAN RAFAEL AVE**
**BELVEDERE, 94920**
**APN: 060-011-12**

| ISSUE: | DATE: |
|---|---|
| ISSUE FOR REVIEW | 08.19.21 |
| DESIGN REVIEW | 01.27.22 |
| REVISION 01 | 04.25.22 |

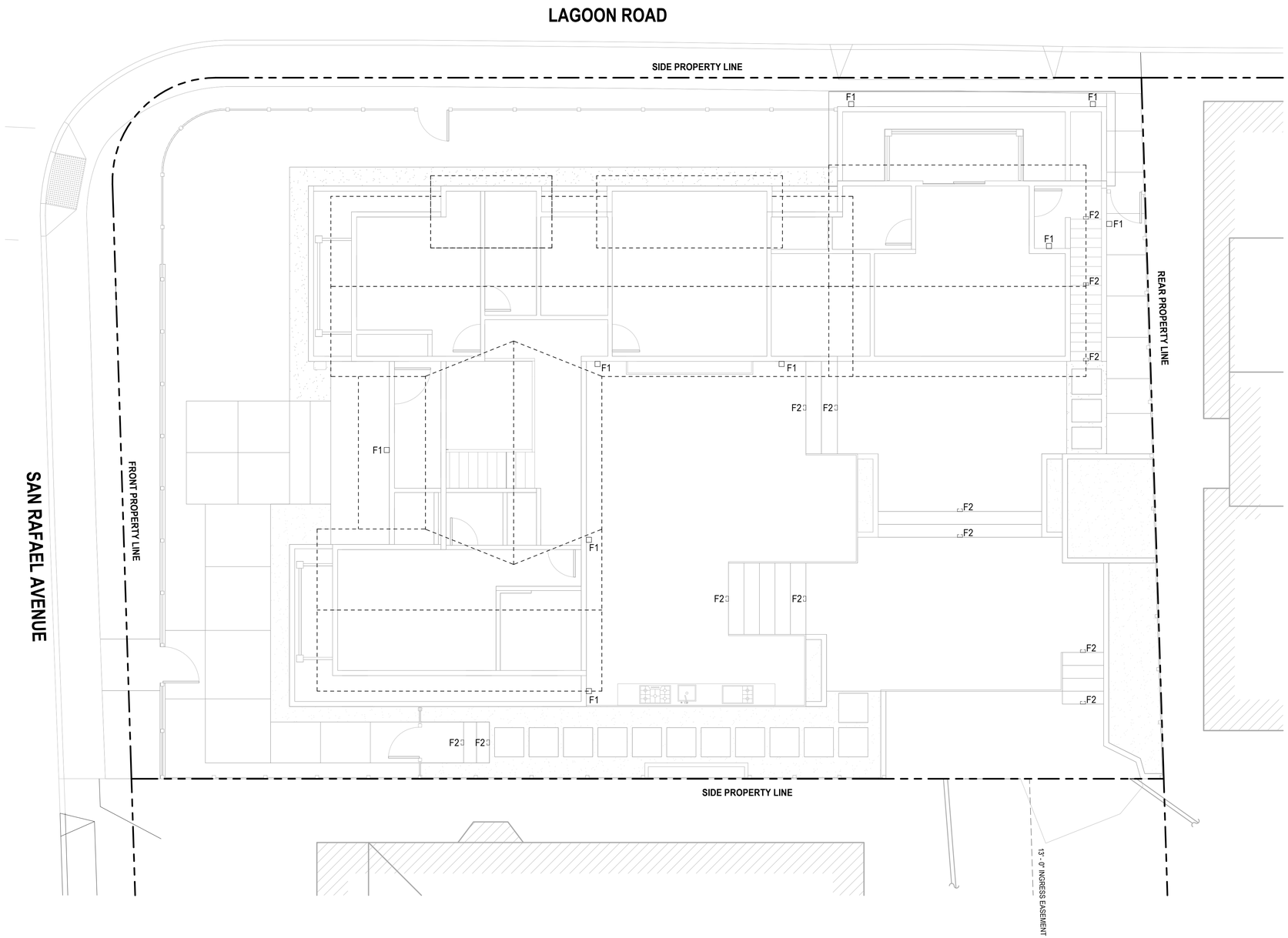
| | |
|---|---|
| **DRAWN BY:** | TL |
| **DATE:** | 01.27.22 |
| **SHEET TITLE:** | |

**IRRIGATION WATER CALCULATIONS**

**SHEET NUMBER:**

# L4.4

**REV #:** **DATE:**




1 SITE PLAN - EXTERIOR LIGHTING PLAN
SCALE: 3/16" = 1'-0"

## EXTERIOR LIGHTING SCHEDULE

| TYPE | MANUFACTURE | DECRIPTION |
|---|---|---|
| F1 | HINKLEY LIGHTING | KUBE 1768SK<br>WALL MOUNTED<br>DOWNLIGHT LATTERN |

SPECIFICATION & PHOTO

KUBE

SMALL DOWN LIGHT WALL MOUNT LANTERN

**1768SK**

A collection of sleek designs, Kube's contemporary style featuring solid aluminum construction provides a chic, minimalist statement to complement a variety of exteriors.

**FINISH**: Satin Black
**GLASS**: Etched Lens
**WIDTH**: 6"
**HEIGHT**: 6"
**DEPTH**: 0
**LIGHT SOURCE**: Integrated LED
**WATTAGE**: 7.50w LED *Included

HINKLEY

HINKLEY
33000 Pin Oak Parkway
Avon Lake, OH 44012

PHONE: (440) 653-5500
Toll Free: 1 (800) 446-5539

hinkley.com

| TYPE | MANUFACTURE | DECRIPTION |
|---|---|---|
| F2 | HINKLEY LIGHTING | TAPER DECK SCONCE |

SPECIFICATION & PHOTO

TAPER DECK SCONCE

TAPER DECK SCONCE 12V WIDE HORIZONTAL

**1557BZ**

Seamlessly blending into architectural elements inside or outside the home, the Taper series beautifully illuminates stairs, walkways or patio spaces to enhance the outdoor lighting experience

**FINISH**: Bronze
**GLASS**: Etched
**WIDTH**: 8"
**HEIGHT**: 3"
**LIGHT SOURCE**: Integrated LED
**WATTAGE**: 2.50w LED *Included
**TRANSFORMER REQUIRED**: Yes

HINKLEY

HINKLEY
33000 Pin Oak Parkway
Avon Lake, OH 44012

PHONE: (440) 653-5500
Toll Free: 1 (800) 446-5539

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LICENSED ARCHITECT MARK A. THOMAS NO. C-29445 EXP. 08-22 STATE OF CALIFORNIA

# UTTING OBRADAIGH RESIDENCE

**30 SAN RAFAEL AVE**
**BELVEDERE, 94920**
**APN: 060-011-12**

| ISSUE: | DATE: |
|---|---|
| ISSUE FOR REVIEW | 08.19.21 |
| DESIGN REVIEW | 01.27.22 |
| PLAN CHECK #1 | 07.26.22 |

| | |
|---|---|
| DRAWN BY: | TL |
| DATE: | 07.26.22 |
| SHEET TITLE: | |

## EXTERIOR LIGHTING PLAN

SHEET NUMBER:

# L5.0

REV #: DATE:

# APPENDIX B

# California Department of Fish and Wildlife, California Natural Diversity Database, 2024

# Selected Elements by Common Name

## California Department of Fish and Wildlife

## California Natural Diversity Database

**Query Criteria:** Quad IS (Richmond (3712283) OR Oakland West (3712273) OR Mare Island (3812213) OR Novato (3812215) OR Petaluma Point (3812214) OR San Francisco North (3712274) OR Point Bonita (3712275) OR San Quentin (3712284) OR San Rafael (3712285))

| Species | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|---|---|---|---|---|---|---|
| **adobe sanicle**<br>*Sanicula maritima* | PDAPI1Z0D0 | None | Rare | G2 | S2 | 1B.1 |
| **Alameda Island mole**<br>*Scapanus latimanus parvus* | AMABB02031 | None | None | G5T1Q | SH | SSC |
| **Alameda song sparrow**<br>*Melospiza melodia pusillula* | ABPBXA301S | None | None | G5T2T3 | S2 | SSC |
| **Alameda whipsnake**<br>*Masticophis lateralis euryxanthus* | ARADB21031 | Threatened | Threatened | G4T2 | S2 | |
| **alkali milk-vetch**<br>*Astragalus tener var. tener* | PDFAB0F8R1 | None | None | G2T1 | S1 | 1B.2 |
| **American badger**<br>*Taxidea taxus* | AMAJF04010 | None | None | G5 | S3 | SSC |
| **American peregrine falcon**<br>*Falco peregrinus anatum* | ABNKD06071 | Delisted | Delisted | G4T4 | S3S4 | |
| **Angel Island mole**<br>*Scapanus latimanus insularis* | AMABB02032 | None | None | G5T1 | S2? | |
| **bank swallow**<br>*Riparia riparia* | ABPAU08010 | None | Threatened | G5 | S3 | |
| **Bay checkerspot butterfly**<br>*Euphydryas editha bayensis* | IILEPK4055 | Threatened | None | G4G5T1 | S3 | |
| **beach layia**<br>*Layia carnosa* | PDAST5N010 | Threatened | Endangered | G2 | S2 | 1B.1 |
| **bent-flowered fiddleneck**<br>*Amsinckia lunaris* | PDBOR01070 | None | None | G3 | S3 | 1B.2 |
| **big free-tailed bat**<br>*Nyctinomops macrotis* | AMACD04020 | None | None | G5 | S3 | SSC |
| **black-crowned night heron**<br>*Nycticorax nycticorax* | ABNGA11010 | None | None | G5 | S4 | |
| **blue coast gilia**<br>*Gilia capitata ssp. chamissonis* | PDPLM040B3 | None | None | G5T2 | S2 | 1B.1 |
| **Bridges' coast range shoulderband**<br>*Helminthoglypta nickliniana bridgesi* | IMGASC2362 | None | None | G3T1 | S1S2 | |
| **bristly sedge**<br>*Carex comosa* | PMCYP032Y0 | None | None | G5 | S2 | 2B.1 |
| **bumblebee scarab beetle**<br>*Lichnanthe ursina* | IICOL67020 | None | None | G2 | S2 | |

| Species | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|---|---|---|---|---|---|---|
| **burrowing owl**<br>*Athene cunicularia* | ABNSB10010 | None | None | G4 | S2 | SSC |
| **California black rail**<br>*Laterallus jamaicensis coturniculus* | ABNME03041 | None | Threatened | G3T1 | S2 | FP |
| **California giant salamander**<br>*Dicamptodon ensatus* | AAAAH01020 | None | None | G2G3 | S2S3 | SSC |
| **California least tern**<br>*Sternula antillarum browni* | ABNNM08103 | Endangered | Endangered | G4T2T3Q | S2 | FP |
| **California red-legged frog**<br>*Rana draytonii* | AAABH01022 | Threatened | None | G2G3 | S2S3 | SSC |
| **California Ridgway's rail**<br>*Rallus obsoletus obsoletus* | ABNME05011 | Endangered | Endangered | G3T1 | S2 | FP |
| **California seablite**<br>*Suaeda californica* | PDCHE0P020 | Endangered | None | G1 | S1 | 1B.1 |
| **California tiger salamander - central California DPS**<br>*Ambystoma californiense pop. 1* | AAAAA01181 | Threatened | Threatened | G2G3T3 | S3 | WL |
| **callippe silverspot butterfly**<br>*Speyeria callippe callippe* | IILEPJ6091 | Endangered | None | G5T1 | S1 | |
| **Carquinez goldenbush**<br>*Isocoma arguta* | PDAST57050 | None | None | G1 | S1 | 1B.1 |
| **Caspian tern**<br>*Hydroprogne caspia* | ABNNM08020 | None | None | G5 | S4 | |
| **chaparral ragwort**<br>*Senecio aphanactis* | PDAST8H060 | None | None | G3 | S2 | 2B.2 |
| **Choris' popcornflower**<br>*Plagiobothrys chorisianus var. chorisianus* | PDBOR0V061 | None | None | G3T1Q | S1 | 1B.2 |
| **coastal bluff morning-glory**<br>*Calystegia purpurata ssp. saxicola* | PDCON040D2 | None | None | G4T2T3 | S2S3 | 1B.2 |
| **Coastal Brackish Marsh**<br>*Coastal Brackish Marsh* | CTT52200CA | None | None | G2 | S2.1 | |
| **Coastal Terrace Prairie**<br>*Coastal Terrace Prairie* | CTT41100CA | None | None | G2 | S2.1 | |
| **coastal triquetrella**<br>*Triquetrella californica* | NBMUS7S010 | None | None | G2 | S2 | 1B.2 |
| **coho salmon - central California coast ESU**<br>*Oncorhynchus kisutch pop. 4* | AFCHA02034 | Endangered | Endangered | G5T2Q | S2 | |
| **congested-headed hayfield tarplant**<br>*Hemizonia congesta ssp. congesta* | PDAST4R0W1 | None | None | G5T2 | S2 | 1B.2 |
| **Cooper's hawk**<br>*Accipiter cooperii* | ABNKC12040 | None | None | G5 | S4 | WL |
| **Crotch's bumble bee**<br>*Bombus crotchii* | IIHYM24480 | None | Candidate Endangered | G2 | S2 | |

| Species | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|---|---|---|---|---|---|---|
| **dark-eyed gilia**<br>*Gilia millefoliata* | PDPLM04130 | None | None | G2 | S2 | 1B.2 |
| **Delta smelt**<br>*Hypomesus transpacificus* | AFCHB01040 | Threatened | Endangered | G1 | S1 | |
| **Delta tule pea**<br>*Lathyrus jepsonii var. jepsonii* | PDFAB250D2 | None | None | G5T2 | S2 | 1B.2 |
| **Diablo helianthella**<br>*Helianthella castanea* | PDAST4M020 | None | None | G2 | S2 | 1B.2 |
| **double-crested cormorant**<br>*Nannopterum auritum* | ABNFD01020 | None | None | G5 | S4 | WL |
| **eulachon**<br>*Thaleichthys pacificus* | AFCHB04010 | Threatened | None | G5 | S1 | SSC |
| **foothill yellow-legged frog - north coast DPS**<br>*Rana boylii pop. 1* | AAABH01051 | None | None | G3T4 | S4 | SSC |
| **fragrant fritillary**<br>*Fritillaria liliacea* | PMLIL0V0C0 | None | None | G2 | S2 | 1B.2 |
| **Franciscan manzanita**<br>*Arctostaphylos franciscana* | PDERI040J3 | Endangered | None | GHC | S1 | 1B.1 |
| **Franciscan thistle**<br>*Cirsium andrewsii* | PDAST2E050 | None | None | G3 | S3 | 1B.2 |
| **great blue heron**<br>*Ardea herodias* | ABNGA04010 | None | None | G5 | S4 | |
| **great egret**<br>*Ardea alba* | ABNGA04040 | None | None | G5 | S4 | |
| **green sturgeon - southern DPS**<br>*Acipenser medirostris pop. 1* | AFCAA01031 | Threatened | None | G2T1 | S1 | SSC |
| **hairless popcornflower**<br>*Plagiobothrys glaber* | PDBOR0V0B0 | None | None | GX | SX | 1A |
| **hoary bat**<br>*Lasiurus cinereus* | AMACC05032 | None | None | G3G4 | S4 | |
| **island tube lichen**<br>*Hypogymnia schizidiata* | NLT0032640 | None | None | G2G3 | S2 | 1B.3 |
| **Kellogg's horkelia**<br>*Horkelia cuneata var. sericea* | PDROS0W043 | None | None | G4T1? | S1? | 1B.1 |
| **Lee's micro-blind harvestman**<br>*Microcina leei* | ILARA47040 | None | None | G1 | S1 | |
| **Loma Prieta hoita**<br>*Hoita strobilina* | PDFAB5Z030 | None | None | G2? | S2? | 1B.1 |
| **longfin smelt - San Francisco Bay-Delta DPS**<br>*Spirinchus thaleichthys pop. 2* | AFCHB03040 | Endangered | None | G5TNRQ | S1 | |
| **long-styled sand-spurrey**<br>*Spergularia macrotheca var. longistyla* | PDCAR0W062 | None | None | G5T2 | S2 | 1B.2 |

| Species | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|---|---|---|---|---|---|---|
| **Marin blind harvestman**<br>*Calicina diminua* | ILARAU8040 | None | None | G1 | S1 | |
| **Marin checker lily**<br>*Fritillaria lanceolata var. tristulis* | PMLIL0V0P1 | None | None | G5T2 | S2 | 1B.1 |
| **Marin County navarretia**<br>*Navarretia rosulata* | PDPLM0C0Z0 | None | None | G2 | S2 | 1B.2 |
| **Marin elfin butterfly**<br>*Callophrys mossii marinensis* | IILEPE2207 | None | None | G4T1 | S2 | |
| **Marin hesperian**<br>*Vespericola marinensis* | IMGASA4140 | None | None | G2 | S2 | |
| **Marin knotweed**<br>*Polygonum marinense* | PDPGN0L1C0 | None | None | G2Q | S2 | 3.1 |
| **Marin manzanita**<br>*Arctostaphylos virgata* | PDERI041K0 | None | None | G2 | S2 | 1B.2 |
| **Marin western flax**<br>*Hesperolinon congestum* | PDLIN01060 | Threatened | Threatened | G1 | S1 | 1B.1 |
| **marsh microseris**<br>*Microseris paludosa* | PDAST6E0D0 | None | None | G2 | S2 | 1B.2 |
| **marsh sandwort**<br>*Arenaria paludicola* | PDCAR040L0 | Endangered | Endangered | G1 | S1 | 1B.1 |
| **Mason's lilaeopsis**<br>*Lilaeopsis masonii* | PDAPI19030 | None | Rare | G2 | S2 | 1B.1 |
| **mimic tryonia (=California brackishwater snail)**<br>*Tryonia imitator* | IMGASJ7040 | None | None | G2 | S2 | |
| **minute pocket moss**<br>*Fissidens pauperculus* | NBMUS2W0U0 | None | None | G3? | S2 | 1B.2 |
| **Mission blue butterfly**<br>*Icaricia icarioides missionensis* | IILEPG801A | Endangered | None | G5T2 | S2 | |
| **monarch - California overwintering population**<br>*Danaus plexippus plexippus pop. 1* | IILEPP2012 | Candidate | None | G4T1T2Q | S2 | |
| **Mt. Tamalpais bristly jewelflower**<br>*Streptanthus glandulosus ssp. pulchellus* | PDBRA2G0J2 | None | None | G4T2 | S2 | 1B.2 |
| **Mt. Tamalpais manzanita**<br>*Arctostaphylos montana ssp. montana* | PDERI040J5 | None | None | G3T3 | S3 | 1B.3 |
| **Mt. Tamalpais thistle**<br>*Cirsium hydrophilum var. vaseyi* | PDAST2E1G2 | None | None | G2T1 | S1 | 1B.2 |
| **Napa false indigo**<br>*Amorpha californica var. napensis* | PDFAB08012 | None | None | G4T2 | S2 | 1B.2 |
| **North American porcupine**<br>*Erethizon dorsatum* | AMAFJ01010 | None | None | G5 | S3 | |
| **North Coast semaphore grass**<br>*Pleuropogon hooverianus* | PMPOA4Y070 | None | Threatened | G2 | S2 | 1B.1 |

| Species | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|---|---|---|---|---|---|---|
| **Northern Coastal Salt Marsh**<br>*Northern Coastal Salt Marsh* | CTT52110CA | None | None | G3 | S3.2 | |
| **northern harrier**<br>*Circus hudsonius* | ABNKC11011 | None | None | G5 | S3 | SSC |
| **Northern Maritime Chaparral**<br>*Northern Maritime Chaparral* | CTT37C10CA | None | None | G1 | S1.2 | |
| **northern meadow sedge**<br>*Carex praticola* | PMCYP03B20 | None | None | G5 | S2 | 2B.2 |
| **northwestern pond turtle**<br>*Actinemys marmorata* | ARAAD02031 | Proposed Threatened | None | G2 | SNR | SSC |
| **obscure bumble bee**<br>*Bombus caliginosus* | IIHYM24380 | None | None | G2G3 | S1S2 | |
| **Opler's longhorn moth**<br>*Adela oplerella* | IILEE0G040 | None | None | G2 | S2 | |
| **Oregon polemonium**<br>*Polemonium carneum* | PDPLM0E050 | None | None | G3G4 | S2 | 2B.2 |
| **osprey**<br>*Pandion haliaetus* | ABNKC01010 | None | None | G5 | S4 | WL |
| **oval-leaved viburnum**<br>*Viburnum ellipticum* | PDCPR07080 | None | None | G4G5 | S3 | 2B.3 |
| **Pacific walker**<br>*Pomatiopsis californica* | IMGASJ9020 | None | None | G1 | S1 | |
| **pallid bat**<br>*Antrozous pallidus* | AMACC10010 | None | None | G4 | S3 | SSC |
| **pallid manzanita**<br>*Arctostaphylos pallida* | PDERI04110 | Threatened | Endangered | G1 | S1 | 1B.1 |
| **Pheres blue butterfly**<br>*Icaricia icarioides pheres* | IILEPG8019 | None | None | G5TX | SX | |
| **Point Reyes checkerbloom**<br>*Sidalcea calycosa ssp. rhizomata* | PDMAL11012 | None | None | G5T2 | S2 | 1B.2 |
| **Point Reyes horkelia**<br>*Horkelia marinensis* | PDROS0W0B0 | None | None | G2 | S2 | 1B.2 |
| **Point Reyes jumping mouse**<br>*Zapus trinotatus orarius* | AMAFH01031 | None | None | G5T2 | S2 | SSC |
| **Point Reyes salty bird's-beak**<br>*Chloropyron maritimum ssp. palustre* | PDSCR0J0C3 | None | None | G4?T2 | S2 | 1B.2 |
| **Presidio clarkia**<br>*Clarkia franciscana* | PDONA050H0 | Endangered | Endangered | G1 | S1 | 1B.1 |
| **Presidio manzanita**<br>*Arctostaphylos montana ssp. ravenii* | PDERI040J2 | Endangered | Endangered | G3T1 | S1 | 1B.1 |
| **Robbins' broomrape**<br>*Aphyllon robbinsii* | PDORO040Q0 | None | None | G1 | S1 | 1B.1 |

| Species | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|---|---|---|---|---|---|---|
| **robust spineflower**<br>*Chorizanthe robusta var. robusta* | PDPGN040Q2 | Endangered | None | G2T1 | S1 | 1B.1 |
| **robust walker**<br>*Pomatiopsis binneyi* | IMGASJ9010 | None | None | G1 | S1 | |
| **rose leptosiphon**<br>*Leptosiphon rosaceus* | PDPLM09180 | None | None | G1 | S1 | 1B.1 |
| **round-headed collinsia**<br>*Collinsia corymbosa* | PDSCR0H060 | None | None | G1 | S1 | 1B.2 |
| **Sacramento perch**<br>*Archoplites interruptus* | AFCQB07010 | None | None | G1 | S1 | SSC |
| **Sacramento splittail**<br>*Pogonichthys macrolepidotus* | AFCJB34020 | None | None | G3 | S3 | SSC |
| **saline clover**<br>*Trifolium hydrophilum* | PDFAB400R5 | None | None | G2 | S2 | 1B.2 |
| **saltmarsh common yellowthroat**<br>*Geothlypis trichas sinuosa* | ABPBX1201A | None | None | G5T3 | S3 | SSC |
| **salt-marsh harvest mouse**<br>*Reithrodontomys raviventris* | AMAFF02040 | Endangered | Endangered | G1G2 | S3 | FP |
| **salt-marsh wandering shrew**<br>*Sorex vagrans halicoetes* | AMABA01071 | None | None | G5T1 | S1 | SSC |
| **San Francisco Bay Area leaf-cutter bee**<br>*Trachusa gummifera* | IIHYM80010 | None | None | G1 | S1 | |
| **San Francisco Bay spineflower**<br>*Chorizanthe cuspidata var. cuspidata* | PDPGN04081 | None | None | G2T1 | S1 | 1B.2 |
| **San Francisco campion**<br>*Silene verecunda ssp. verecunda* | PDCAR0U213 | None | None | G5T1 | S1 | 1B.2 |
| **San Francisco collinsia**<br>*Collinsia multicolor* | PDSCR0H0B0 | None | None | G2 | S2 | 1B.2 |
| **San Francisco gumplant**<br>*Grindelia hirsutula var. maritima* | PDAST470D3 | None | None | G5T1Q | S1 | 3.2 |
| **San Francisco lessingia**<br>*Lessingia germanorum* | PDAST5S010 | Endangered | Endangered | G1 | S1 | 1B.1 |
| **San Francisco owl's-clover**<br>*Triphysaria floribunda* | PDSCR2T010 | None | None | G2? | S2? | 1B.2 |
| **San Francisco popcornflower**<br>*Plagiobothrys diffusus* | PDBOR0V080 | None | Endangered | G1Q | S1 | 1B.1 |
| **San Joaquin spearscale**<br>*Extriplex joaquinana* | PDCHE041F3 | None | None | G2 | S2 | 1B.2 |
| **San Pablo song sparrow**<br>*Melospiza melodia samuelis* | ABPBXA301W | None | None | G5T2 | S2 | SSC |
| **San Pablo vole**<br>*Microtus californicus sanpabloensis* | AMAFF11034 | None | None | G5T1T2 | S1S2 | SSC |

| Species | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|---|---|---|---|---|---|---|
| **sandy beach tiger beetle**<br>*Cicindela hirticollis gravida* | IICOL02101 | None | None | G5T2 | S2 | |
| **Santa Cruz microseris**<br>*Stebbinsoseris decipiens* | PDAST6E050 | None | None | G2 | S2 | 1B.2 |
| **Santa Cruz tarplant**<br>*Holocarpha macradenia* | PDAST4X020 | Threatened | Endangered | G1 | S1 | 1B.1 |
| **Scouler's catchfly**<br>*Silene scouleri ssp. scouleri* | PDCAR0U1MC | None | None | G5T4T5 | S2S3 | 2B.2 |
| **Serpentine Bunchgrass**<br>*Serpentine Bunchgrass* | CTT42130CA | None | None | G2 | S2.2 | |
| **short-eared owl**<br>*Asio flammeus* | ABNSB13040 | None | None | G5 | S2 | SSC |
| **silver-haired bat**<br>*Lasionycteris noctivagans* | AMACC02010 | None | None | G3G4 | S3S4 | |
| **silverskin lichen**<br>*Dermatocarpon meiophyllizum* | NLTEST91L0 | None | None | G3G5 | S3 | 2B.3 |
| **small groundcone**<br>*Kopsiopsis hookeri* | PDORO01010 | None | None | G4? | S1S2 | 2B.3 |
| **snowy egret**<br>*Egretta thula* | ABNGA06030 | None | None | G5 | S4 | |
| **soft salty bird's-beak**<br>*Chloropyron molle ssp. molle* | PDSCR0J0D2 | Endangered | Rare | G2T1 | S1 | 1B.2 |
| **southern sea otter**<br>*Enhydra lutris nereis* | AMAJF09012 | Threatened | None | G4T2 | S3 | FP |
| **Steller sea lion**<br>*Eumetopias jubatus* | AMAJC03010 | Delisted | None | G3 | S2 | |
| **Suisun Marsh aster**<br>*Symphyotrichum lentum* | PDASTE8470 | None | None | G2 | S2 | 1B.2 |
| **Suisun shrew**<br>*Sorex ornatus sinuosus* | AMABA01103 | None | None | G5T1T2Q | S1S2 | SSC |
| **Tamalpais jewelflower**<br>*Streptanthus batrachopus* | PDBRA2G050 | None | None | G2 | S2 | 1B.3 |
| **Tamalpais lessingia**<br>*Lessingia micradenia var. micradenia* | PDAST5S063 | None | None | G2T2 | S2 | 1B.2 |
| **Tamalpais oak**<br>*Quercus parvula var. tamalpaisensis* | PDFAG051Q3 | None | None | G4T2 | S2 | 1B.3 |
| **thin-lobed horkelia**<br>*Horkelia tenuiloba* | PDROS0W0E0 | None | None | G2 | S2 | 1B.2 |
| **Thurber's reed grass**<br>*Calamagrostis crassiglumis* | PMPOA17070 | None | None | G5Q | S2 | 2B.1 |
| **Tiburon buckwheat**<br>*Eriogonum luteolum var. caninum* | PDPGN083S1 | None | None | G5T2 | S2 | 1B.2 |

| Species | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|---|---|---|---|---|---|---|
| **Tiburon jewelflower**<br>*Streptanthus glandulosus ssp. niger* | PDBRA2G0T0 | Endangered | Endangered | G4T1 | S1 | 1B.1 |
| **Tiburon mariposa-lily**<br>*Calochortus tiburonensis* | PMLIL0D1C0 | Threatened | Threatened | G1 | S1 | 1B.1 |
| **Tiburon micro-blind harvestman**<br>*Microcina tiburona* | ILARA47060 | None | None | G2 | S2 | |
| **Tiburon paintbrush**<br>*Castilleja affinis var. neglecta* | PDSCR0D013 | Endangered | Threatened | G4G5T1T2 | S1S2 | 1B.2 |
| **tidewater goby**<br>*Eucyclogobius newberryi* | AFCQN04010 | Endangered | None | G3 | S3 | SSC |
| **Townsend's big-eared bat**<br>*Corynorhinus townsendii* | AMACC08010 | None | None | G4 | S2 | SSC |
| **two-fork clover**<br>*Trifolium amoenum* | PDFAB40040 | Endangered | None | G1 | S1 | 1B.1 |
| **Ubick's gnaphosid spider**<br>*Talanites ubicki* | ILARA98030 | None | None | G1 | S1 | |
| **Valley Needlegrass Grassland**<br>*Valley Needlegrass Grassland* | CTT42110CA | None | None | G3 | S3.1 | |
| **water star-grass**<br>*Heteranthera dubia* | PMPON03010 | None | None | G5 | S2 | 2B.2 |
| **western bumble bee**<br>*Bombus occidentalis* | IIHYM24252 | None | Candidate Endangered | G3 | S1 | |
| **western leatherwood**<br>*Dirca occidentalis* | PDTHY03010 | None | None | G2 | S2 | 1B.2 |
| **western red bat**<br>*Lasiurus frantzii* | AMACC05080 | None | None | G4 | S3 | SSC |
| **western ridged mussel**<br>*Gonidea angulata* | IMBIV19010 | None | None | G3 | S2 | |
| **western snowy plover**<br>*Charadrius nivosus nivosus* | ABNNB03031 | Threatened | None | G3T3 | S3 | SSC |
| **white-rayed pentachaeta**<br>*Pentachaeta bellidiflora* | PDAST6X030 | Endangered | Endangered | G1 | S1 | 1B.1 |
| **white-tailed kite**<br>*Elanus leucurus* | ABNKC06010 | None | None | G5 | S3S4 | FP |
| **yellow rail**<br>*Coturnicops noveboracensis* | ABNME01010 | None | None | G4 | S2 | SSC |
| **yellow-headed blackbird**<br>*Xanthocephalus xanthocephalus* | ABPBXB3010 | None | None | G5 | S3 | SSC |

**Record Count: 163**

CNPS Rare Plant Inventory

## Search Results

86 matches found. Click on scientific name for details

Search Criteria: CRPR is one of [1A:1B:2A:2B:3] , 9-Quad include [3712283:3712273:3812213:3812215:3812214:3712274:3712275:3712284:3712285]

| COMMON NAME | ▲ SCIENTIFIC NAME | FAMILY | LIFEFORM | FED LIST | STATE LIST | CA RARE PLANT RANK | GENERAL HABITATS | MICROHABITATS | LOWEST ELEVATION (FT) | LOWEST ELEVATION (M) | HIGHEST ELEVATION (FT) | HIGHEST ELEVATION (M) | BLOOMING PERIOD | PHOTO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Franciscan onion | *Allium peninsulare* var. *franciscanum* | Alliaceae | perennial bulbiferous herb | None | None | 1B.2 | Cismontane woodland, Valley and foothill grassland | Clay, Serpentine (often), Volcanic | 170 | 52 | 1000 | 305 | (Apr)May-Jun |  © 2019 Aaron Arthur |
| Napa false indigo | *Amorpha californica* var. *napensis* | Fabaceae | perennial deciduous shrub | None | None | 1B.2 | Broadleafed upland forest (openings), Chaparral, Cismontane woodland | | 165 | 50 | 6560 | 2000 | Apr-Jul |  © 2016 John Doyen |
| bent-flowered fiddleneck | *Amsinckia lunaris* | Boraginaceae | annual herb | None | None | 1B.2 | Cismontane woodland, Coastal bluff scrub, Valley and foothill grassland | | 10 | 3 | 1640 | 500 | Mar-Jun |  © 2011 Neal Kramer |
| Robbins' broomrape | *Aphyllon robbinsii* | Orobanchaceae | annual herb (achlorophyllous) | None | None | 1B.1 | Coastal bluff scrub | Rocky, Sandy | 0 | 0 | 330 | 100 | Apr-Jul |  © 2017 Dylan Neubauer |
| Franciscan manzanita | *Arctostaphylos franciscana* | Ericaceae | perennial evergreen shrub | FE | None | 1B.1 | Coastal scrub (serpentinite) | | 195 | 60 | 985 | 300 | Feb-Apr |  © 2015 Neal Kramer |
| Mt. Tamalpais manzanita | *Arctostaphylos montana* ssp. *montana* | Ericaceae | perennial evergreen shrub | None | None | 1B.3 | Chaparral, Valley and foothill grassland | Rocky, Serpentine | 525 | 160 | 2495 | 760 | Feb-Apr |  © 2018 John Doyen |
| Presidio manzanita | *Arctostaphylos montana* ssp. *ravenii* | Ericaceae | perennial evergreen shrub | FE | CE | 1B.1 | Chaparral, Coastal prairie, Coastal scrub | Serpentine | 150 | 45 | 705 | 215 | Feb-Mar |  © 2019 Susan McDougall |
| pallid manzanita | *Arctostaphylos pallida* | Ericaceae | perennial evergreen shrub | FT | CE | 1B.1 | Broadleafed upland forest, Chaparral, Cismontane woodland, Closed-cone coniferous forest, Coastal scrub | Gravelly (sometimes), Sandy (sometimes) | 605 | 185 | 1525 | 465 | Dec-Mar | No Photo Available |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Marin manzanita | *Arctostaphylos virgata* | Ericaceae | perennial evergreen shrub | None | None | 1B.2 | Broadleafed upland forest, Chaparral, Closed-cone coniferous forest, North Coast coniferous forest | Granitic (sometimes), Sandstone (sometimes) | 195 | 60 | 2295 | 700 | Jan-Mar | No Photo Available |
| marsh sandwort | *Arenaria paludicola* | Caryophyllaceae | perennial stoloniferous herb | FE | CE | 1B.1 | Marshes and swamps (brackish, freshwater) | Openings, Sandy | 10 | 3 | 560 | 170 | May-Aug | No Photo Available |
| alkali milk-vetch | *Astragalus tener* var. *tener* | Fabaceae | annual herb | None | None | 1B.2 | Playas, Valley and foothill grassland (adobe clay), Vernal pools | Alkaline | 5 | 1 | 195 | 60 | Mar-Jun | No Photo Available |
| Thurber's reed grass | *Calamagrostis crassiglumis* | Poaceae | perennial rhizomatous herb | None | None | 2B.1 | Coastal scrub (mesic), Marshes and swamps (freshwater) | | 35 | 10 | 195 | 60 | May-Aug | No Photo Available |
| Tiburon mariposa-lily | *Calochortus tiburonensis* | Liliaceae | perennial bulbiferous herb | FT | CT | 1B.1 | Valley and foothill grassland (serpentinite) | | 165 | 50 | 490 | 150 | Mar-Jun | No Photo Available |
| coastal bluff morning-glory | *Calystegia purpurata* ssp. *saxicola* | Convolvulaceae | perennial herb | None | None | 1B.2 | Coastal bluff scrub, Coastal dunes, Coastal scrub, North Coast coniferous forest | | 0 | 0 | 345 | 105 | (Mar)Apr-Sep | No Photo Available |
| bristly sedge | *Carex comosa* | Cyperaceae | perennial rhizomatous herb | None | None | 2B.1 | Coastal prairie, Marshes and swamps (lake margins), Valley and foothill grassland | | 0 | 0 | 2050 | 625 | May-Sep |  Dean Wm. Taylor 1997 |
| northern meadow sedge | *Carex praticola* | Cyperaceae | perennial herb | None | None | 2B.2 | Meadows and seeps (mesic) | | 0 | 0 | 10500 | 3200 | May-Jul |  ©2013 Scot Loring |
| Tiburon paintbrush | *Castilleja affinis* var. *neglecta* | Orobanchaceae | perennial herb (hemiparasitic) | FE | CT | 1B.2 | Valley and foothill grassland (serpentinite) | | 195 | 60 | 1310 | 400 | Apr-Jun | No Photo Available |
| Point Reyes salty bird's-beak | *Chloropyron maritimum* ssp. *palustre* | Orobanchaceae | annual herb (hemiparasitic) | None | None | 1B.2 | Marshes and swamps (coastal salt) | | 0 | 0 | 35 | 10 | Jun-Oct |  ©2017 John Doyen |
| soft salty bird's-beak | *Chloropyron molle* ssp. *molle* | Orobanchaceae | annual herb (hemiparasitic) | FE | CR | 1B.2 | Marshes and swamps (coastal salt) | | 0 | 0 | 10 | 3 | Jun-Nov |  © 2014 John Doyen |

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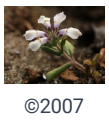
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| San Francisco Bay spineflower | *Chorizanthe cuspidata* var. *cuspidata* | Polygonaceae | annual herb | None | None | 1B.2 | Coastal bluff scrub, Coastal dunes, Coastal prairie, Coastal scrub | Sandy | 10 | 3 | 705 | 215 | Apr-Jul(Aug) | No Photo Available |
| robust spineflower | *Chorizanthe robusta* var. *robusta* | Polygonaceae | annual herb | FE | None | 1B.1 | Chaparral (maritime), Cismontane woodland (openings), Coastal dunes, Coastal scrub | Gravelly (sometimes), Sandy (sometimes) | 10 | 3 | 985 | 300 | Apr-Sep | No Photo Available |
| Franciscan thistle | *Cirsium andrewsii* | Asteraceae | perennial herb | None | None | 1B.2 | Broadleafed upland forest, Coastal bluff scrub, Coastal prairie, Coastal scrub | Mesic, Serpentine (sometimes) | 0 | 0 | 490 | 150 | Mar-Jul | No Photo Available |
| Mt. Tamalpais thistle | *Cirsium hydrophilum* var. *vaseyi* | Asteraceae | perennial herb | None | None | 1B.2 | Broadleafed upland forest, Chaparral, Meadows and seeps | Seeps, Serpentine | 785 | 240 | 2035 | 620 | May-Aug | No Photo Available |
| Presidio clarkia | *Clarkia franciscana* | Onagraceae | annual herb | FE | CE | 1B.1 | Coastal scrub, Valley and foothill grassland (serpentinite) | | 80 | 25 | 1100 | 335 | May-Jul | No Photo Available |
| round-headed collinsia | *Collinsia corymbosa* | Plantaginaceae | annual herb | None | None | 1B.2 | Coastal dunes | | 0 | 0 | 65 | 20 | Apr-Jun |  ©2007 Steve Matson |
| San Francisco collinsia | *Collinsia multicolor* | Plantaginaceae | annual herb | None | None | 1B.2 | Closed-cone coniferous forest, Coastal scrub | Serpentine (sometimes) | 100 | 30 | 900 | 275 | (Feb)Mar-May | No Photo Available |
| silverskin lichen | *Dermatocarpon meiophyllizum* | Verrucariaceae | foliose lichen (aquatic) | None | None | 2B.3 | Coastal prairie, Lower montane coniferous forest, North Coast coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest | Lake Margins, Rocky, Streambanks | 970 | 295 | 11465 | 3495 | | No Photo Available |

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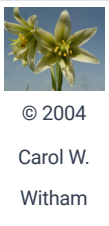
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| western leatherwood | *Dirca occidentalis* | Thymelaeaceae | perennial deciduous shrub | None | None | 1B.2 | Broadleafed upland forest, Chaparral, Cismontane woodland, Closed-cone coniferous forest, North Coast coniferous forest, Riparian forest, Riparian woodland | Mesic | 80 | 25 | 1395 | 425 | Jan-Mar(Apr) |  © 2017 Steve Matson |
| marsh horsetail | *Equisetum palustre* | Equisetaceae | perennial rhizomatous herb | None | None | 3 | Marshes and swamps | | 150 | 45 | 3280 | 1000 | Unk | No Photo Available |
| Tiburon buckwheat | *Eriogonum luteolum* var. *caninum* | Polygonaceae | annual herb | None | None | 1B.2 | Chaparral, Cismontane woodland, Coastal prairie, Valley and foothill grassland | Gravelly, Sandy, Serpentine | 0 | 0 | 2295 | 700 | May-Sep | No Photo Available |
| San Joaquin spearscale | *Extriplex joaquinana* | Chenopodiaceae | annual herb | None | None | 1B.2 | Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland | Alkaline | 5 | 1 | 2740 | 835 | Apr-Oct | No Photo Available |
| minute pocket moss | *Fissidens pauperculus* | Fissidentaceae | moss | None | None | 1B.2 | North Coast coniferous forest (damp coastal soil) | | 35 | 10 | 3360 | 1024 | |  ©2021 Scot Loring |
| Marin checker lily | *Fritillaria lanceolata* var. *tristulis* | Liliaceae | perennial bulbiferous herb | None | None | 1B.1 | Coastal bluff scrub, Coastal prairie, Coastal scrub | | 50 | 15 | 490 | 150 | Feb-May |  © 2020 Barry Rice |
| fragrant fritillary | *Fritillaria liliacea* | Liliaceae | perennial bulbiferous herb | None | None | 1B.2 | Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland | Serpentine (often) | 10 | 3 | 1345 | 410 | Feb-Apr |  © 2004 Carol W. Witham |
| blue coast gilia | *Gilia capitata* ssp. *chamissonis* | Polemoniaceae | annual herb | None | None | 1B.1 | Coastal dunes, Coastal scrub | | 5 | 2 | 655 | 200 | Apr-Jul |  © 2017 John Doyen |
| dark-eyed gilia | *Gilia millefoliata* | Polemoniaceae | annual herb | None | None | 1B.2 | Coastal dunes | | 5 | 2 | 100 | 30 | Apr-Jul |  © 2017 John Doyen |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| San Francisco gumplant | *Grindelia hirsutula* var. *maritima* | Asteraceae | perennial herb | None | None | 3.2 | Coastal bluff scrub, Coastal scrub, Valley and foothill grassland | Sandy (sometimes), Serpentine (sometimes) | 50 | 15 | 1310 | 400 | Jun-Sep |  Robert Potts © 2001 California Academy of Sciences |
| Diablo helianthella | *Helianthella castanea* | Asteraceae | perennial herb | None | None | 1B.2 | Broadleafed upland forest, Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland, Valley and foothill grassland | Rocky (usually) | 195 | 60 | 4265 | 1300 | Mar-Jun |  © 2013 Christopher Bronny |
| congested-headed hayfield tarplant | *Hemizonia congesta* ssp. *congesta* | Asteraceae | annual herb | None | None | 1B.2 | Valley and foothill grassland | Roadsides (sometimes) | 65 | 20 | 1835 | 560 | Apr-Nov |  © 2015 Vernon Smith |
| Marin western flax | *Hesperolinon congestum* | Linaceae | annual herb | FT | CT | 1B.1 | Chaparral, Valley and foothill grassland | Serpentine | 15 | 5 | 1215 | 370 | Apr-Jul |  © 2009 Neal Kramer |
| water star-grass | *Heteranthera dubia* | Pontederiaceae | perennial herb (aquatic) | None | None | 2B.2 | Marshes and swamps (alkaline, still, slow-moving water) | Alkaline | 100 | 30 | 4905 | 1495 | Jul-Oct |  ©2010 Louis-M. Landry |
| Loma Prieta hoita | *Hoita strobilina* | Fabaceae | perennial herb | None | None | 1B.1 | Chaparral, Cismontane woodland, Riparian woodland | Mesic, Serpentine (usually) | 100 | 30 | 2820 | 860 | May-Jul(Aug-Oct) |  © 2004 Janell Hillman |
| Santa Cruz tarplant | *Holocarpha macradenia* | Asteraceae | annual herb | FT | CE | 1B.1 | Coastal prairie, Coastal scrub, Valley and foothill grassland | Clay (often), Sandy | 35 | 10 | 720 | 220 | Jun-Oct |  © 2011 Dylan Neubauer |
| Kellogg's horkelia | *Horkelia cuneata* var. *sericea* | Rosaceae | perennial herb | None | None | 1B.1 | Chaparral (maritime), Closed-cone coniferous forest, Coastal dunes, Coastal scrub | Gravelly (sometimes), Openings, Sandy (sometimes) | 35 | 10 | 655 | 200 | Apr-Sep |  © 2018 Neal Kramer |
| Point Reyes horkelia | *Horkelia marinensis* | Rosaceae | perennial herb | None | None | 1B.2 | Coastal dunes, Coastal prairie, Coastal scrub | Sandy | 15 | 5 | 2475 | 755 | May-Sep |  © 2017 John Doyen |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| thin-lobed horkelia | *Horkelia tenuiloba* | Rosaceae | perennial herb | None | None | 1B.2 | Broadleafed upland forest, Chaparral, Valley and foothill grassland | Mesic, Openings, Sandy | 165 | 50 | 1640 | 500 | May-Jul(Aug) |  © 1994 Doreen L. Smith |
| island tube lichen | *Hypogymnia schizidiata* | Parmeliaceae | foliose lichen | None | None | 1B.3 | Chaparral, Closed-cone coniferous forest | | 1180 | 360 | 1330 | 405 | | No Photo Available |
| Carquinez goldenbush | *Isocoma arguta* | Asteraceae | perennial shrub | None | None | 1B.1 | Valley and foothill grassland (alkaline) | | 5 | 1 | 65 | 20 | Aug-Dec | No Photo Available |
| small groundcone | *Kopsiopsis hookeri* | Orobanchaceae | perennial rhizomatous herb (parasitic) | None | None | 2B.3 | Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest | | 295 | 90 | 2905 | 885 | Apr-Aug |  ©2016 Vernon Smith |
| Delta tule pea | *Lathyrus jepsonii* var. *jepsonii* | Fabaceae | perennial herb | None | None | 1B.2 | Marshes and swamps (brackish, freshwater) | | 0 | 0 | 15 | 5 | May-Jul(Aug-Sep) |  © 2003 Mark Fogiel |
| beach layia | *Layia carnosa* | Asteraceae | annual herb | FT | CE | 1B.1 | Coastal dunes, Coastal scrub (sandy) | | 0 | 0 | 195 | 60 | Mar-Jul |  © 2007 Aaron Schusteff |
| rose leptosiphon | *Leptosiphon rosaceus* | Polemoniaceae | annual herb | None | None | 1B.1 | Coastal bluff scrub | | 0 | 0 | 330 | 100 | Apr-Jul |  © 2013 Aaron Schusteff |
| San Francisco lessingia | *Lessingia germanorum* | Asteraceae | annual herb | FE | CE | 1B.1 | Coastal scrub (remnant dunes) | | 80 | 25 | 360 | 110 | (Jun)Jul-Nov |  © 2019 Aaron Schusteff |
| woolly-headed lessingia | *Lessingia hololeuca* | Asteraceae | annual herb | None | None | 3 | Broadleafed upland forest, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland | Clay, Serpentine | 50 | 15 | 1000 | 305 | Jun-Oct |  © 2015 Aaron Schusteff |
| Tamalpais lessingia | *Lessingia micradenia* var. *micradenia* | Asteraceae | annual herb | None | None | 1B.2 | Chaparral, Valley and foothill grassland | Roadsides (often), Serpentine (usually) | 330 | 100 | 1640 | 500 | (Jun)Jul-Oct |  © 2015 Vernon Smith |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mason's lilaeopsis | *Lilaeopsis masonii* | Apiaceae | perennial rhizomatous herb | None | CR | 1B.1 | Marshes and swamps (brackish, freshwater), Riparian scrub | | 0 | 0 | 35 | 10 | Apr-Nov | No Photo Available |
| Mt. Diablo cottonweed | *Micropus amphibolus* | Asteraceae | annual herb | None | None | 3.2 | Broadleafed upland forest, Chaparral, Cismontane woodland, Valley and foothill grassland | Rocky | 150 | 45 | 2705 | 825 | Mar-May |  © 2008 Aaron Arthur |
| marsh microseris | *Microseris paludosa* | Asteraceae | perennial herb | None | None | 1B.2 | Cismontane woodland, Closed-cone coniferous forest, Coastal scrub, Valley and foothill grassland | | 15 | 5 | 1165 | 355 | Apr-Jun(Jul) | No Photo Available |
| Baker's navarretia | *Navarretia leucocephala* ssp. *bakeri* | Polemoniaceae | annual herb | None | None | 1B.1 | Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland, Vernal pools | Mesic | 15 | 5 | 5710 | 1740 | Apr-Jul |  © 2018 Barry Rice |
| Marin County navarretia | *Navarretia rosulata* | Polemoniaceae | annual herb | None | None | 1B.2 | Chaparral, Closed-cone coniferous forest | Rocky, Serpentine | 655 | 200 | 2085 | 635 | May-Jul | No Photo Available |
| white-rayed pentachaeta | *Pentachaeta bellidiflora* | Asteraceae | annual herb | FE | CE | 1B.1 | Cismontane woodland, Valley and foothill grassland (often serpentinite) | | 115 | 35 | 2035 | 620 | Mar-May | No Photo Available |
| Choris' popcornflower | *Plagiobothrys chorisianus* var. *chorisianus* | Boraginaceae | annual herb | None | None | 1B.2 | Chaparral, Coastal prairie, Coastal scrub | Mesic | 10 | 3 | 525 | 160 | Mar-Jun | No Photo Available |
| San Francisco popcornflower | *Plagiobothrys diffusus* | Boraginaceae | annual herb | None | CE | 1B.1 | Coastal prairie, Valley and foothill grassland | | 195 | 60 | 1180 | 360 | Mar-Jun | No Photo Available |
| hairless popcornflower | *Plagiobothrys glaber* | Boraginaceae | annual herb | None | None | 1A | Marshes and swamps (coastal salt), Meadows and seeps (alkaline) | | 50 | 15 | 590 | 180 | Mar-May | No Photo Available |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| North Coast semaphore grass | *Pleuropogon hooverianus* | Poaceae | perennial rhizomatous herb | None | CT | 1B.1 | Broadleafed upland forest, Meadows and seeps, North Coast coniferous forest | Mesic, Openings | 35 | 10 | 2200 | 671 | Apr-Jun | No Photo Available |
| Oregon polemonium | *Polemonium carneum* | Polemoniaceae | perennial herb | None | None | 2B.2 | Coastal prairie, Coastal scrub, Lower montane coniferous forest | | 0 | 0 | 6005 | 1830 | Apr-Sep |  ©2018 John Doyen |
| Marin knotweed | *Polygonum marinense* | Polygonaceae | annual herb | None | None | 3.1 | Marshes and swamps (brackish, coastal salt) | | 0 | 0 | 35 | 10 | (Apr)May-Aug(Oct) | No Photo Available |
| Tamalpais oak | *Quercus parvula* var. *tamalpaisensis* | Fagaceae | perennial evergreen shrub | None | None | 1B.3 | Lower montane coniferous forest | | 330 | 100 | 2460 | 750 | Mar-Apr | No Photo Available |
| Sanford's arrowhead | *Sagittaria sanfordii* | Alismataceae | perennial rhizomatous herb (emergent) | None | None | 1B.2 | Marshes and swamps (shallow freshwater) | | 0 | 0 | 2135 | 650 | May-Oct(Nov) |  ©2013 Debra L. Cook |
| adobe sanicle | *Sanicula maritima* | Apiaceae | perennial herb | None | CR | 1B.1 | Chaparral, Coastal prairie, Meadows and seeps, Valley and foothill grassland | Clay, Serpentine | 100 | 30 | 785 | 240 | Feb-May | No Photo Available |
| chaparral ragwort | *Senecio aphanactis* | Asteraceae | annual herb | None | None | 2B.2 | Chaparral, Cismontane woodland, Coastal scrub | Alkaline (sometimes) | 50 | 15 | 2625 | 800 | Jan-Apr(May) | No Photo Available |
| Point Reyes checkerbloom | *Sidalcea calycosa* ssp. *rhizomata* | Malvaceae | perennial rhizomatous herb | None | None | 1B.2 | Marshes and swamps (freshwater, near coast) | | 10 | 3 | 245 | 75 | Apr-Sep | No Photo Available |
| Scouler's catchfly | *Silene scouleri* ssp. *scouleri* | Caryophyllaceae | perennial herb | None | None | 2B.2 | Coastal bluff scrub, Coastal prairie, Valley and foothill grassland | | 0 | 0 | 1970 | 600 | (Mar-May)Jun-Aug(Sep) |  ©2015 Vernon Smith |
| San Francisco campion | *Silene verecunda* ssp. *verecunda* | Caryophyllaceae | perennial herb | None | None | 1B.2 | Chaparral, Coastal bluff scrub, Coastal prairie, Coastal scrub, Valley and foothill grassland | Sandy | 100 | 30 | 2115 | 645 | (Feb)Mar-Jul(Aug) | No Photo Available |
| long-styled sand-spurrey | *Spergularia macrotheca* var. *longistyla* | Caryophyllaceae | perennial herb | None | None | 1B.2 | Marshes and swamps, Meadows and seeps | Alkaline | 0 | 0 | 835 | 255 | Feb-May | No Photo Available |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Santa Cruz microseris | *Stebbinsoseris decipiens* | Asteraceae | annual herb | None | None | 1B.2 | Broadleafed upland forest, Chaparral, Closed-cone coniferous forest, Coastal prairie, Coastal scrub, Valley and foothill grassland | Openings, Serpentine (sometimes) | 35 | 10 | 1640 | 500 | Apr-May | No Photo Available |
| Tamalpais jewelflower | *Streptanthus batrachopus* | Brassicaceae | annual herb | None | None | 1B.3 | Chaparral, Closed-cone coniferous forest | Serpentine | 1000 | 305 | 2135 | 650 | Apr-Jul |  © 2012 Aaron Schusteff |
| Tiburon jewelflower | *Streptanthus glandulosus* ssp. *niger* | Brassicaceae | annual herb | FE | CE | 1B.1 | Valley and foothill grassland (serpentinite) | | 100 | 30 | 490 | 150 | May-Jun | No Photo Available |
| Mt. Tamalpais bristly jewelflower | *Streptanthus glandulosus* ssp. *pulchellus* | Brassicaceae | annual herb | None | None | 1B.2 | Chaparral, Valley and foothill grassland | Serpentine | 490 | 150 | 2625 | 800 | May-Jul(Aug) | No Photo Available |
| California seablite | *Suaeda californica* | Chenopodiaceae | perennial evergreen shrub | FE | None | 1B.1 | Marshes and swamps (coastal salt) | | 0 | 0 | 50 | 15 | Jul-Oct |  © 2010 Chris Winchell |
| Suisun Marsh aster | *Symphyotrichum lentum* | Asteraceae | perennial rhizomatous herb | None | None | 1B.2 | Marshes and swamps (brackish, freshwater) | | 0 | 0 | 10 | 3 | (Apr)May-Nov | No Photo Available |
| two-fork clover | *Trifolium amoenum* | Fabaceae | annual herb | FE | None | 1B.1 | Coastal bluff scrub, Valley and foothill grassland (sometimes serpentinite) | | 15 | 5 | 1360 | 415 | Apr-Jun | No Photo Available |
| saline clover | *Trifolium hydrophilum* | Fabaceae | annual herb | None | None | 1B.2 | Marshes and swamps, Valley and foothill grassland (mesic, alkaline), Vernal pools | | 0 | 0 | 985 | 300 | Apr-Jun |  © 2005 Dean Wm Taylor |
| San Francisco owl's-clover | *Triphysaria floribunda* | Orobanchaceae | annual herb | None | None | 1B.2 | Coastal prairie, Coastal scrub, Valley and foothill grassland | Serpentine (usually) | 35 | 10 | 525 | 160 | Apr-Jun | No Photo Available |
| coastal triquetrella | *Triquetrella californica* | Pottiaceae | moss | None | None | 1B.2 | Coastal bluff scrub, Coastal scrub | | 35 | 10 | 330 | 100 | | No Photo Available |
| oval-leaved viburnum | *Viburnum ellipticum* | Viburnaceae | perennial deciduous shrub | None | None | 2B.3 | Chaparral, Cismontane woodland, Lower montane coniferous forest | | 705 | 215 | 4595 | 1400 | May-Jun |  © 2006 Tom Engstrom |

Showing 1 to 86 of 86 entries

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# IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.



## Location

Marin County, California


## Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

# Endangered species

**This resource list is for informational purposes only and does not constitute an analysis of project level impacts.**

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

# Mammals

| NAME | STATUS |
|---|---|
| Salt Marsh Harvest Mouse Reithrodontomys raviventris<br>Wherever found<br>No critical habitat has been designated for this species.<br>https://ecos.fws.gov/ecp/species/613 | Endangered |

# Birds

| NAME | STATUS |
|---|---|
| California Least Tern Sternula antillarum browni<br>Wherever found<br>No critical habitat has been designated for this species.<br>https://ecos.fws.gov/ecp/species/8104 | Endangered |
| California Ridgway''s Rail Rallus obsoletus obsoletus<br>Wherever found<br>No critical habitat has been designated for this species.<br>https://ecos.fws.gov/ecp/species/4240 | Endangered |
| Western Snowy Plover Charadrius nivosus nivosus<br>There is **final** critical habitat for this species. Your location does not overlap the critical habitat.<br>https://ecos.fws.gov/ecp/species/8035 | Threatened |

# Reptiles

| NAME | STATUS |
|---|---|
| Green Sea Turtle Chelonia mydas<br>No critical habitat has been designated for this species.<br>https://ecos.fws.gov/ecp/species/6199 | Threatened |

# Amphibians

| NAME | STATUS |
|---|---|

California Red-legged Frog Rana draytonii — Threatened

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

https://ecos.fws.gov/ecp/species/2891

# Fishes

| NAME | STATUS |
|---|---|

Tidewater Goby Eucyclogobius newberryi — Endangered

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

https://ecos.fws.gov/ecp/species/57

# Insects

| NAME | STATUS |
|---|---|

Monarch Butterfly Danaus plexippus — Candidate

Wherever found

No critical habitat has been designated for this species.

https://ecos.fws.gov/ecp/species/9743

# Flowering Plants

| NAME | STATUS |
|---|---|

California Seablite Suaeda californica — Endangered

No critical habitat has been designated for this species.

https://ecos.fws.gov/ecp/species/6310

Marin Dwarf-flax Hesperolinon congestum — Threatened

Wherever found

No critical habitat has been designated for this species.

https://ecos.fws.gov/ecp/species/5363

Showy Indian Clover Trifolium amoenum — Endangered

Wherever found

No critical habitat has been designated for this species.

https://ecos.fws.gov/ecp/species/6459

Tiburon Jewelflower Streptanthus niger — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/4187

Tiburon Mariposa Lily Calochortus tiburonensis — Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/2858

Tiburon Paintbrush Castilleja affinis ssp. neglecta — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/2687

White-rayed Pentachaeta Pentachaeta bellidiflora — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/7782



## Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

# Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are likely bald eagles present in your project area. For additional information on bald eagles, refer to Bald Eagle Nesting and Sensitivity to Human Activity

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

| NAME | BREEDING SEASON |
|---|---|
| Bald Eagle *Haliaeetus leucocephalus*<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.<br>https://ecos.fws.gov/ecp/species/1626 | Breeds Jan 1 to Aug 31 |
| Golden Eagle *Aquila chrysaetos*<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.<br>https://ecos.fws.gov/ecp/species/1680 | Breeds Jan 1 to Aug 31 |



# Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

**Probability of Presence** (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

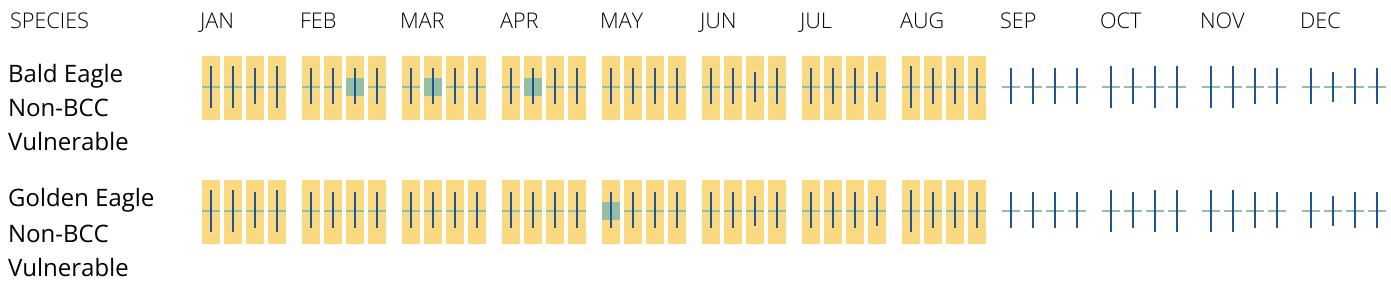
**Breeding Season** (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

**Survey Effort** (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

**No Data** (–)
A week is marked as having no data if there were no survey events for that week.

**Survey Timeframe**
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.




**What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?**

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

**What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?**

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

**What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

# Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

**The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location.** To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

| NAME | BREEDING SEASON |
|---|---|
| Allen's Hummingbird Selasphorus sasin<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/9637 | Breeds Feb 1 to Jul 15 |

Bald Eagle Haliaeetus leucocephalus — Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1626

Belding's Savannah Sparrow Passerculus sandwichensis beldingi — Breeds Apr 1 to Aug 15

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/8

Black Oystercatcher Haematopus bachmani — Breeds Apr 15 to Oct 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9591

Black Swift Cypseloides niger — Breeds Jun 15 to Sep 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8878

Black Turnstone Arenaria melanocephala — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Brandt's Cormorant Urile penicillatus — Breeds Apr 15 to Sep 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Bullock's Oriole Icterus bullockii — Breeds Mar 21 to Jul 25

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

California Gull Larus californicus — Breeds Mar 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

California Spotted Owl Strix occidentalis occidentalis — Breeds Mar 10 to Jun 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Clark's Grebe *Aechmophorus clarkii* — Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Common Yellowthroat *Geothlypis trichas sinuosa* — Breeds May 20 to Jul 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

Elegant Tern *Thalasseus elegans* — Breeds Apr 5 to Aug 5

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/8561

Golden Eagle *Aquila chrysaetos* — Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Heermann's Gull *Larus heermanni* — Breeds Mar 15 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Marbled Godwit *Limosa fedoa* — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9481

Northern Harrier *Circus hudsonius* — Breeds Apr 1 to Sep 15

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/8350

Nuttall's Woodpecker *Dryobates nuttallii* — Breeds Apr 1 to Jul 20

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse *Baeolophus inornatus* — Breeds Mar 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Olive-sided Flycatcher *Contopus cooperi* — Breeds May 20 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Red Knot *Calidris canutus roselaari* — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8880

Santa Barbara Song Sparrow *Melospiza melodia graminea* — Breeds Mar 1 to Sep 5

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/5513

Short-billed Dowitcher *Limnodromus griseus* — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

Tricolored Blackbird *Agelaius tricolor* — Breeds Mar 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Western Grebe *aechmophorus occidentalis* — Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/6743

Western Gull *Larus occidentalis* — Breeds Apr 21 to Aug 25

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Western Screech-owl *Megascops kennicottii cardonensis* — Breeds Mar 1 to Jun 30

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

| | |
|---|---|
| Willet Tringa semipalmata<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds elsewhere |
| Wrentit Chamaea fasciata<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds Mar 15 to Aug 10 |

# Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

**Probability of Presence** (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

**Breeding Season** (■)

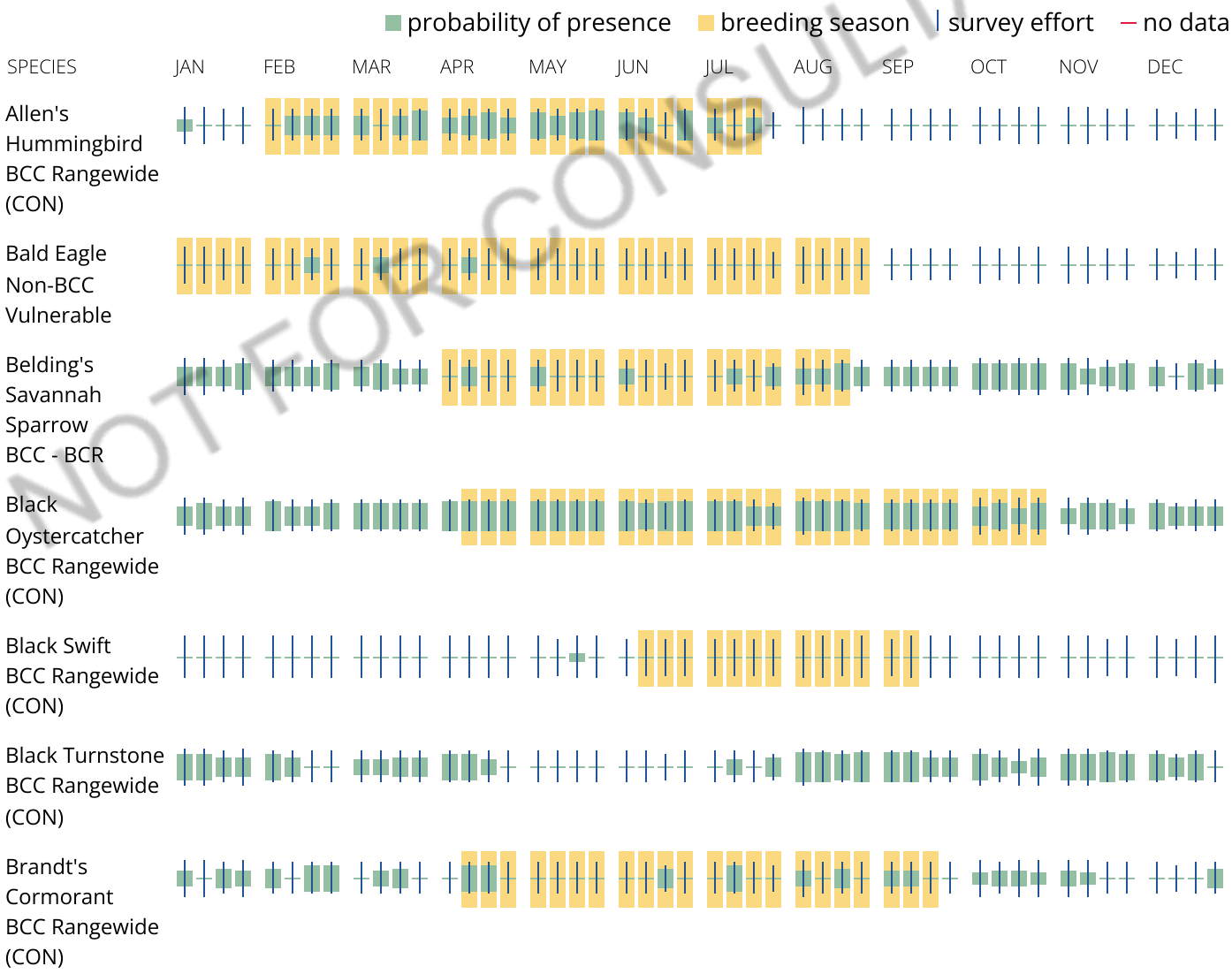
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

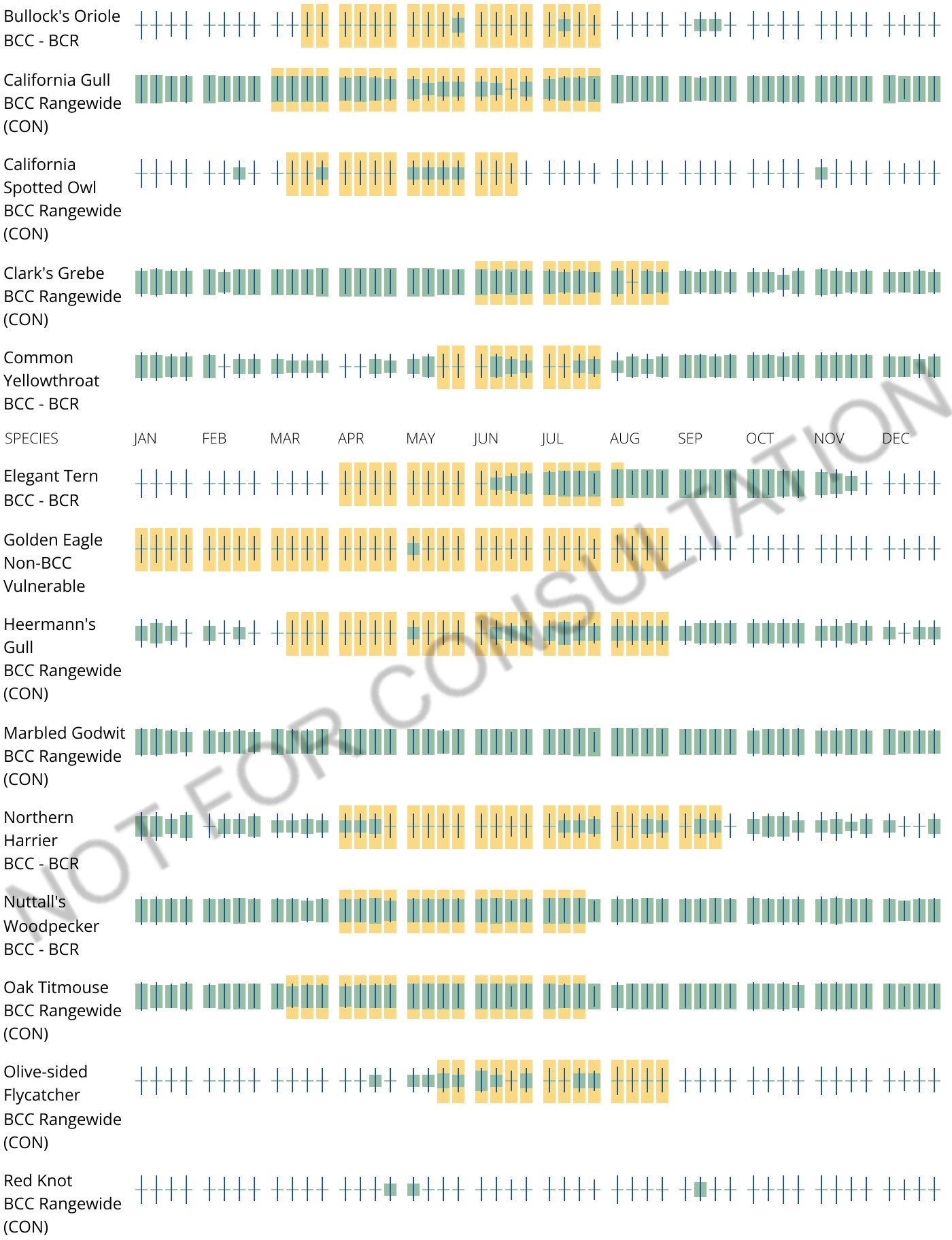
**Survey Effort** (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

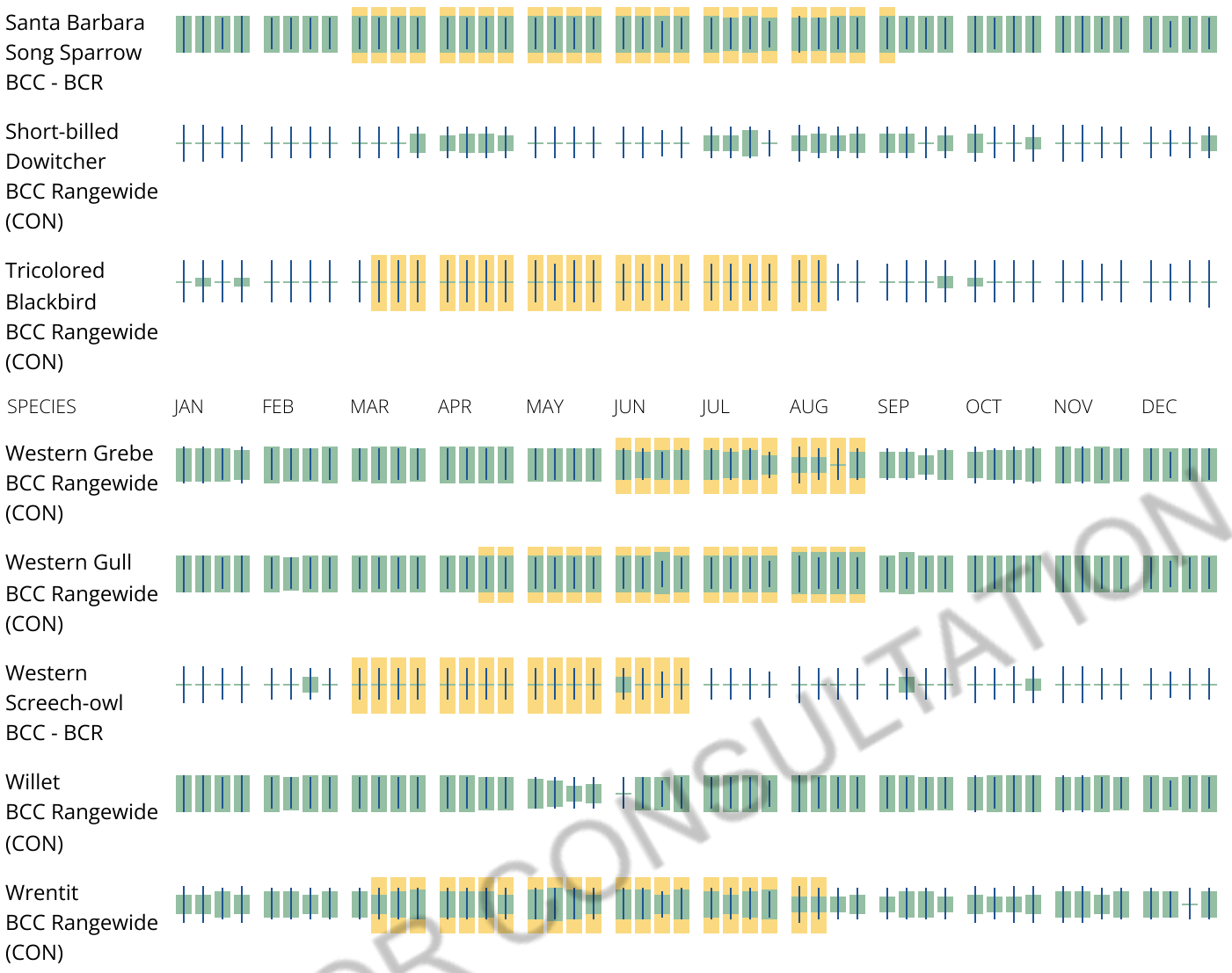
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

**No Data** (–)
A week is marked as having no data if there were no survey events for that week.

**Survey Timeframe**
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.










**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?**

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid

cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

**What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

**How do I know if a bird is breeding, wintering or migrating in my area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

**What are the levels of concern for migratory birds?**

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

**Details about birds that are potentially affected by offshore projects**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to

you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

**What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

**Proper Interpretation and Use of Your Migratory Bird Report**

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.



# Facilities

## National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

### There are no refuge lands at this location.

# Fish hatcheries

There are no fish hatcheries at this location.

# Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

## This location did not intersect any wetlands mapped by NWI.

**NOTE:** This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.



### Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

### Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

**Data precautions**

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

# APPENDIX C

## Geotechnical Investigation, Murray Engineers, Inc., May 2022

# GEOTECHNICAL INVESTIGATION
# BRADY NEW RESIDENCE
# 30 SAN RAFAEL AVENUE
# BELVEDERE, CALIFORNIA

**THIS REPORT HAS BEEN PREPARED FOR**

**ANDY BRADY**

**30 SAN RAFAEL AVENUE**

**BELVEDERE, CALIFORNIA 94920**

**MAY 2022**

MURRAY ENGINEERS INC
GEOTECHNICAL SERVICES

MURRAY ENGINEERS INC
GEOTECHNICAL SERVICES

May 6, 2022
Project No. 3476-1R1

**Andy Brady**
30 San Rafael Avenue
Belvedere, California 94920

**RE: GEOTECHNICAL INVESTIGATION,**
**BRADY NEW RESIDENCE,**
**30 SAN RAFAEL AVENUE,**
**BELVEDERE, CALIFORNIA**

Ladies and Gentlemen:

We are pleased to present the results of our geotechnical investigation relating to design and construction of the new residence at 30 San Rafael Avenue in Belvedere. This report summarizes the results of our field, laboratory, and engineering work, and presents geotechnical recommendations for the proposed construction.

The conclusions and recommendations presented in this report are contingent upon our review and approval of the project plans and our observation and testing of the geotechnical aspects of the construction.

If you have any questions concerning our investigation, please call.

Sincerely,
**MURRAY ENGINEERS, INC.**

REGISTERED PROFESSIONAL ENGINEER
ANDREW ELDEN SCAVULLO
No. 79996
CIVIL
STATE OF CALIFORNIA

Andrew E. Scavullo, P.E.
Senior Engineer

REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. CARTER
C73575
CIVIL
STATE OF CALIFORNIA

William P. Carter, P.E.
Principal Engineer

Copies: Addressee (email)
Hood Thomas Architects
Attn: Mark Thomas

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# GEOTECHNICAL INVESTIGATION
# BRADY NEW RESIDENCE
# 30 SAN RAFAEL AVENUE
# BELVEDERE, CALIFORNIA

## INTRODUCTION

This report presents the results of our geotechnical investigation relating to the design and construction of the proposed new residence at 30 San Rafael Avenue in Belvedere, California. The project location is indicated on the Vicinity Map, Figure A-1. The purpose of our investigation was to assess the subsurface conditions on the site in the areas of the proposed improvements and to provide geotechnical design criteria and recommendations for the project.

### Project Description

We understand the project will consist of demolition and removal of the existing residence, garage and adjacent patios, and construction of a new, two-story residence with attached garage in approximately the same location. Exterior improvements will consist of an entry walkway off of San Rafael Avenue and rear decks at several elevations in the rear yard. An existing bulkhead at the lagoon will be upgraded. We understand that the proposed finished floor elevation of the new residence will be approximately four feet above existing grade. We understand structural loads associated with the planned improvements will be relatively light and typical of single-family residential construction. The layout of the existing and proposed improvements is shown on the Site Plan, Figure A-2.

### Scope of Services

We performed the following services in accordance with our agreement with you dated January 14, 2022 (executed on January 27, 2022):

- Reviewed geologic and seismic conditions in the site vicinity and commented on the geologic hazards that could potentially impact the site and the proposed improvements
- Performed a reconnaissance of the site in the areas of the proposed improvements
- Explored the subsurface conditions by excavating, sampling, and logging two exploratory borings in the area of the proposed improvements
- Performed laboratory testing and analyses on selected soil samples for soil classification and to evaluate engineering properties of the subsurface materials
- Performed geotechnical engineering analyses to develop geotechnical engineering design criteria for the proposed improvements
- Prepared this report containing a summary of our investigation and our geotechnical conclusions and recommendations

## GEOLOGIC & SEISMIC CONDITIONS

### Geologic Overview

The property is located on the east shore of the Belvedere Lagoon in Belvedere, California. The map entitled Geology of Ring Mountain and the Tiburon Peninsula, Marin County, California (Bero 2014) indicates the site is located in an area underlain by artificial fill (af) placed during development of the lagoon shoreline. Artificial fill was placed over native marsh deposits and soft sediment known locally as Bay Mud. Slope Debris and Ravine Fill/Colluvium (Qsr) and Franciscan Complex rock (Kfmc) are also mapped on the adjacent hillside to the northeast. The relevant portion of the geologic map is included as Figure A-3, Geologic Map.

### Seismicity

Geologists and seismologists recognize the San Francisco Bay Area as one of the most active seismic regions in the United States. There are three major faults that trend in a northwest direction through the Bay Area, which have generated about 12 earthquakes per century large enough to cause significant structural damage. The faults causing these earthquakes are part of the San Andreas Fault system that extends for at least 700 miles along the California Coast, and includes the San Andreas, San Gregorio, Hayward, and Calaveras faults. The San Andreas fault is located off-shore approximately 8.4 miles west of the site. The San Gregorio fault is located off-shore approximately 11.3 miles southwest of the site. The Hayward and Calaveras faults are located approximately 9.6 and 25.7 miles southeast of the site, respectively.

Seismologic and geologic experts convened by the U. S. Geological Survey, California Geological Survey, and the Southern California Earthquake Center conclude that there is a 72 percent probability for at least one "large" earthquake of magnitude 6.7 or larger in the Bay Area before the year 2043. The northern portion of the San Andreas fault is estimated to have a 6 percent probability of producing a magnitude 6.7 or larger earthquake by the year 2043 and the Hayward and Calaveras faults are estimated to have a 14 percent and 7 percent probability of producing a similar magnitude earthquake during the same time period (Working Group on California Earthquake Probabilities, 2014).

## SITE EXPLORATION & RECONNAISSANCE

### Exploration Program

An initial reconnaissance was performed by our associate engineer on February 1, 2022. Our subsurface exploration was performed on February 9, 2022, and included the excavation, logging, and sampling of two exploratory borings to depths of approximately 27.8 and 29 feet below existing ground surface at the locations shown on Figure A-2. The boring locations

were approximately determined by measuring distance from known points on the supplied site plan using a tape measure and should be considered accurate only to the degree implied by the mapping technique used.

The borings were advanced using sampling and drilling methods with portable equipment. Soil samples were collected with split-spoon samplers that were driven with a 140-pound hammer repeatedly dropped from a height of 30 inches with a rope and cathead winch. The split-spoon samplers included 3-inch outside diameter (OD) samplers, and a 2-inch OD Standard Penetration Test sampler. The sampler types used are indicated on the logs at the appropriate depths. The number of hammer blows required to drive the samplers were recorded in 6-inch increments for the length of the 18-inch long sampler barrels. The associated blow count data, which is the sum of the second and third 6-inch increments, is presented on the boring logs as sampling resistance in blows per foot. The field blow counts for the 3-inch OD samples have been standardized to Standard Penetration Test blow counts for the sampler size; however, the blow count data has not been adjusted for other factors such as hammer efficiency. The logs of our borings are presented in Appendix B as Figures B-1 and B-2. Also included in Appendix B is Figure B-3, Key to Boring Logs; Figure B-4, Unified Soil Classification System; and Figure B-5, Key to Bedrock Descriptions.

Our staff engineer logged the borings in general accordance with the Unified Soil Classification System and Key to Bedrock Descriptions. The boring logs show our interpretation of the subsurface conditions at the location and on the date indicated and it is not warranted that these conditions are representative of the subsurface conditions at other locations and times. In addition, the stratification lines shown on the logs represent approximate boundaries between the soil and bedrock materials; however, the transitions may be gradual.

**Site Description**

The property is located at the intersection of Lagoon Road and San Rafael Avenue in a developed residential area of Belvedere. The property is bound to the north by Lagoon Road, to the west by San Rafael Avenue, and to the south by a neighboring residential property with residence set back from the property line. The property is bound to the east by the Belvedere Lagoon. The natural site grade is essentially level with a slight slope towards the lagoon. The site is developed with a single-level residence (originally constructed in 1941) and an attached garage accessed by a driveway off of Lagoon Road. The exterior yards include brick patios, landscaping areas and a dock. A bulkhead wall defines the transition from the dock to the rear patio.

The exterior brick pathway leading to the entry exhibited extensive signs of settlement. Brick patios in the rear yard appeared to have been relatively recently placed and were level. Due to the proposed demolition of the existing residence we did not perform a distress survey.

**Subsurface**

We advanced two exploratory borings at the site (Boring B-1 at the rear yard and boring B-2 at the existing side yard off of San Rafael Avenue) to depths of approximately 29 and 27.8 feet feet below existing grade, respectively, at the locations shown on Figure A-2. Detailed logs of the borings are presented in Appendix B. In general, the exploratory borings encountered 1 and 2 feet of surficial fill consisting of dark brown, soft sandy lean clay, underlain by very soft gray clay (Bay Mud) that was approximately 15-feet thick below the rear patio and 20-feet thick below the side yard adjacent to San Rafael Avenue. Bay Mud was underlain by yellow brown, very stiff to medium dense, native colluvium consisting of sandy clay and clayey gravel. Native colluvium extended from a depth of 17 feet below grade with markedly harder drilling at a depth of approximately 25 feet below grade which was interpreted to indicate contact with underlying bedrock. Boring B-1 was terminated at a depth of 31.5 feet. At boring B-2, native colluvium was encountered at a depth of 21 feet and continued to a depth of 27 feet at which depth sandstone bedrock was encountered. Boring B-2 was terminated at a depth of 27.8 feet after sampling refusal in bedrock was encountered.

Based on review of a historic photo of the area, it appears that the pre-development shoreline of the lagoon extended very near to the property. This likely explains the relatively thin layer of fill and the high organic content of the upper portions of the Bay Mud (buried march deposits).

**Groundwater**

Groundwater was encountered in our exploratory borings at the elevation of the water surface of the Lagoon (approximately 3 feet below grade). We note that water level in the Lagoon is artificially controlled. Fluctuations in the level of groundwater can occur due to variations in tide, rainfall, landscaping/irrigation, and other factors that may not have been evident at the time our observations were made.

## CONCLUSIONS

Based on our investigation, the site is underlain by a thin layer of artificial full, further underlain by between 15 and 20 feet of compressible Bay Mud with competent native colluvium starting at a depth of approximately 17 feet below the rear patio and 21 feet below the side yard. In our opinion, the proposed residence and site improvements are feasible from a geotechnical perspective provided that the recommendations contained in this report are implemented in the design and construction of the project. The primary geotechnical constraints to the proposed improvements are the potential for future consolidation settlement of the approximately 15 to 19-foot thick layer of Bay Mud underlying the site, the associated shallow groundwater table underlying the site, and the potential for very strong ground shaking during

a moderate to large earthquake on one of the nearby active faults. In our opinion, the majority of potential static consolidation settlement under current loading conditions has likely occurred in the approximately 81 years since residence construction; however, the new and reconfigured loads associated with the construction of the new two-story residence will induce a new cycle of consolidation settlement resulting in total settlement that may be on the order of several inches or more, over the span of decades. Potential for locally greater settlements and differential settlement exists due to variability in fill thickness, organic fill, and presence of peat deposits. In our opinion competent native colluvium and bedrock will provide adequate support for new deep foundations.

**Geologic Hazards**

As part of our investigation, we evaluated the potential for geologic hazards to impact the site and the proposed improvements. The results of our review are presented below:

- Seismic Densification - During moderate and large earthquakes, soft or loose, natural or fill soils can settle, often unevenly across a site. Structures supported on foundations bearing in these relatively weak soils can experience differential settlement in response to differential compaction of these materials. Based on our investigation, there is potential for a relatively minor amount of seismic densification to occur within the weak, undocumented surficial fill encountered in the borings to a depth of approximately 2 feet below grade. In our opinion, seismic densification of the subsurface materials at the site should not constitute a significant hazard to the residence provided that it is supported on foundations designed and constructed in accordance with the recommendations presented in this report.

- Ground Shaking – As noted in the Seismicity section above, moderate to large earthquakes are probable along several active faults in the greater Bay Area. Therefore, strong ground shaking should be expected at some time during the design life of the proposed development. The improvements should be designed in accordance with current earthquake resistant standards, including the 2019 CBC guidelines and design parameters presented in this report. It should be clearly understood that these guidelines and parameters will not prevent damage to structures; rather they are intended to prevent catastrophic collapse. The magnitude and extent of earthquake-related damage can be mitigated to a degree by utilizing an upgraded structural design. The project structural engineer should be consulted for additional details relating to an upgraded seismic design.

- Liquefaction – Liquefaction is a soil softening response, by which an increase in the excess pore water pressure results in partial to full loss of soil shear strength. In order for liquefaction to occur, the following four factors are required: 1) saturated soil or

soil situated below the groundwater table; 2) undrained loading (strong ground shaking), such as by earthquake; 3) contractive soil response during shear loading, which is often the case for a soil which is initially in a loose or uncompacted state; and 4) susceptible soil type; such as clean, uniformly graded sands, non-plastic silts, or gravels. Structures situated above temporarily liquefied soils may sink or tilt, potentially resulting in significant structural damage. As our borings did not encounter saturated granular soil, in our opinion, the potential for liquefaction to occur and affect the existing residence or proposed improvements is very low.

- Flooding, Tsunamis & Seiches – Based on our review of published maps (FEMA 2016) included as Figure A-6, the property is located in area designated as being within the 100-year flood hazard. We understand that Belvedere requires raising the finished floor elevation of the new residence relative to the existing residence to address flooding hazard.

  According to the Association of Bay Area Governments (ABAG) Tsunami Inundation Map(2018), included as Figure A-5, the site is situated within a tsunami inundation area. A tsunami is a series of sea waves, typically caused by large-scale seafloor displacements associated with large earthquakes or submarine landslides. A seiche is a standing wave that forms in an enclosed body of water, such as a lake, lagoon, or enclosed narrow bay, either as a result of strong ground shaking associated with a seismic event or else as a result of water being displaced due to a mass of soil impacting the standing body of water. In general, low-lying areas near the ocean and harbors are most susceptible to flooding and/or impact-related distress to structures from tsunamis. The project site is likely protected from the full initial impact of an ocean tsunami due to its position relative to the open ocean. However, due to its low elevation, it could by subject to widespread flooding as a result of a large tsunami or a seiche. As described above, we understand required flood-protection measures are being incorporated into the project design, which may also offer some mitigation of potential flooding impacts related to tsunami/seiche. The tsunami and seiche hazards present at this site are difficult to quantify and/or mitigate, and the owner must be willing to accept the inherent risk associated with these hazards due to the site's location. Please contact our office if further discussion/exploration of potential mitigation methods are desired.

- Fault Rupture – Based on our review of published maps, it is our opinion that no active or potentially active faults cross the subject property. Therefore, in our opinion the potential for fault rupture to occur at the site is very low.

## RECOMMENDATIONS

We recommend that no new conventional earth fill be added above the elevation of existing grade. If grades are to be raised we recommend the use of geo-foam blocks. We recommend that the new residence, garage and exterior hardscapes deemed to be critical, such as ingress and egress locations, be supported on deep foundations consisting of helical or driven pipe piles gaining support in underlying native colluvium or bedrock below the Bay Mud, and interconnected with a structural slab or a grid of grade beams. In our opinion, shallow foundations are not suitable for the residence due to the potential for settlement. We note that we have not provided recommendations for conventional drilled reinforced concrete piers due to constraints posed by the need for deep casing and dewatering.

We recommend that interior slabs, if used, be constructed as structural slabs spanning between foundations. Exterior slabs may be constructed as slabs-on-grade over a layer of compacted aggregate base rock and geotextile stabilization fabric with the understanding that slabs-on-grade will be more prone to distress and settlement than structural slabs. As an alternative to concrete slabs-on-grade, we recommend that consideration be given to using sand set pavers at exterior patios. Existing fill within areas of new hardscape should be removed and replaced as a properly engineered fill as deemed necessary by our field representative during construction.

Where utility connections enter the pile supported residence, we recommend that they be provided with flexible connections capable of accommodating at least 6 inches of differential settlement between the building and surrounding ground. Additionally, any utilities beneath the residence should be suspended from the pile supported structure with corrosion resistant materials.

We should review the proposed layout and design, prior to completion of the final plans, to verify that the following recommendations are appropriate. Detailed foundation, grading, and drainage recommendations and geotechnical design criteria are presented below.

## 2019 CBC SEISMIC DESIGN PARAMETERS

Based on the location of the site at latitude 37.8826 and longitude -122.4715, our investigation and engineering judgment, and the site class definitions presented in Chapter 20 of Minimum Design Loads and Associated Criteria for Buildings and other Structures (ASCE 7-16) (American Society of Civil Engineers, 2017), in accordance with Chapter 16, Section 1613 of the 2019 California Building Code (California Building Standards Commission, 2019), the following seismic design parameters should be utilized for the project:

- Site Class E – Soil Profile Name: Soft Clay Soil (Table 1613.5.2)
- Mapped Spectral Accelerations for 0.2 second Period: $S_S$= 1.5 g (Site Class B)

- Mapped Spectral Accelerations for a 1-second Period: $S_1$=0.6 g (Site Class B)
- Design Spectral Accelerations for 0.2 second Period: $S_{DS}$=1.0 g (Site Class E)*
- Design Spectral Accelerations for a 1-second Period: $S_{D1}$=N/A** (Site Class E)

*Per review/discussion of site conditions with Dr. Robert Pyke, PhD, G.E., 3-16-22. Assuming $F_a$ = 1.0.
** Site specific response required if $S_{D1}$ is needed.

The preceding seismic design criteria was developed using the Structural Engineers Association of California (SEAOC) and California's Office of Statewide Health Planning and Development (OSHPD) online seismic design value application tool (SEAOC/OSHPD, 2021) using ASCE 7-16 as the design code reference document and review/discussion of site conditions with Dr. Robert Pyke, PhD, G.E.

**HELICAL PILES or PIPE PILES**

Helical or pipe piles gaining support in the underlying competent colluvium or bedrock may be used to support the residence and associated improvements. We recommend that piles achieve a minimum of 6-feet embedment into competent colluvium and/or bedrock; however, deeper embedment may be necessary to achieve design installation torque/resistance. Helical anchors such as manufactured by A.B. Chance Co., Atlas Systems, Inc., Maclean Civil Products or similar, and as approved by this office, would be suitable. Building loads should be supported by axial capacity as achieved by helical anchor embedment torque or pipe pile driving resistance as established by a structural design engineer experience in their design and use. Pipe pile or helical anchor embedment depth and associated embedment torque or driving resistance should be confirmed and documented at each individual anchor/pile during installation. We recommend that proof/performance testing (including at least one compression test) be performed in accordance with manufacturer's and structural engineer's specifications on a representative number of piles to verify capacity.

Resistance to buckling in the Bay Mud should be evaluated by the structural designer or design-build contractor using a lateral subgrade reaction of 5 pounds per cubic inch. Consideration should be given to using tubular steel helical piles that will provide greater resistance to buckling.

Future settlement of Bay Mud will apply downdrag/negative skin friction to pile shafts. The magnitude of downdrag may be calculated using the formula:

P(kips)=0.3 x B(inches), where B is the pile diameter

We recommend that the helical piles be connected by relatively rigid grids of grade beams and/or structural slabs. Grade beams at the building perimeter should extend at least 30 inches below lowest adjacent grade.

Lateral loads may be resisted by passive pressure acting against the vertical faces of the grade beams poured neat into excavations exposing compacted fill using an equivalent fluid pressure of 200 pounds per cubic foot below a depth of 6 inches below lowest adjacent grade where the ground surface is confined by a slab or pavement. Where no confinement exists, passive pressure should be ignored over the upper 12 inches.

If additional passive resistance and/or rigidity is required over the upper portion of the pile, a pull-down or formed grout column could be included in the upper portion of the piles, if deemed necessary by the project structural engineer.

If additional support for lateral loads is required, battered/angular helical anchors may be installed as established by the structural design engineer. If piles are designed to resist tension forces, tension capacity should be verified by pull testing of at least one anchor.

Bay Mud and fill should be considered corrosive to buried iron and steel within an upper approximately 10-foot thick aerobic zone (as measured from existing grade). The upper portion of the piles should be properly protected against corrosion.

The installation and testing of helical anchors should be observed by a representative of Murray Engineers, Inc., to establish that the minimum depths, torque, and associated design axial capacity are achieved.

Based on our engineering judgment, thirty-year post-construction differential foundation movement due to static loads is not expected to exceed approximately ½-inch across any 20-foot span of the new pile-supported foundation.

## SITE RETAINING WALLS

Site retaining walls, such as the proposed bulkhead wall, should be supported on foundations designed in accordance with the recommendations provided above. Waterproofing or damp-proofing of retaining walls should be included in areas where wall moisture would be undesirable or where wall finishes could be impacted by moisture. The project architect or a waterproofing consultant should provide detailed recommendations for waterproofing or damp proofing, as necessary.

### Lateral Earth Pressures

Site retaining walls should be designed to resist lateral earth pressure from the adjoining natural soils, backfill, and any anticipated surcharge loads. In our opinion seismic surcharge does not need to be included in retaining wall design due to their low height. We also note that the

allowable passive pressures provided for retaining wall foundations may be increased by one-third for short-term seismic forces.

Assuming that the backfill behind the wall will be level (e.g., not sloping upward) and that adequate drainage will be incorporated as recommended below, we recommend that retaining walls be designed to resist lateral earth pressure based on the equivalent fluid weights presented in Table 1, below.

**Table 1: Lateral Earth Pressures for Retaining Wall Design**

| ACTIVE PRESSURE (unrestrained condition) | AT-REST PRESSURE (restrained condition) | SEISMIC CONDITION (restrained/unrestrained condition) |
|---|---|---|
| 45 pcf[1] | 45 pcf +8H[2] psf[3] | N/A |

Notes: (1) pcf = pounds per cubic foot (pounds per square foot, per foot of wall height)
(2) H is the height of the retained soil in feet
(3) psf = pounds per square foot

Where backfill behind the wall will be sloping upward from the wall, we recommend that the equivalent fluid pressures given above be increased by 3 pcf for each 4-degree increase in slope inclination. Unrestrained walls should also be designed to resist an additional uniform pressure equal to one-third of any surcharge loads applied at the surface within a lateral distance equal to the height of the wall. Walls restrained from movement at the top should also be designed to resist an additional uniform pressure equal to one-half of any surcharge loads applied at the surface within a lateral distance equal to the height of the wall.

**Retaining Wall Drainage**

We recommend that retaining walls include a subsurface drainage system to mitigate the buildup of water pressure from surface water infiltration and other possible sources of water. As noted above, the basement wall drainage system for the proposed residence should be integral with the basement mat slab foundation drainage system.

Retaining wall backdrains should consist of a minimum 4-inch diameter, perforated rigid pipe, Schedule 40 or SDR 35 (or equivalent) with the perforations facing down, resting on about a 2- to 3-inch thick layer of crushed rock. The perforated pipe should be placed within a minimum 8-inch deep by 12-inch wide trench excavated below the perimeter of the walls. Subdrain pipes should be bedded and backfilled with ½- to ¾-inch clean crushed rock separated from the native soil with a geotextile filter fabric, such as TC Mirafi 140N or equivalent. The crushed rock backfill should extend vertically to within approximately 18 inches of the finished grade and laterally at least approximately 12 inches from the rear face of the wall. The crushed rock should be compacted with a jumping jack or vibratory plate compactor in lifts not exceeding roughly 12 inches in loose thickness. The upper roughly 18 inches of backfill should consist of native soil, which should be compacted in accordance with

the Compaction section of this report to mitigate infiltration of surface water into the subdrain systems.

As an alternative to crushed rock, MiraDRAIN®, Hydroduct®, or other geosynthetic drainage panels approved by this office may be used for retaining wall drainage. If used, the drainage panels should extend from a depth of 18 inches below finish grade to the base of the retaining wall. An approximate 2-foot section of crushed rock wrapped in filter fabric should be placed around the drainpipe, as discussed previously; or a pre-fabricated horizontal collector system, such as MiraDRAIN® HC or Hydroduct® Coil, may be used in areas with lateral space constraints, such as zero-lot-line and/or blind-side forming conditions. Geosynthetic drainage panels should be installed in strict compliance with manufacturer's recommendations with filter fabric facing towards the soil back-cut.

The subdrain trench and pipes should be sloped at a minimum of approximately 1.5 percent and should be connected to rigid, solid (non-perforated) discharge pipes to convey any collected water to a suitable discharge location away from the walls. The subdrain pipes for site and basement retaining walls should be provided with clean-out risers to facilitate maintenance. The retaining wall subdrain system should be kept completely separate from the surface drainage system and downspouts. Clean-out risers should be terminated below grade in a Christy box and should be clearly marked as subdrains to reduce the risk that cleanout pipes might be inadvertently used as discharge pipes for surface drains or downspout.

**Retaining Wall Backfill**

Backfill placed behind retaining walls should be compacted in accordance with the recommendations provided in the Compaction section of this report, using light compaction equipment. Please refer also to the Earthwork section of this report for important recommendations regarding retaining wall backfill.

## CONCRETE SLABS

If interior slabs are used at the residence and garage, they should be designed as structural slabs spanning between foundations. Exterior slabs for patios and walkways may be designed as slabs-on-grade. However, where slight slab movement and cracking is unacceptable, such as at ingress/egress areas, slabs should be constructed as structural slabs. In our opinion, foundation-supported structural slabs will provide significantly higher resistance to differential movement and related distress.

**Structural Slabs**

Structural slabs should be supported on foundations designed in accordance with the recommendations provided above. The project structural engineer should determine slab thickness and reinforcing based on the preceding foundation design criteria and structural

requirements. Structural slabs should be underlain by at least 4 inches of ½- to ¾-inch clean crushed rock to serve as a capillary break between the underlying subgrade and the slabs. To limit interior slab dampness from soil moisture vapors, we recommend that a heavy-duty impermeable membrane be placed directly beneath the slab. In particular, we suggest the use of an integrally bonded vapor retarder, such as Preprufe™ (Grace Construction Products), which will remain in direct contact with the slab in the event that the underlying subgrade subsides. Please refer to the Vapor Retarder Considerations section below for additional information relating to slab underlayment. Please note that these recommendations do not comprise a specification for "waterproofing." For greater protection against concrete slab dampness, a concrete slab waterproofing system should be considered. The project architect or a waterproofing consultant should provide project-specific waterproofing design and details.

**Slabs-on-Grade**

Concrete slabs-on-grade should be underlain by at least 10 inches of Class 2 aggregate baserock. To reduce the potential for edge cracking, the baserock should extend at least 6 inches beyond the edge of the slab. Prior to placement of the baserock, the subgrade soils should be scarified to a depth of approximately 6 inches, moisture conditioned and compacted in accordance with the Compaction section of this report. A geotextile strength fabric, such as Mirafi RS280i or Tensar Triax should be placed on the compacted subgrade.

Where slab surface moisture might be a concern, we recommend that slabs be underlain by a vapor retarder consisting of a highly durable membrane not less than 15 mils thick (such as Stego Wrap Vapor Barrier by Stego Industries, LLC or equivalent), underlain by a capillary break consisting of 4 inches of ½- to ¾-inch crushed rock. The capillary break may used in place of the upper 4 inches of baserock recommended above.

In general, exterior slabs-on-grade should be designed as "free-floating" slabs, structurally isolated from adjacent foundations. We recommend that exterior slabs be provided with control joints at spacing of not more than about 10 feet. The project structural engineer should determine slab reinforcing based on anticipated use and loading.

## FLEXIBLE PAVEMENTS

**Sand Set Pavers or Flagstones**

As an alternative to slabs-on-grade, consideration could be given to sand-set pavers or flagstones at patios and walkways due to their relative ease of releveling. Pavers should be placed in accordance with the manufacturer's recommendations. At a minimum, we recommend that pavers in driveway areas be underlain by at least 12 inches of compacted Class 2 aggregate baserock, and by at least 6 inches elsewhere. A representative from our office should observe the subgrade conditions of the hardscape prior to placement of

baserock. Prior to placement of the baserock, the subgrade soils should be scarified and moisture conditioned to a depth of at least 6 inches, as necessary, and compacted in accordance with the Compaction section of this report. A geotextile strength fabric, such as Mirafi RS280i or Tensar Triax should be placed on the compacted subgrade to help bridge over underlying variable/soft soils.

## EARTHWORK

A moderate amount of earthwork is anticipated as part of the proposed construction, including demolition and removal of existing foundations and slabs, excavation of grade beams, subgrade preparation beneath hardscape, placement and compaction of engineered fill, and backfill in utility trenches. Earthwork should be performed in accordance with the following recommendations.

### Clearing & Site Preparation

Initially, the proposed improvement areas should be cleared of obstructions, including existing foundations, flatwork, utilities, and trees not designated to remain. Holes or depressions resulting from the removal of underground obstructions below proposed subgrade levels, such as existing foundations and root balls, should be backfilled with engineered fill, placed and compacted in accordance with the recommendations provided below. After clearing, the proposed improvement areas should be adequately stripped to remove surface vegetation and organic-laden topsoil. The stripped material should be used as engineered fill; however, it may be stockpiled and used for landscaping purposes.

### Material for Fill

All on-site soils below the stripped layer having an organic content of less than 3 percent organic material by volume (ASTM D 2974) may be suitable for use as engineered fill contingent upon review by our firm. In general, fill material should not contain rocks or pieces larger than 6 inches in greatest dimension, and should contain no more than 15 percent larger than 2.5 inches. Any required imported fill should be predominantly granular material or low plasticity material with a plasticity index of less than approximately 15 percent. Any proposed fill for import should be approved by Murray Engineers, Inc. prior to importing to the site. Our approval process may require index testing to establish the expansive potential of the soil; therefore, it is important that we receive samples of any proposed import material at least 3 days prior to planned importing. Class 2 aggregate baserock should meet the specifications outlined in the Caltrans Standard Specifications, latest edition.

### Compaction

Prior to placing engineered fill, the subgrade soil should be scarified and compacted, as necessary. Material used for fill should be placed in uniform lifts, no more than 8-inches in uncompacted thickness. The fill material should be moisture conditioned, as necessary, and

compacted in accordance with the specifications listed in Table 1 below. The relative compaction and moisture content specified in Table 1 are relative to ASTM D 1557 (latest edition). Compacted lifts should be firm and non-yielding under the weight of compaction equipment prior to the placement of successive lifts.

**Table 1 Compaction Specifications**

| Fill Element | Relative Compaction* | Moisture Content* |
|---|---|---|
| General fill for raising of site grades, driveway, patio areas, and retaining wall backfill (for fills up to 4 feet thick) | 90 percent | Near optimum |
| Upper 6 inches of relatively non-expansive subgrade beneath hardscape | 90 percent | Near optimum |
| Aggregate baserock under hardscape | 95 percent | Near optimum |
| ½- to ¾-inch Crushed Rock - Compact with at least 3 passes of a vibratory plate with lift-thickness ≤ 12 inches. | see note at left | Not critical |
| Backfill of utility trenches using on-site soil | 90 percent | Near optimum |
| Backfill of utility trenches using imported sand | 90 percent | Near optimum |

*Relative to ASTM D 1557, latest edition.

**SITE DRAINAGE**

Roof run-off, rain, and irrigation water should not be allowed to pond near the residence, exterior slabs, or pavement areas. The residence should continue to be provided with roof gutters and downspouts. Water collected in the gutters should not be allowed to discharge freely onto the ground surface adjacent to the foundations and should be conveyed away from the structures via buried closed conduits and routed to a suitable discharge outlet. The finished grades around the structures should be designed to drain surface water away from the structures, slabs, and yard areas to suitable discharge points. Where such surface gradients are difficult to achieve, we recommend that area drains or surface drainage swales be installed to collect surface water and convey it away from the residence.

We recommend that annual maintenance of the surface drainage systems be performed. This maintenance should include inspection and testing to make sure that roof gutters and downspouts are in good working order and do not leak; inspection and flushing of area drains to make sure that they are free of debris and are in good working order; and inspection of surface drainage outfall locations to verify that introduced water flows freely through the discharge pipes and that no excessive erosion has occurred. If erosion is detected, this office should be contacted to evaluate its extent and to provide mitigation recommendations, if needed.

## REQUIRED FUTURE SERVICES

### Plan Review

To better assure conformance of the final design documents with the recommendations contained in this report, and to better comply with the building department's requirements, Murray Engineers, Inc. must review the completed project plans prior to construction. The plans should be made available for our review as soon as possible after completion so that we can better assist in keeping your project schedule on track. We recommend that the following note be added to the architectural, structural, and civil plans:

- All earthwork and site drainage, including site grading, excavation of grade beams, retaining wall drainage and backfill, subgrade preparation beneath hardscape, placement and compaction of engineered fill, and backfill in utility trenches, installation of final surface and subsurface drainage controls as well as foundation installation should be performed in accordance with the geotechnical report prepared by Murray Engineers, Inc., dated May 6, 2022 Murray Engineers, Inc. (415-888-8952) should be provided at least 48 hours advance notification of any earthwork operations and should be present to observe and test, as necessary, the earthwork, foundation, and drainage installation phases of the project.

### Construction Observation Services

Murray Engineers, Inc. should observe and test (as necessary) the earthwork and foundation phases of construction in order to a) confirm that subsurface conditions exposed during construction are substantially the same as those interpolated from our limited subsurface exploration, on which the analysis and design were based; b) evaluate compliance with the geotechnical design concepts, specifications, and recommendations; and c) allow design changes in the event that subsurface conditions differ from those anticipated. The recommendations in this report are based on limited subsurface information. The nature and extent of variation across the site may not become evident until construction. If variations are exposed during construction, it may be necessary to re-evaluate our recommendations.

## LIMITATIONS

This report has been prepared for the sole use of Andy Brady, specifically for developing geotechnical design criteria relating to design and construction of the residence and improvements, as discussed above, at 30 San Rafael Avenue in Belvedere, California. In the event that any changes in the nature or locations of the proposed improvements are planned, the conclusions and recommendations of this report shall not be considered valid unless such changes are reviewed, and the conclusions and recommendations presented in this report are modified or verified in writing by this firm.

The opinions presented in this report are based upon information obtained from borings at widely separated locations, site reconnaissance, review of provided prior geotechnical reports and the original building plans, review of field data made available to us, and upon local experience and engineering judgment, and have been formulated in accordance with generally accepted geotechnical engineering practices that exist in the San Francisco Bay Area at the time this report was prepared. Further, our recommendations are based on the assumption that soil and geologic conditions at or between borings do not deviate substantially from those encountered. In addition, geotechnical issues may arise that are not apparent at this time. No other warranty, expressed or implied, is made or should be inferred. We are not responsible for data provided by others.

The recommendations provided in this report are based on the assumption that we will be retained to provide the Future Services described above in order to evaluate compliance with our recommendations. If we are not retained for these services, Murray Engineers, Inc. cannot assume any responsibility for any potential claims that may arise during or after construction as a result of misuse or misinterpretation of Murray Engineers, Inc.'s report by others. Furthermore, if another geotechnical consultant is retained for follow-up service to this report, Murray Engineers, Inc. will at that time cease to be the Engineer-of-Record.

The opinions presented in this report are valid as of the present date for the property evaluated. Changes in the condition of a property can occur with the passage of time, whether due to natural processes or the works of man, on this or adjacent properties. In addition, changes in applicable standards of practice can occur, whether from legislation or the broadening of knowledge. Accordingly, the opinions presented in this report may be invalidated, wholly or partially, by changes outside of our control. Therefore, this report is subject to review and should not be relied upon after a period of three years, nor should it be used, or is it applicable, for any property other than that evaluated.

**REFERENCES**

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Base: USGS Topographic Maps, San Quentin & North San Francisco Quadrangles, 7.5 Minute Series, 2015
Scale: 1 inch = 2,000 feet

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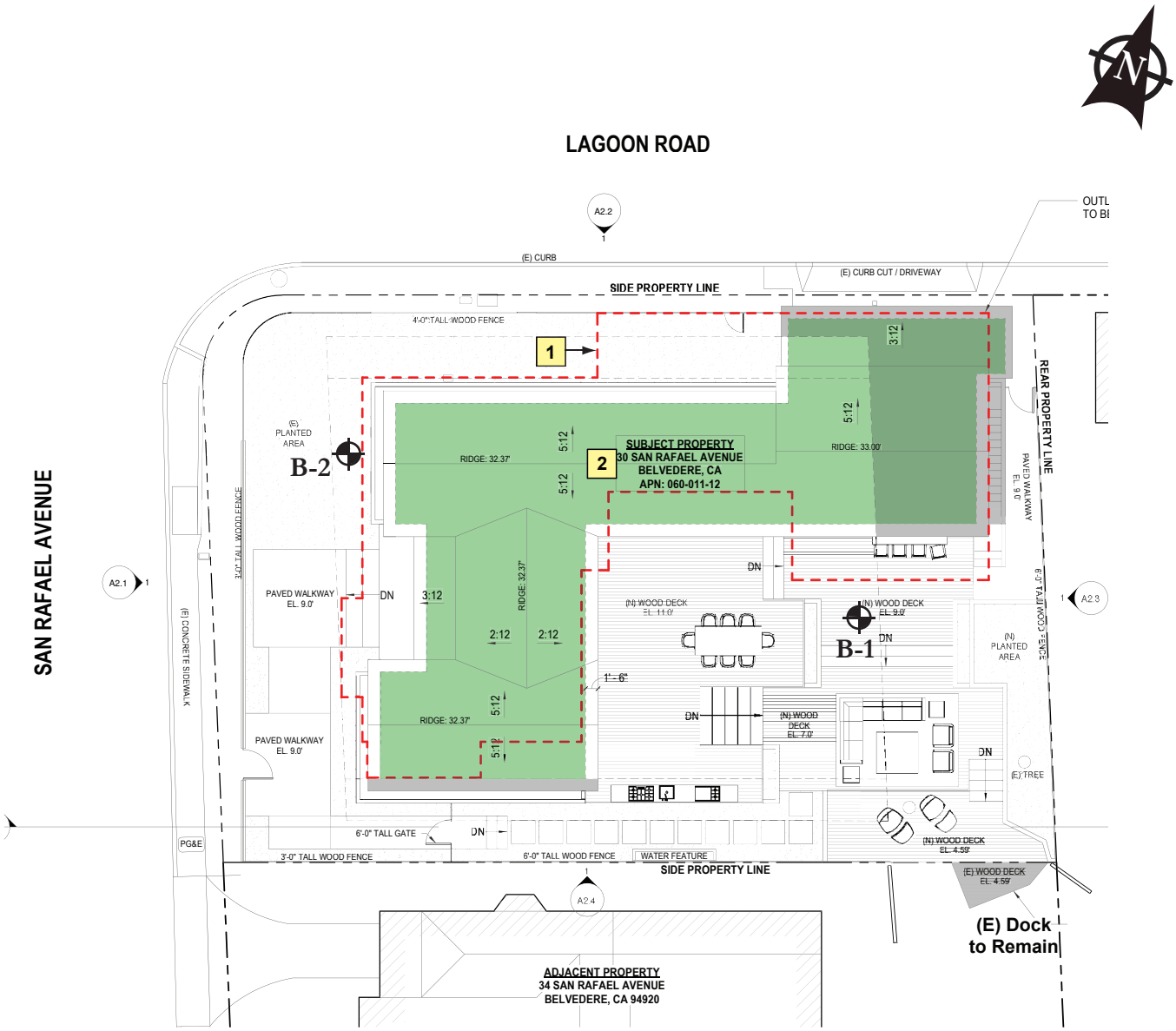
|---|---|---|
| MURRAY ENGINEERS INC GEOTECHNICAL SERVICES | **BRADY NEW RESIDENCE**<br>**30 SAN RAFAEL AVENUE**<br>**BELVEDERE, CALIFORNIA** | **VICINITY MAP** |
| | **PROJECT NO. 3476-1R1** \| **MAY 2022** | **FIGURE A-1** |




## KEY NOTES

1 Outline of (E) Residence to be Demolished (Dashed)

2 Outline of Proposed Two-Story Residence (Shaded)

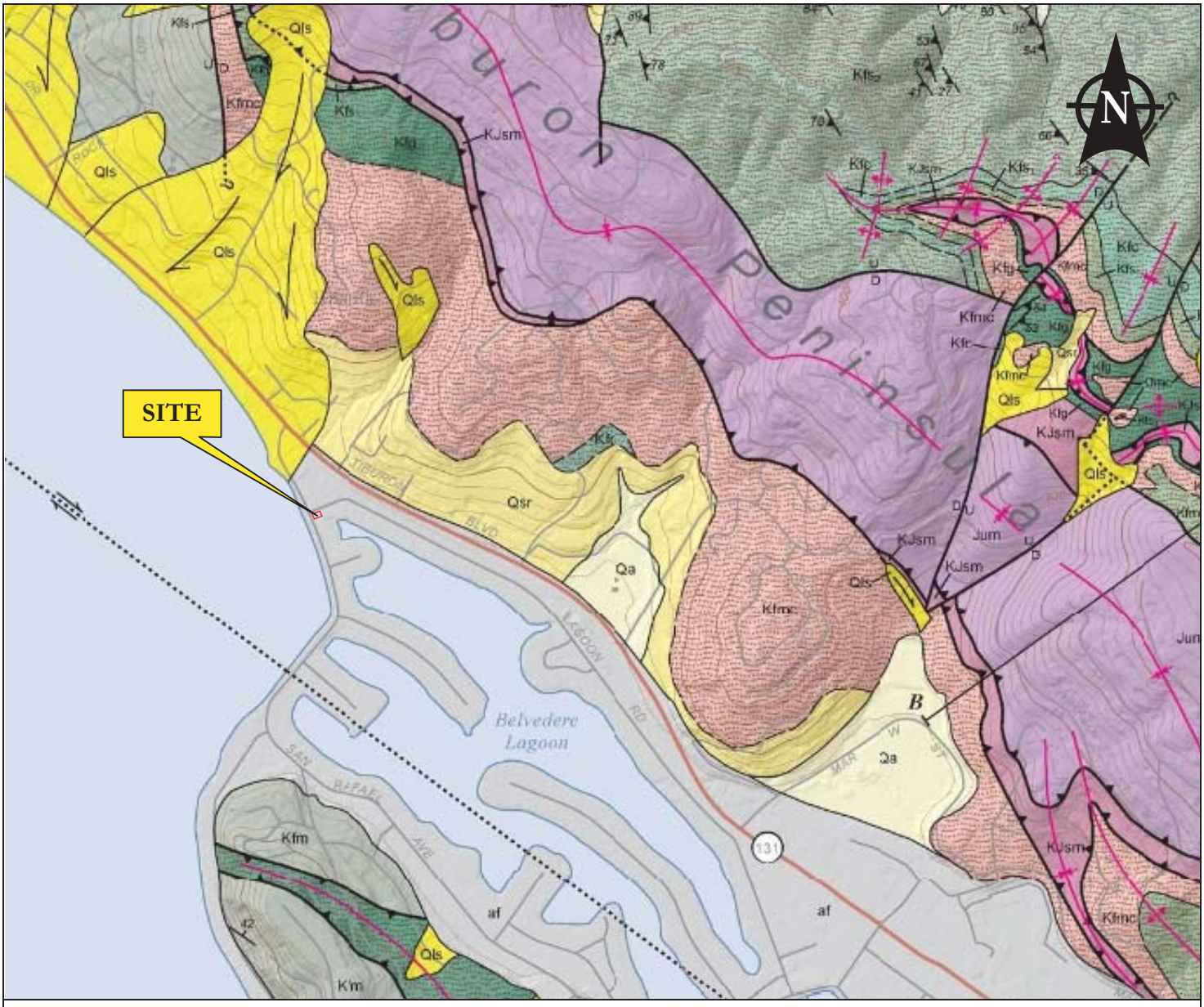
## LEGEND

**B-1** ⊕ Approximate Location of Soil Boring by Murray Engineers, Inc., drilled February 9, 2022

Base: Site Plan - Proposed by Hood Thomas Architects, dated December 31, 2021

Approximate Scale: 1 inch = 20 feet

| | | |
|---|---|---|
| MURRAY ENGINEERS INC GEOTECHNICAL SERVICES | **BRADY NEW RESIDENCE**<br>**30 SAN RAFAEL AVENUE**<br>**BELVEDERE, CALIFORNIA** | **SITE PLAN** |
| **PROJECT NO. 3476-1R1** | **MAY 2022** | **FIGURE A-2** |




## LEGEND

| | |
|---|---|
| af | Artificial Fill |
| Qsr | Slope Debris and Ravine Fill |
| Qa | Alluvium |
| Kfmc | Metachert |
| Kfg | Metabasalt |
| KJsm | Serpentinite-matrix mélange |

Contact between map units - Solid where accurately located; dashed where approximately located; dotted where concealed

Fault - Solid where accurately located; dashed where approximately located; dotted where concealed; queried where uncertain; U = upthrown side, D = downthrown side; arrows along fault indicate relative or apparent direction of lateral movement.

Thrust fault - Solid where accurately located; dashed where approximately located; dotted where concealed; queried where uncertain; teeth on upper plate

Synform - Solid where accurately located; arrowhead indicates direction of plunge

25

Strike and dip of foliation

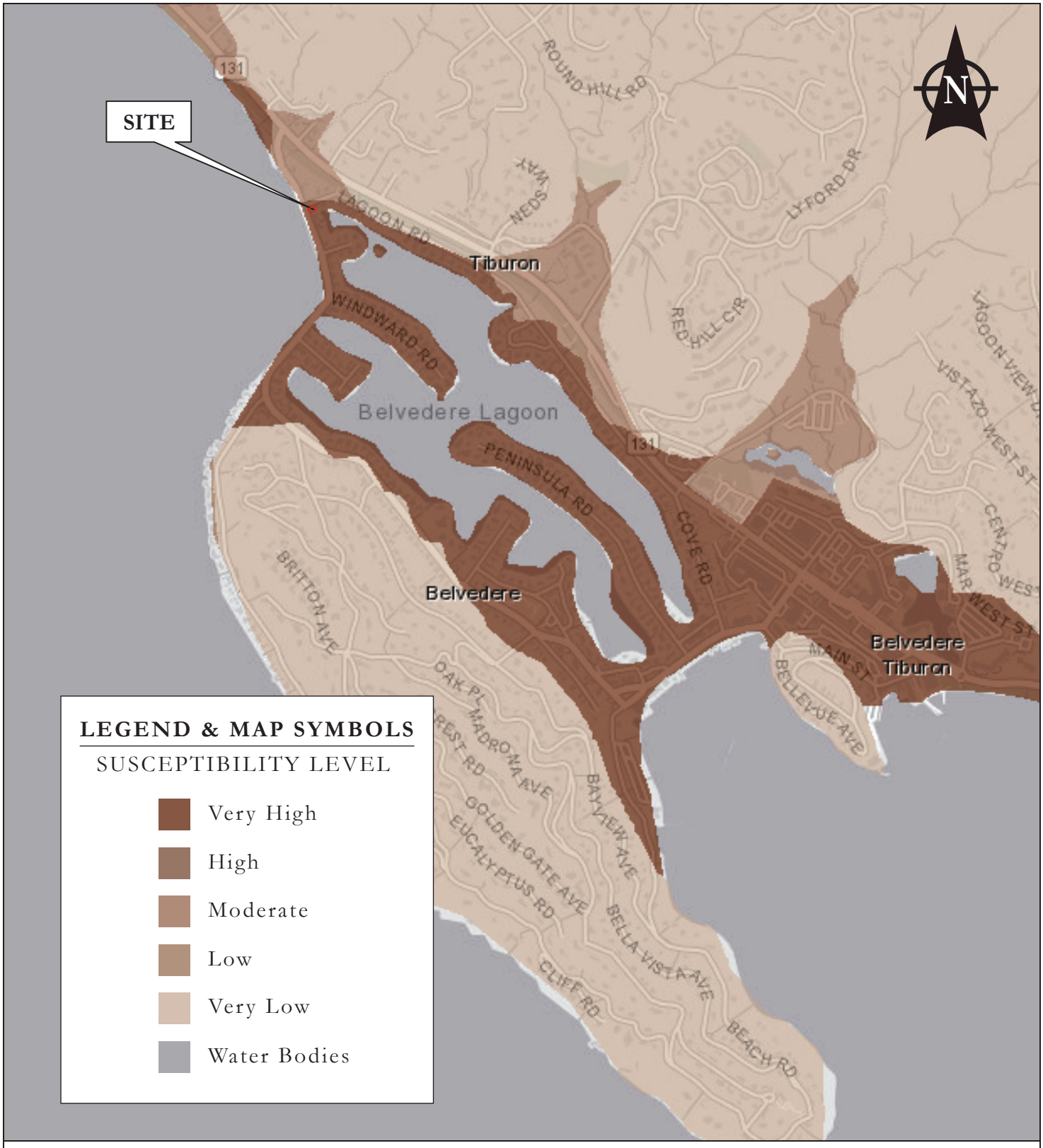
Base: Bero, David A., Geology of Ring Mountain and Tiburon Peninsula, Marin County, California, Map Sheet 62, California Geologic Society, 2014. Approximate Scale: 1 inch = 1,000 feet

MURRAY ENGINEERS INC
GEOTECHNICAL SERVICES

**BRADY NEW RESIDENCE**
**30 SAN RAFAEL AVENUE**
**BELVEDERE, CALIFORNIA**

**GEOLOGIC MAP**

**PROJECT NO. 3476-1R1** | **MAY 2022** | **FIGURE A-3**




Base: Association of Bay Area Governments, 2016, Liquefaction Susceptibility Map, https://mtc.maps.arcgis.com/apps/webappviewer/index.html?id=4a6f3f1259df42eab29b35dfcd086fc8, accessed February 25, 2022
Scale: 1 inch = 2,000 feet

| | | |
|---|---|---|
| MURRAY ENGINEERS INC GEOTECHNICAL SERVICES | **BRADY NEW RESIDENCE**<br>**30 SAN RAFAEL AVENUE**<br>**BELVEDERE, CALIFORNIA** | **LIQUEFACTION SUSCEPTIBILITY MAP** |
| **PROJECT NO. 3476-1R1** | **MAY 2022** | **FIGURE A-4** |


Base: Association of Bay Area Governments, 2016, Tsunami Inundation Area for Emergency Planning, https://mtc.maps.arcgis.com/apps/webappviewer/index.html?id=4a6f3f1259df42eab29b35dfcd086fc8, accessed February 25, 2022 Scale: 1 inch = 2,000 feet

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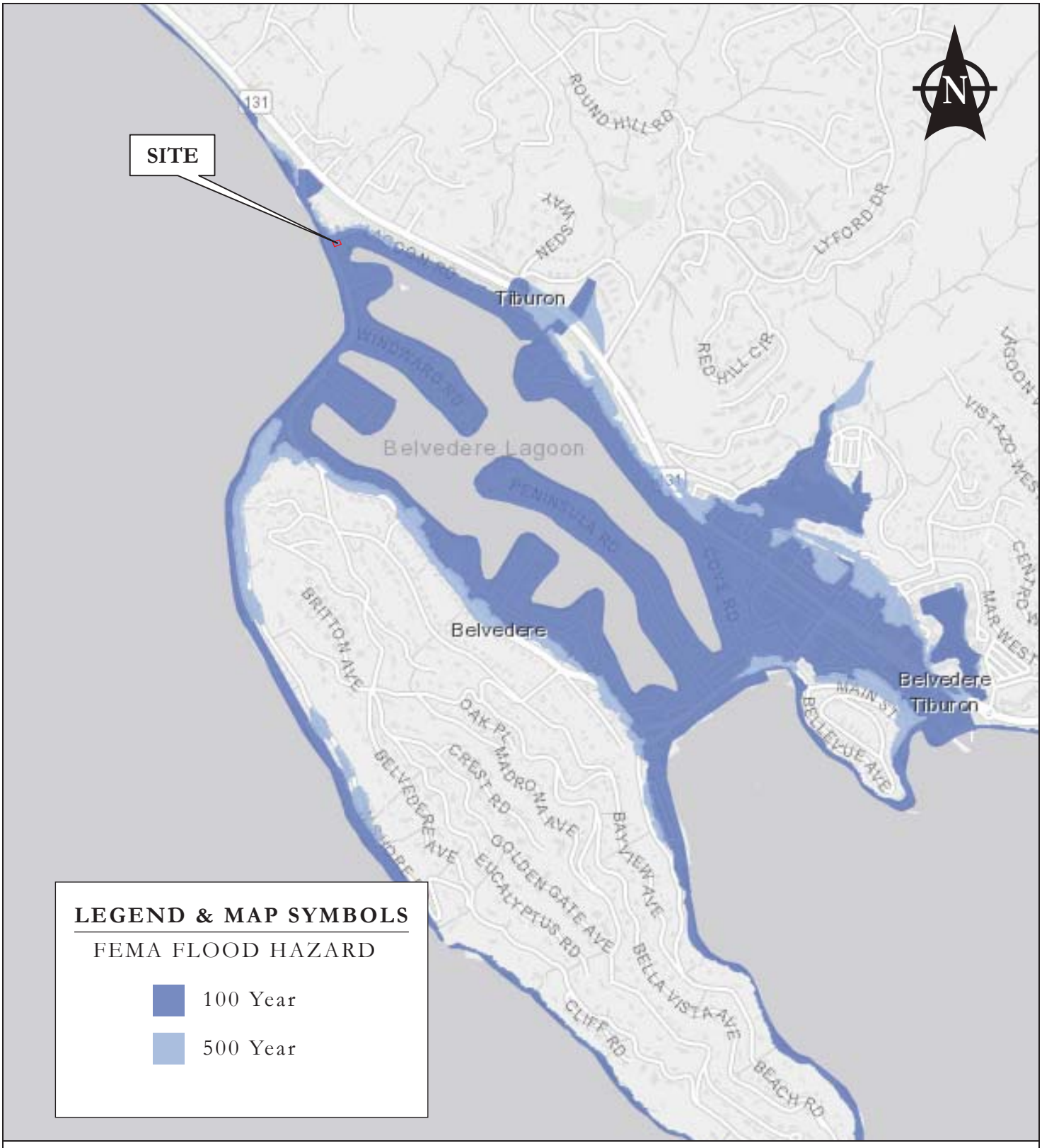
|---|---|---|
| MURRAY ENGINEERS INC GEOTECHNICAL SERVICES | **BRADY NEW RESIDENCE<br>30 SAN RAFAEL AVENUE<br>BELVEDERE, CALIFORNIA** | **TSUNAMI INUNDATION AREA FOR EMERGENY PLANNING MAP** |
| **PROJECT NO. 3476-1R1** | **MAY 2022** | **FIGURE A-5** |




Base: Association of Bay Area Governments, 2016, FEMA Flood Zones, https://mtc.maps.arcgis.com/apps/webappviewer/index.html?id=4a6f3f1259df42eab29b35dfcd086fc8, accessed February 25, 2022 Scale: 1 inch = 2,000 feet

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| MURRAY ENGINEERS INC GEOTECHNICAL SERVICES | **BRADY NEW RESIDENCE<br>30 SAN RAFAEL AVENUE<br>BELVEDERE, CALIFORNIA** | **FEMA FLOOD ZONES MAP** |
| **PROJECT NO. 3476-1R1** | **MAY 2022** | **FIGURE A-6** |

| | | |
|---|---|---|
| Date(s) Drilled **February 8, 2022** | Logged By **BR** | Checked By **AES** |
| Drilling Method **Continuous Flight Auger** | Drill Bit Size/Type **4 inch Auger** | Total Depth of Borehole **29 feet bgs** |
| Drill Rig Type **Portable Drill Rig** | Drilling Contractor **De Novo** | Approximate Surface Elevation **N/A** |
| Groundwater Level and Date Measured **N/A** | Sampling Method(s) **3" OD, 2.5" OD, & 2" OD SPT Split Spoon Samplers** | Hammer Data **140 lb, 30 in drop, rope & cathead** |
| Borehole Backfill **Cuttings** | Location **Rear of existing residence** | |

| Depth, feet | Sample Type | Sampling Resistance, blows/foot | Relative Consistency | USCS Symbol | MATERIAL DESCRIPTION | Water Content, % | Dry Density (PCF) |
|---|---|---|---|---|---|---|---|
| 0 | | 2 | Soft | CL | FILL: SANDY CLAY TOPSOIL, dark brown, homogeneous, low plasticity, trace rootlets, moist | 9 | 81 |
| | | | Medium Stiff | CH | FAT CLAY with ORGANICS, blackish brown, homogeneous, medium plasticity, saturated (Marsh Deposit) | 22 | 85 |
| | | | | | | 36 | 87 |
| 5 | | | Very Soft | CH | FAT CLAY, gray, homogeneous, high plasticity, saturated (Younger Bay Mud) | | |
| 10 | | 1 | | | | | |
| 15 | | | | | | | |
| | | | Very Stiff | CL | SANDY CLAY, yellowish brown, homogeneous, moderate plasticity, trace gravels, very moist (Colluvium) | | |
| 20 | | 25 | | | | 21 | 104 |
| 25 | | | | | Very hard drilling 25' | | |
| | | | | | Drilling Refusal 29' | | |
| 30 | | | | | Bottom of Boring at 29 feet bgs | | |
| 35 | | | | | | | |

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MURRAY ENGINEERS INC
GEOTECHNICAL SERVICES

**BRADY NEW RESIDENCE**
**30 SAN RAFAEL AVENUE**
**BELVEDERE, CALIFORNIA**

**LOG OF BORING B-1**

**PROJECT NO. 3476-1R1** | **MAY 2022** | **FIGURE B-1**

| | | |
|---|---|---|
| Date(s) Drilled **February 8, 2022** | Logged By **BR** | Checked By **AES** |
| Drilling Method **Continuous Flight Auger** | Drill Bit Size/Type **4 inch Auger** | Total Depth of Borehole **27.8 feet bgs** |
| Drill Rig Type **Portable Drill Rig** | Drilling Contractor **De Novo** | Approximate Surface Elevation **N/A** |
| Groundwater Level and Date Measured **N/A** | Sampling Method(s) **3" OD, 2.5" OD, & 2" OD SPT Split Spoon Samplers** | Hammer Data **140 lb, 30 in drop, rope & cathead** |
| Borehole Backfill **Cuttings** | Location **30 San Rafael side of residence** | |

| Depth, feet | Sample Type | Sampling Resistance, blows/foot | Relative Consistency | USCS Symbol | MATERIAL DESCRIPTION | Water Content, % | Dry Density (PCF) |
|---|---|---|---|---|---|---|---|
| 0 | | | Stiff | SC | | | |
| | | 10 | Medium Stiff | CL | FILL: SANDY CLAY TOPSOIL, dark brown, homogeneous, low plasticity, trace rootlets, moist | 16 | 86 |
| | | | | | FAT CLAY with ORGANICS, blackish brown, homogeneous, medium plasticity, moist (Marsh Deposit) | 39 | 81 |
| 5 | | | Very Soft | CH | FAT CLAY, gray, homogeneous, high plasticity, saturated (Young Bay Mud) | 106 | 43 |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | Very Stiff | CL | SANDY CLAY, yellowish brown, homogeneous, medium plasticity, trace subangular gravels, very moist (Colluvium) | | |
| 25 | | | | | | | |
| | | 50/4" | Soft* | BR | SANDSTONE, yellowish brown, homogeneous, severely weathered, friable, moist (Franciscan Complex) | 8 | 123 |
| 30 | | | | | *designates hardness of bedrock (see Figure B-5) | | |
| | | | | | Refusal at 27.8 feet bgs | | |
| 35 | | | | | | | |

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GEOTECHNICAL SERVICES

**BRADY NEW RESIDENCE**
**30 SAN RAFAEL AVENUE**
**BELVEDERE, CALIFORNIA**

**LOG OF BORING B-2**

**PROJECT NO. 3476-1R1** | **MAY 2022** | **FIGURE B-2**

| Elevation, feet | Depth, feet | Sample Type | Sampling Resistance, blows/foot | Relative Consistency | USCS Symbol | MATERIAL DESCRIPTION | Water Content, % |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

## COLUMN DESCRIPTIONS

1 **Elevation, feet:** Elevation (MSL, feet)

2 **Depth, feet:** Depth in feet below the ground surface.

3 **Sample Type:** Type of soil sample collected at the depth interval shown.

4 **Sampling Resistance, blows/foot:** Number of blows required to advance the sampler 12 inches or the distance shown. Blow counts for the 3.0-inch O.D. and 2.5-inch O.D. samplers have been corrected for sampler size to SPT values using conversion factors of 0.65 and 0.77, respectively.

5 **Relative Consistency:** Relative consistency of the subsurface material.

6 **USCS Symbol:** USCS symbol of the subsurface material.

7 **MATERIAL DESCRIPTION:** Description of material encountered. May include consistency, moisture, color, and other descriptive text.

8 **Water Content, %:** Water content of the soil sample, expressed as percentage of dry weight of sample.

## FIELD AND LABORATORY TEST ABBREVIATIONS

**CHEM:** Chemical tests to assess corrosivity
**COMP:** Compaction test
**CONS:** One-dimensional consolidation test
**LL:** Liquid Limit, percent
**PI:** Plasticity Index, percent
**SA:** Sieve analysis (percent passing No. 200 Sieve)
**UC:** Unconfined compressive strength test, Qu, in ksf
**WA:** Wash sieve (percent passing No. 200 Sieve)

## TYPICAL MATERIAL GRAPHIC SYMBOLS

- Sandstone
- Well graded GRAVEL (GW)
- Poorly graded GRAVEL (GP)
- Well graded GRAVEL with Silt (GW-GM)
- Well graded GRAVEL with Clay (GW/GC)
- Poorly graded GRAVEL with Silt (GP-GM)
- Poorly graded GRAVEL with Clay (GP-GC)
- Silty GRAVEL (GM)
- Clayey GRAVEL (GC)
- Well graded SAND (SW)
- Poorly graded SAND (SP)
- Well graded SAND with Silt (SW-SM)
- Well graded SAND with Clay (SW/SC)
- Poorly graded SAND with Silt (SP-SM)
- Poorly graded SAND with Clay (SP-SC)
- Silty SAND (SM)
- Clayey SAND (SC)
- SILT, SILT w/SAND, SANDY SILT (ML)
- Lean CLAY, CLAY w/SAND, SANDY CLAY (CL)
- SILT, SILT w/SAND, SANDY SILT (MH)
- Fat CLAY, CLAY w/SAND, SANDY CLAY (CH)
- SILT, SILT with SAND, SANDY SILT (ML-MH)
- Lean-Fat CLAY, CLAY w/SAND, SANDY CLAY (CL-CH)
- SILTY CLAY (CL-ML)
- Lean CLAY/PEAT (CL-OL)
- Fat CLAY/SILT (CH-MH)
- Fat CLAY/PEAT (CH-OH)
- Silty SAND to Sandy SILT (SM-ML)
- Silty SAND to Sandy SILT (SM-MH)
- Sandy CLAY to Clayey SAND (CL/SC)
- Clayey SAND to Sandy CLAY (SC-CH)
- SILT to CLAY (CL/ML)
- Silty to Clayey SAND (SC/SM)

## TYPICAL SAMPLER GRAPHIC SYMBOLS

- 2 inch-OD Unlined Split Spoon (SPT)
- 2.5 inch-OD Unlined Split Spoon
- 3 inch-OD Unlined Split Spoon
- Shelby Tube (thin-walled, fixed head)
- Grab Sample
- Bulk Sample
- Pitcher Sample
- Other Sampler

## OTHER GRAPHIC SYMBOLS

- Water level (at time of drilling, ATD)
- Water level (after waiting a given time)
- Minor change in material properties within a stratum
- – – – Inferred or gradational contact between strata
- — ? — Queried contact between strata

## GENERAL NOTES

1. Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2. Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

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MURRAY ENGINEERS INC
GEOTECHNICAL SERVICES

**BRADY NEW RESIDENCE**
**30 SAN RAFAEL AVENUE**
**BELVEDERE, CALIFORNIA**

**KEY TO SOIL BORING LOGS**

**PROJECT NO. 3476-1R1** | **MAY 2022** | **FIGURE B-3**

| PRIMARY DIVISIONS | | | SOIL TYPE | SECONDARY DIVISIONS |
|---|---|---|---|---|
| COARSE GRAINED SOILS *(<50% Fines)* | GRAVEL | CLEAN GRAVEL *(<5% Fines)* | **GW** | Well graded gravel, gravel-sand mixtures, little or no fines. |
| | | | **GP** | Poorly graded gravel or gravel-sand mixtures, little or no fines. |
| | | GRAVEL *with* FINES | **GM** | Silty gravels, gravel-sand-silt mixtures, non-plastic fines. |
| | | | **GC** | Clayey gravels, gravel-sand-clay mixtures, plastic fines. |
| | SAND | CLEAN SAND *(<5% Fines)* | **SW** | Well graded sands, gravelly sands, little or no fines. |
| | | | **SP** | Poorly graded sands or gravelly sands, little or no fines. |
| | | SAND *with* FINES | **SM** | Silty sands, sand-silt mixtures, non-plastic fines. |
| | | | **SC** | Clayey sands, sand-clay mixtures, plastic fines. |
| FINE GRAINED SOILS *(>50% Fines)* | SILT AND CLAY *Liquid limit <50%* | | **ML** | Inorganic silts and very fine sands, with slight plasticity. |
| | | | **CL** | Inorganic clays of low to medium plasticity, lean clays. |
| | | | **OL** | Organic silts and organic clays of low plasticity. |
| | SILT AND CLAY *Liquid limit >50%* | | **MH** | Inorganic silt, micaceous or diatomaceous fine sandy or silty soil. |
| | | | **CH** | Inorganic clays of high plasticity, fat clays. |
| | | | **OH** | Organic clays of medium to high plasticity, organic silts. |
| HIGHLY ORGANIC SOILS | | | **Pt** | Peat and other highly organic soils. |

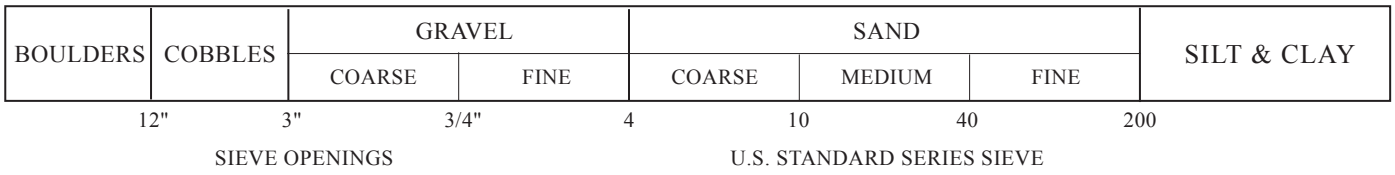
## RELATIVE DENSITY

| SAND & GRAVEL | BLOWS/FOOT* |
|---|---|
| VERY LOOSE | 0 to 4 |
| LOOSE | 4 to 10 |
| MEDIUM DENSE | 10 to 30 |
| DENSE | 30 to 50 |
| VERY DENSE | OVER 50 |

## CONSISTENCY

| SILT & CLAY | STRENGTH^ | BLOWS/FOOT* |
|---|---|---|
| VERY SOFT | 0 to 0.25 | 0 to 2 |
| SOFT | 0.25 to 0.5 | 2 to 4 |
| MEDIUM STIFF | 0.5 to 1 | 4 to 8 |
| STIFF | 1 to 2 | 8 to 16 |
| VERY STIFF | 2 to 4 | 16 to 32 |
| HARD | OVER 4 | OVER 32 |

## GRAIN SIZES




Classification is based on the Unified Soil Classification System; fines refer to soil passing a No. 200 sieve.

*Standard penetration test (SPT) resistance using a 140-pound hammer falling 30 inches on a 2-inch outside diameter split spoon sampler; blow counts for the 3.0-inch O.D. and 2.5-inch O.D. samplers have been corrected for sampler size to SPT values using conversion factors of 0.65 and 0.77, respectively.

^ Shear strength in tons/sq. ft. as estimated by SPT resistance, field and laboratory tests, and/or visual observation.

MURRAY ENGINEERS INC
GEOTECHNICAL SERVICES

**BRADY NEW RESIDENCE**
**30 SAN RAFAEL AVENUE**
**BELVEDERE, CALIFORNIA**

**UNIFIED SOIL CLASSIFICATION SYSTEM**

**PROJECT NO. 3476-1R1** | **MAY 2022** | **FIGURE B-4**

## WEATHERING

### *Fresh*
Rock fresh, crystals bright, few joints may show slight staining. Rock rings under hammer if crystalline.

### *Very Slight*
Rock generally fresh, joints stained, some joints may show thin clay coatings, crystals in broken face show bright. Rock rings under hammer if crystalline.

### *Slight*
Rock generally fresh, joints stained, and discoloration extends into rock up to 1 inch. Joints may contain clay. In granitoid rocks some occasional feldspar crystals are dull and discolored. Crystalline rocks ring under hammer.

### *Moderate*
Significant portions of rock show discoloration and weathering effects. In granitoid rocks, most feldspars are dull and discolored; some are clayey. Rock has dull sound under hammer and shows significant loss of strength as compared with fresh rock.

### *Moderately Severe*
All rock excepts quartz discolored or stained. In granitoid rocks, all feldspars dull and discolored and majority show kaolinization. Rock shows severe loss of strength and can be excavated with geologist's pick. Rock goes "clunk" when struck.

### *Severe*
All rock except quartz discolored or stained. Rock "fabric" clear and evident, but reduced in strength to strong soil. In granitoid rocks, all feldspars kaolinized to some extent. Some fragments of strong rock usually left.

### *Very Severe*
All rock except quartz discolored and stained. Rock "fabric" discernible, but mass effectively reduced to "soil" with only fragments of strong rock remaining.

### *Complete*
Rock reduced to "soil". Rock fabric not discernible or discernible only in small scattered locations. Quartz may be present as dikes or stringers.

## HARDNESS

### *Very Hard*
Cannot be scratched with knife or sharp pick. Hand specimens requires several hard blows of geologist's hammer.

### *Hard*
Can be scratched with knife or pick only with difficulty. Hard blow of hammer required to detach hand specimen.

### *Moderately Hard*
Can be scratched with knife or pick. Gouges or grooves to 1/4 inch deep can be excavated by hard blow of point of a geologist's pick. Hard specimen can be detached by moderate blow.

### *Medium*
Can be grooved or gouged 1/16 inch deep by firm pressure on knife or pick point. Can be excavated in small chips to pieces about 1 inch maximum size by hard blows of the point of geologist's pick.

### *Soft*
Can be gouged or grooved readily with knife or pick point. Can be excavated in chips to pieces several inches in size by moderate blows of a pick point. Small thin pieces can be broken by finger pressure.

### *Very Soft*
Can be carved with knife. Can be excavated readily with point of pick. Pieces 1 inch or more in thickness can be broken with finger pressure. Can be scratched readily by fingernail.

## JOINT BEDDING & FOLIATION SPACING

| Spacing | Joints | Bedding & Foliation |
|---|---|---|
| Less than 2 in. | Very Close | Very Thin |
| 2 in to 1 ft. | Close | Thin |
| 1 ft. to 3 ft. | Moderately Close | Medium |
| 3 ft. to 10 ft. | Wide | Thick |
| More than 10 ft. | Very Wide | Very Thick |

## ROCK QUALITY DESIGNATOR (RQD)

| RQD, as a percentage | Descriptor |
|---|---|
| Exceeding 90 | Excellent |
| 90 to 75 | Good |
| 75 to 50 | Fair |
| 50 to 25 | Poor |
| Less than 25 | Very Poor |

MURRAY ENGINEERS INC
GEOTECHNICAL SERVICES

**BRADY NEW RESIDENCE**
**30 SAN RAFAEL AVENUE**
**BELVEDERE, CALIFORNIA**

**KEY TO BEDROCK DESCRIPTIONS**

**PROJECT NO. 3476-1R1** | **MAY 2022** | **FIGURE B-5**

## APPENDIX C

## LABORATORY TESTS

Samples from the subsurface exploration were selected for tests to establish the physical and engineering properties of the soils. The tests performed are briefly described below.

Natural moisture content and density was determined on select samples recovered from the borings. The samples were initially weighed to obtain wet weight measurements and subsequently dried in accordance with ASTM D2216. After drying, the weight of each sample was obtained to determine the moisture content representative of field conditions and time the samples were collected. The results are presented on the boring logs at the appropriate sample depths.