J&J Ranch

Draft Environmental Impact Report

SCH# 2013112022

Prepared for:
City of Orinda

February 2015
## Notice of Completion & Environmental Document Transmittal

### Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044  (916) 445-0613
### For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814
### SCH #2013112022

### Project Title: J & J Ranch Subdivision

**Lead Agency:** City of Orinda  
**Mailing Address:** City of Orinda  
**City:** Orinda  
**Zip:** 94563  
**County:** Contra Costa

### Project Location:

**County:** Contra Costa  
**City/Nearest Community:** Orinda

**Cross Streets:** 24 Adobe Lane  
**Assessor’s Parcel No.:** 271-130-003, 271-150-002  
**Longitude/Latitude (degrees, minutes and seconds):** ° ′ ″ N / ° ′ ″ W  
**Total Acres:** 20.33

**Within 2 Miles:** State Hwy #: 24  
**Waterways:** Lower Moraga Creek  
**Airports:**  
**Railways:**  
**Schools:** Del Rey, Miramonte

### Document Type:

- CEQA:  
  - NOP
  - Early Cons
  - Neg Dec
  - Mit Neg Dec
  - Draft EIR
  - Supplement/Subsequent EIR  
- NEPA:  
  - NOI
  - Other:

### Local Action Type:

- General Plan Update
- General Plan Amendment
- General Plan Element
- Community Plan
- Specific Plan
- Master Plan
- Planned Unit Development
- Site Plan
- Rezone
- Prezone
- Use Permit
- Land Division (Subdivision, etc.)
- Annexation
- Redevelopment
- Coastal Permit
- Other:

### Development Type:

- Residential: Units 13  
  - Acres 20.33
- Office:  
  - Sq.ft.  
  - Acres
  - Employees
- Commercial:  
  - Sq.ft.  
  - Acres
  - Employees
- Industrial:  
  - Sq.ft.  
  - Acres
  - Employees
- Educational:  
- Recreational:  
- Water Facilities: Type
- Other:

### Project Issues Discussed in Document:

- Aesthetic/Visual
- Agricultural Land
- Air Quality
- Archeological/Historical
- Biological Resources
- Coastal Zone
- Drainage/Absorption
- Economic/Jobs
- Fiscal
- Flood Plain/Flooding
- Forest Land/Fire Hazard
- Geologic/Seismic
- Minerals
- Noise
- Population/Housing Balance
- Public Services/Facilities
- Recreation/Parks
- Schools/Universities
- Septic Systems
- Sewer Capacity
- Soil Erosion/Compaction/Grading
- Solid Waste
- Toxic/Hazardous
- Traffic/Circulation
- Vegetation
- Water Quality
- Water Supply/Groundwater
- Wetland/Riparian
- Growth Inducement
- Land Use
- Cumulative Effects
- Other:

### Present Land Use/Zoning/General Plan Designation:

General Plan: Low Density Residential, Zoning: RL-40 (Residential Low Density, 40,000 sf)

### Project Description: (please use a separate page if necessary)

The Project would subdivide the 20.33-acre site into 13 single-family, clustered lots, ranging in size from 24,676 sf (.57 acres) to 154,569 sf (3.5 acres), and a separate 101,078 gross sf parcel (2.3 acres) that will contain the Moraga Adobe. An open space easement, which comprises 7.95 acres incorporates creek setbacks and the majority of on-site sensitive biological areas. The Project also includes construction of a new access road ending at two cul-de-sacs, parking pullouts for guest parking, a bio retention basin and pedestrian paths. The Project would include installation of underground utilities within the new roadways, removal of protected trees, and installation of landscaping along the private roadways. Individual home designs have not been prepared as a part of the Project.

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*Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.*
### Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with an "X." If you have already sent your document to the agency please denote that with an "S."

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**Local Public Review Period (to be filled in by lead agency):**

Starting Date:    
Ending Date:    

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**Lead Agency (Complete if applicable):**

Consulting Firm: Lamphier-Gregory
Address: 
City/State/Zip: 
Contact: 
Phone: 

Applicant: J&J Ranch, LLC
Address: 100 School Street
City/State/Zip: Danville, CA 94526
Phone: 925-743-9500

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**Signature of Lead Agency Representative:**  
Date: 1/29/15

# J&J Ranch Draft EIR

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(Technical appendices are included on a Compact Disk included in the back cover of the Draft EIR document.)

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1B: Responses to Notice of Preparation
1C: Memorandum of Agreement between Friends of the Joaquin Moraga Adobe and J&J Ranch, LLC, March 26, 2013

Appendix 3: Project Description
3A: J&J Ranch, LLC, Letter, November 19, 2014

Appendix 5: Air Quality
5B: Michael Brandman Associates, Health Risk Assessment – Impacts on Student Receptors at Del Ray Elementary School, October 25, 2011

Appendix 6: Biological Resources
6A: Wetlands Research Associates, Inc. (WRA), Biological Resources Assessment Update for 24 Adobe Lane, dated May 2010
6B: Subsequent WRA memoranda dated December 2, 2010; June 2, 2011; March 23, 2012; and September 26, 2012 (WRA Reports
6C: Stream and Watercourse Biotic Assessment prepared by the City’s Biologist (Barbara Leitner), dated January 16, 2009
6D: HortScience, Inc., Tree Report, dated October 2011

Appendix 7: Cultural Resources
7B: Carey & Co. Architecture, Moraga Adobe Pre-Design Report (Carey Report), September 23, 2010
7C: ARG letter to City of Orinda, September 28, 2012
7D: ARG Update to Historical/Cultural Resources Study, March 2014

Appendix 8: Geology and Soils
8B: Alan Kropp and Associates report (AKA Report) of 2008
8C: Darwin Myers peer review of the JVL Report on behalf of the City of Orinda in 2010
8D: Several JVL letter reports, dated November 28, 2011; March 15, 2012; September 17, 2012; and October 1, 2012.
Appendix 9: Hazards and Hazardous Materials

Appendix 10: Hydrology and Water Quality
10A: CDM Smith, Storm Water Control Plan (SWCP) for Subdivision 9271, May 15, 2012
10B: CDM Smith’s letter to the City on September 17, 2012

Appendix 12: Traffic and Transportation
12A: TJKM Transportation Consultants, Traffic Impact Study for 24 Adobe Lane (TJKM Study), dated May 21, 2010
12B: TJKM letter to City of Orinda, dated September 17, 2012
12C: TJKM memo of July 11, 2014

Appendix 13: Other Less than Significant Effects
13A: Moraga-Orinda Fire District letter to J&J Ranch, LLC, July 2, 2014
Introduction

Project Summary

This Environmental Impact Report ("EIR") analyzes the potential effects associated with the proposed J&J Ranch Project ("Project"). The Project is located at 24 Adobe Lane in the City of Orinda, on parcels totaling approximately 20.33 acres (Assessor's Parcel Numbers 271-130-003 and 271-150-002). The Project site is designated as "Low Density Residential" in the City of Orinda General Plan and zoned RL-40 Residential in the Orinda Municipal Code ("OMC").

The Project would subdivide the Project site into 13 single-family clustered lots, ranging in size from approximately 0.5 acres to 3.4 acres, and a separate approximately 2.25-acre parcel that will contain the historic Joaquin Moraga Adobe ("Moraga Adobe" or "Adobe"). The majority of the Project site will remain zoned RL-40, but the Project would rezone the Moraga Adobe parcel to Park and Recreation ("PR") to allow for the Memorandum of Agreement ("MOA") public access provisions. The PR District allows for cultural institutions (defined as "nonprofit institution displaying or preserving objects of interest in the arts or sciences") including libraries, museums and art galleries. The use of the Moraga Adobe for any of these purposes requires a use permit. The Project includes a General Plan Amendment, required for the rezoning of the Adobe parcel, restoration of the Adobe, and construction of ancillary facilities as described below. The Project also includes a request for removal of protected trees and construction of a new access road ending at two cul-de-sacs, parking pullouts for guest parking, a bio-retention basin and pedestrian paths. The Project would include installation of underground utilities within the new roadways (i.e., water, sewer, storm drains, and power and telecommunications systems) and installation of landscaping.

Individual home designs are not part of the currently proposed Project. Development of single-family homes would be subject to City of Orinda Design Review and all applicable development standards and regulations. Construction would comply with all local and state building ordinances and the requirements of the Moraga Orinda Fire District.

Purpose of the Environmental Impact Report

This EIR has been prepared by the City of Orinda in compliance with the provisions of the California Environmental Quality Act (California Public Resources Code §21000 et seq.) ("CEQA") and the CEQA Guidelines (California Code of Regulations Title 14, §15000 et seq.). The City of Orinda is the lead agency responsible for conducting the environmental review before deciding whether to approve the Project.

Pursuant to CEQA Guidelines section 15161, this is a project-level EIR, defined as an EIR that examines the environmental impacts of a specific development project. As defined in CEQA Guidelines section 15382, an environmental impact is, “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance.” This EIR also identifies and analyzes mitigation measures and alternatives capable of eliminating or minimizing any significant environmental impacts of the Project.

An EIR is an informational document intended to inform public agency decision-makers and the public of the significant environmental effects of a project, identify possible ways to minimize the significant impacts, and analyze reasonable alternatives to the project. CEQA requires that public agencies not approve projects until all feasible means available have been employed to substantially lessen the
project’s significant environmental effects. Before any discretionary approvals may be granted for the Project, the City of Orinda Planning Commission must certify the EIR as adequate, accurate, and objective. CEQA Guidelines section 15151 provides the following standards for adequacy of an EIR: “An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure.”

EIR Review Process

Background

In January 2010, J&J Ranch, LLC (the “Project applicant”) submitted an application to the City of Orinda ("City") for a vesting tentative map ("VTM") for a major subdivision that would subdivide the Project site into 13 separate lots, together with an application for a tree removal permit for removal of approximately 38 trees, subject to the provisions in OMC chapter 17.21. Pursuant to those applications (together, the “2010 Project”), the 2010 Project included grading to repair existing unstable soil conditions, construction of subdivision improvements, planting of replacement native-species trees, and on-site restoration of the historic Moraga Adobe for use as a neighborhood recreation center.

The City prepared an Environmental Review Document for the 2010 Project pursuant to CEQA’s streamlined environmental review as set forth in Public Resources Code Section 21083.3 and CEQA Guidelines Section 15183. That Environmental Review Document was made available for public review and considered by the Planning Commission at a public hearing on October 9, 2012, together with comments received during the public review process and the responses to those comments. The Planning Commission adopted the Environmental Review Document as reflecting the Planning Commission’s independent judgment and analysis, and together with required findings, approved the VTM and tree removal application.

Two separate and unrelated parties appealed the Planning Commission’s adoption of the Environmental Review Document and approval of the 2010 Project to the Orinda City Council. The appeals claimed that the Environmental Review Document was legally deficient and requested that the City Council overturn the Planning Commission’s actions. Subsequent to the filing of the appeals, the Project applicant initiated a series of meetings with the appellant groups and on March 26, 2013, the Project applicant entered into a MOA with one of the two appellant groups, the Friends of the Joaquin Moraga Adobe (“Friends”), a California non-profit corporation (see Appendix 1C). The MOA provides, in part, that the Project applicant will: file a revised VTM application that increases the size of the Moraga Adobe Parcel; seek City approval to rehabilitate the Moraga Adobe in accordance with the Secretary of Interior’s Rehabilitation Standards; and obtain approval to construct separate bathroom facilities and a storage area on the Adobe Parcel. The MOA sets forth a process for the Friends’ potential purchase of the Moraga Adobe and the Adobe Parcel and includes two provisions regarding public access to the Moraga Adobe and the Adobe Parcel, one schedule that applies if the Friends purchase the Moraga Adobe and the Adobe Parcel and one that applies if the Friends do not acquire this property. The City is not a party to the MOA.

1 “Feasible” means capable of being accomplished in a successful manner within a reasonable period of time taking into account economic, environmental, social, and technological factors (Public Resources Code §21061.1).

2 Memorandum of Agreement Between Friends of the Joaquin Moraga Adobe and J&J Ranch, LLC., March 26, 2013
The Project applicant thereafter withdrew its 2010 Project application and on June 27, 2013, submitted a revised application for a VTM. The elements of the revised VTM (which includes 12 sheets) include:

- A parcel map showing 13 individual lots, plus an additional Adobe lot of 101,078 gross square feet;
- Existing easements and proposed structural setback lines;
- Proposed open space easement;
- Plans and measurements related to the City of Orinda’s Creek Setback Ordinance (OMC section 16.64.220);
- Proposed grading and drainage plans, overview
- Detailed drawings of proposed lower roads and bio-retention facility;
- Utility coordination plans;
- Detail sheets showing cross sections of roads, the bio-retention facility, the wetlands boardwalk, and trail details;
- Storm water management plan;
- Parking pullouts and roadway pedestrian path plans; and
- Preliminary street tree plan.

As a result, the City notified the other appellant group that the revised application mooted its appeal.

The Project’s EIR Process

Notice of Preparation

On November 5, 2013, the City distributed a Notice of Preparation of an EIR (“NOP”) for the Project. The NOP solicited comments from public agencies and the general public regarding the scope of the EIR. Publication of the NOP initiated a 30-day public review and comment period that began on November 6, 2013 and ended on December 5, 2013. A public scoping meeting on the EIR was held on November 20, 2013 at the Orinda Community Center to gather oral comments. The NOP is presented in Appendix 1A, and all comments submitted in response are presented in Appendix 1B. The Planning Department, in preparing this Draft EIR, has considered the public’s comments, including the selection of Project alternatives.

Draft EIR

Copies of this Draft EIR are available at the Planning Department offices at 22 Orinda Way. The Draft EIR is also available for viewing or downloading at the Planning Department website. All documents referenced in this Draft EIR, and the distribution list for the Draft EIR, are available for review at the Orinda Planning Department.

The public comment period for this Draft EIR will extend for a period of 45 days after its publication date, during which time there will be a public hearing before the Planning Commission to solicit public comment on this Draft EIR’s adequacy and accuracy of information. In addition, members of the public are invited to submit written comments on the adequacy of this Draft EIR. Written comments may be submitted to:

City of Orinda Planning Department  
Attn: Christina Ratcliffe, AICP, Senior Planner  
22 Orinda Way  
Orinda, CA 94563

Written comments may also be submitted to Ms. Ratcliffe via email, at CRratcliffe@cityoforinda.org. Please include “J&J” in the subject line.
Final EIR

Following the close of the Draft EIR public review and comment period, the Planning Department will prepare and publish a Response to Comments document, which will contain a copy of all comments on this Draft EIR and the City’s responses to those comments, along with copies of the letters received and a transcript or summary of the Planning Commission public hearing on the Draft EIR. This Draft EIR, together with the Response to Comments document, will be considered by the Planning Commission in a noticed public meeting, and then certified as a Final EIR, if deemed adequate.

The Planning Commission will use the information in the Final EIR in their deliberations on whether to approve, modify, or deny the Project or aspects of the Project. If the Planning Commission approves the Project, its approval action must include findings that identify significant Project-related impacts that would result; discuss mitigation measures or alternatives that have been adopted to reduce significant impacts to less than significant levels; determine whether mitigation measures or alternatives are within the jurisdiction of other public agencies; and explain reasons for rejecting mitigation measures or alternatives if any are infeasible for legal, social, economic, technological, or other reasons.

If the Project is approved, the Planning Commission will adopt a Mitigation Monitoring and Reporting Program (“MMRP”) as part of the adoption of the CEQA findings and project approvals, to the extent that mitigation measures are made part of the Project. The MMRP will identify the measures included in the Project or imposed by the City decision-makers as conditions of approval, the entities responsible for carrying out the measures, and the timing of implementation. If significant unavoidable impacts would remain after all feasible mitigation measures are implemented, the Planning Commission, if it elects to approve the Project, must adopt a statement of overriding considerations explaining how the benefits of the Project would outweigh its significant impacts.

Approach and Content of the EIR

The Project, which is substantively similar to the 2010 Project, modifies the 2010 Project to be consistent with the terms of the MOA. These modifications pertain primarily to Project elements that relate to the disposition and setting of the historic Moraga Adobe and the Adobe Parcel. The Project also includes certain physical changes (as more fully described in the Project Description) intended to respond to environmental issues raised in comments on the prior Environmental Review Document.

Project Elements

The Project includes many design elements that serve to reduce or avoid otherwise potentially significant impacts. Examples of these Project design elements include a structural setback line from all on-site creeks and channels, and the establishment of an open space easement of 7.95 acres (or more than 39 percent of the Project site), which encompasses the structural setback from creeks, as well as the coast live oak woodland located in the western edge of the Project site, riparian areas, sensitive natural communities and wetlands.

The analysis of potential Project impacts as presented in this EIR accounts for the mitigating Project elements associated with the design of the Project, and describes these elements as they pertain to each environmental topic.

Mitigation Measures

This EIR also describes feasible measures that are either proposed by the Project applicant, or recommended by the City of Orinda as lead agency, which are capable of minimizing, reducing or avoiding potentially significant adverse impacts. The discussion of mitigation measures distinguishes between those measures that are proposed by the Project applicant and which the applicant has agreed to implement as part of the Project, whereas the Project applicant’s proposed measures are redefined as “mitigation

3 The 2010 Environmental Document identified mitigation measures proposed by the Project applicant as being “Elements of the Project”, whereas the Project applicant’s proposed measures are redefined as “mitigation
(as may be necessary) to reduce adverse impacts and that would be required as conditions of Project approval. Certain mitigation measures (such as Mitigation Measure Bio-1E: Compensation for Wetlands Fill) specify a performance standard which, if achieved, would mitigate significant impacts but that may be accomplished in more than one way. Other mitigation measures (such as Mitigation Measure Bio-1B: BMPs for Landscaping within the Stream Bank) are specific and prescriptive as to their implementation. The applicant has agreed to implement any and all mitigation measures described in this EIR. Either approach satisfies the CEQA requirement to identify measures capable of minimizing adverse impacts (CEQA Guidelines section 15126.4).

Technical Studies
This EIR relies on many of the technical studies prepared for the Environmental Review Document, and includes additional analysis and discussion on issues raised during the prior environmental review and additional comments received by the City in response to the November 2013 NOP. Based on these considerations, this EIR is focused on the physical conditions that have potential to be affected by the Project, including aesthetics, air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, and transportation and traffic. This Draft EIR discusses, in summary only, the other environmental topics listed in Appendix G of the CEQA Guidelines that are not expected to be adversely affected by the Project, including agriculture and forestry resources, greenhouse gas emissions, land use/planning, mineral resources, population/housing, public services, recreation, and utilities/service systems.

Organization
This EIR is organized into sixteen chapters, as described below.

- Chapter 1, Introduction, describes the type, purpose, and function of the EIR; the environmental review process; and the organization of the EIR.
- Chapter 2, the Executive Summary, provides a concise overview of the Project and the necessary approvals; the environmental impacts that would result from the Project; mitigation measures identified to reduce or eliminate these impacts; project alternatives; and areas of known controversy and issues to be resolved.
- Chapter 3, Project Description, presents details about the Project and the approvals required for its implementation.
- Chapter 4, Aesthetics
- Chapter 5, Air Quality
- Chapter 6, Biological Resources
- Chapter 7, Cultural Resources
- Chapter 8, Geology and Soils
- Chapter 9, Hazards and Hazardous Materials
- Chapter 10, Hydrology and Water Quality
- Chapter 11, Noise
- Chapter 12, Transportation and Traffic
- Chapter 13, Other Less than Significant Impacts
Each of the topic chapters 4 through 13 includes a discussion of the existing (or baseline) environmental setting, regulatory framework, the approach to analysis, project-specific and cumulative impacts, and mitigation measures (both Project applicant-proposed and, if required, mitigation measures recommended by the City of Orinda).

- Chapter 14, Alternatives, presents and analyzes a range of alternatives to the Project and a comparison of the environmental effects that may be associated with each alternative.

- Chapter 15, Other CEQA Issues, addresses potential growth-inducing impacts of the Project and identifies significant effects that cannot be avoided if the Project is implemented, and areas of known controversy, and any project-related issues that have not been resolved.

- Chapter 16 includes references and lists the persons who prepared this Draft EIR.
Executive Summary and Impact Overview

Summary Description
This EIR evaluates the potential environmental impacts that may be associated with the proposed J & J Ranch Project (“Project”) in the City of Orinda, California. The applicant is J & J Ranch LLC, a limited liability corporation. The Lead Agency is the City of Orinda.

The Project site is located in the southern part of Orinda on a hillside above an existing single-family residential neighborhood along Donna Maria Way. The Del Rey Elementary School is located to the north, the approved Lavenida Lane Subdivision is located to the east and the Miramonte High School is located further to the east of the Lavenida Lane Subdivision. The existing single-family residential neighborhood along Sager Court is located to the west, and the Moraga Country Club Golf Course runs along the southern site boundary, which also defines the municipal boundary line between the City of Orinda and the Town of Moraga.

The 20.33-acre Project site is improved only with a one-lane access roadway and the historic Joaquin Moraga Adobe, built in 1848 as a home for the original owner of the land grant involving the surrounding area. Dense vegetation exists along the north, east and west property lines. Three ephemeral drainage creeks traverse the Project site and flow generally in a northeasterly direction into Lower Moraga Creek.

The Project would subdivide the Project site into 13 single-family clustered lots, ranging in size from approximately 0.5 acres to 3.4 acres, and a separate approximately 2.25-acre parcel that will contain the historic Joaquin Moraga Adobe (“Moraga Adobe” or “Adobe”). The majority of the Project site will remain zoned RL-40, but the Project would rezone the Moraga Adobe parcel to Park and Recreation (“PR”) consistent with the Memorandum of Agreement’s (“MOA”) public access provisions. The Project includes a General Plan amendment, required for the rezoning of the adobe parcel, restoration of the Adobe, and construction of ancillary facilities. The Project also includes a request for removal of protected trees and construction of a new access road ending at two cul-de-sacs, parking pullouts for guest parking, a bio-retention basin and pedestrian paths. The Project would include installation of underground utilities within the new roadways (i.e., water, sewer, storm drains, and power and telecommunications systems) and installation of landscaping. Crossing of an ephemeral creek is proposed and would require a permit from the Army Corps of Engineers.

Individual home designs are not part of the currently proposed Project. Subsequent development of single-family homes would be subject to City of Orinda Design Review and all applicable development standards and regulations.

Summary of Impacts and Mitigation Measures
The analyses in Chapters 4 through 13 of this document provide a description of the existing setting, potential impacts of Project implementation, and recommended mitigation measures to reduce or avoid potentially significant impacts that could occur as a result of Project implementation. Table 2.1 at the end of this chapter lists a summary statement of each impact and corresponding mitigation measures, as well as the level of significance after mitigation.
Significant and Unavoidable Impacts that Cannot be Mitigated to a Level of Less than Significant

No significant and unavoidable impacts have been identified. All impacts are either less than significant or can be reduced to that level through mitigation, as discussed in the following text and table.

Impacts Reduced to a Level of Less than Significant Through Mitigation

The following potentially significant impacts would be reduced to less than significant levels with implementation of mitigation measures:

Aesthetics

Construction of structures on Lot 11 of the Project would be prominent in views from the Adobe. With implementation of screening landscaping (Mitigation Measure Aes-3), Project impacts to the visual character of the site would be reduced to a level of less than significant.

Air Quality

Construction of the Project would result in temporary emissions of dust and construction vehicle emissions which would contribute to regional emissions. With implementation of construction best management practices and emissions controls (Mitigation Measures AQ-2A and AQ-2B), construction-period air quality impacts would be reduced to a level of less than significant.

Biological Resources

Development of the Project could adversely affect riparian habitat, other sensitive natural communities, or federally protected wetlands. This impact would be mitigated to less than significant levels through implementation of best management practices during construction and when landscaping (Mitigation Measures Bio-1A, -1B, -1C and -1D), and compensation for wetlands fill (Mitigation Measure Bio-1E). Development of the Project could adversely affect special status species, including the dusky-footed woodrat, and special-status bat, avian, and herpetofauna species. This impact would be mitigated to less than significant levels through implementation of surveys, exclusion, and avoidance, where feasible (Mitigation Measures Bio-2A, -2B, -2C and -2D). Project construction would require removal of trees, some of which are protected under the City’s Tree Protection Ordinance. With implementation of a tree protection plan consistent with City requirements (Mitigation Measure Bio-4A), the impact would be reduced to less than significant.

Cultural Resources

The Project could cause a substantial adverse change in a historical resource by enabling alteration of the Moraga Adobe that would endanger its historic status. However, with constraints on changes and requirements that any work on the Moraga Adobe be consistent with Secretary of Interior Standards and the 2013 MOA (Mitigation Measure Cultural-2), this impact will be reduced to less than significant levels. Site preparation, grading, and construction activities associated with the Project could disturb unidentified archeological or paleontological resources and/or human remains buried at the Moraga Adobe site. With implementation of an archaeological testing program with follow-up as appropriate and training of construction personnel and monitoring during construction (Mitigation Measures Cultural-3A, -3B, -4, and -5), potential impacts to the significance of buried cultural resources would be reduced to less than significant levels.

Geology and Soils

Compliance with required State building codes, City policies, regulatory requirements, and implementation of recommendations in the geotechnical report and proper sloe and foundation/slab design (Mitigation Measures Geo-1, -2 and -4) will mitigate potential impacts so that the Project would not expose people or structures to potential substantial seismic-related adverse effects, ground failure, landslides or unstable or expansive soils. Compliance with a Stormwater Pollution Prevention Plan
(Mitigation Measure Hydro-1A) would ensure impacts related to soil erosion or loss of topsoil would be less than significant.

Hazards and Hazardous Materials
Compliance with a Stormwater Pollution Prevention Plan (Mitigation Measure Hydro-1A) would ensure impacts related to routine use of hazardous materials would be less than significant. Asbestos and lead-based paint could be present in site structures or soils. With assessments for these materials and removal as required (Mitigation Measure Haz-2), the impact related to accidental release of hazardous materials would be less than significant. The Project is located within a Very High Fire Hazard Severity Zone but would incorporate recommended measures to minimize the risk from fires, including defensible space, sprinklers in structures, and adequate provision of fire hydrants and for fire apparatus access (Mitigation Measure Haz-7) to ensure the risk to people or structures from wildland fires is less than significant.

Hydrology and Water Quality
The Project has the potential to impact water quality through runoff both during construction and once occupied. Compliance with a Stormwater Pollution Prevention Plan, source controls, and C.3 provisions for stormwater handling (Mitigation Measures Hydro-1A, -1B, and -1C) would ensure impacts related to routine use of hazardous materials would be less than significant. The Project has the potential to alter on-site drainage in a manner that could increase runoff, siltation, and off-site flooding. Through inclusion of bioretention facilities on each lot according to a Stormwater Pollution Prevention Plan and appropriate structural set-backs from the creeks (Mitigation Measure Hydro-3), impacts related to changes in drainage would be reduced to less than significant.

Noise
Construction of the Project will temporarily generate noise from construction equipment, vehicles, and activities. With compliance with City standards and implementation of limited construction hours (Mitigation Measure Noise-2), Project impacts to the visual character of the site would be reduced to a level of less than significant.

Traffic
The Project could increase the possibility for design hazards due to large vehicles associated with public access to the historic Moraga Adobe and construction-related traffic. With implementation of constraints on public access (Mitigation Measure Trans-4A), requirements for pavement inspection and repair during the construction period (Mitigation Measure Trans-4B), and implementation of a Construction Management Plan, Project impacts related to traffic hazards would be reduced to a level of less than significant. With implementation of Fire District recommendations for street and structure design, inclusion of sprinklers, and street addressing (Mitigation Measure Trans-5) impacts related to inadequate emergency access would be less than significant.

Other Topics
With implementation of Fire District recommendations for water supply, street and structure design, inclusion of sprinklers, and street addressing (Mitigation Measure Public Serv-1), impacts related to public services would be less than significant. With the on-site sewer system designed and constructed in accordance with City standards and guidelines (Mitigation Measure Util-1), impacts related to public utilities would be less than significant.

All other impacts would be less than significant without the need for mitigation, as detailed in Table 2.1.
Alternatives

Five alternatives were evaluated, as summarized below.

Alternative 1: No Project

Alternative 1 is a “no project” alternative. It assumes that if the Project were not approved, the site would develop as allowed under the existing zoning and parcel configuration. This would result in one new single family home and related infrastructure.

Alternative 2: Reduced Project

The Reduced Project Alternative would be similar to the proposed Project, except that the developed portion would end in a cul-de-sac prior to crossing the central ephemeral stream. Lots 9 and 10 would not be developed. The remaining lots and roadways would be developed consistent with the Project plan. This alternative would avoid permits and regulations related to the proposed creek crossing and creek-side riparian habitat.

Alternative 3: Retain and Widen Adobe Lane

Alternative 3 is similar to the Project in almost all respects except in its design of the on-site roadways, which for this alternative retains the existing alignment of Adobe Lane rather than the Project’s proposed realignment as an easterly extension of the west terminus of Donna Maria Way. The intention of this alternative is to maintain the existing roadway alignment on the Project site to help maintain the historic setting of the Moraga Adobe, and to attempt to reduce the number of existing protected trees removed by development of the Project. Alternative 3 necessarily widens the existing Adobe Lane right-of-way to accommodate two-way traffic and emergency access. This alternative also adds a cul-de-sac from Donna Maria Way to access Lots 1 and 2.

Alternative 4: Dolores Way Access

The Dolores Way Access Alternative is also similar to the Project in almost all respects, except that primary access to the site would enter from Dolores Way to the west, rather than from Donna Maria Way. This alternative would result in most Project-generated traffic bypassing the segment of Donna Maria Way between the Project site and El Camino Moraga. Instead, a short cul-de-sac at Donna Maria Way will serve as an entrance to the Project site to provide access to Lot 1. The Dolores Way extension would enter the Project site from the southern edge of the parcel, from where it would follow the same alignment as proposed under the Project from Lot 10 to Lot 3. The Dolores Way extension would end in a cul-de-sac and hammerhead at approximately Lot 2.

Alternative 5: Donna Maria Way East Access

The Donna Maria Way East Access Alternative is also similar to the Project in almost all respects, except that primary access to the site would enter from the eastern segment of Donna Maria Way, rather than the westerly segment of Donna Maria Way. This alternative would result in most Project-generated traffic bypassing the western segment of Donna Maria Way, although a short cul-de-sac will enter the Project site from westerly Donna Maria Way to access Lot 1. The easterly extension of Donna Maria Way would enter the Project site from the east, crossing over the existing wetland and proceeding up the hill to access Lots 3 through 12 and the Adobe, similar to the alignment as proposed under the Project. A hammerhead extension will access Lot 2.

Alternatives Conclusion

No significant and unavoidable impacts were identified under the proposed Project. All Project impacts are either less than significant or can be reduced to those levels through implementation of the mitigation contained in this Draft EIR. Because of the low impact of the proposed Project, differences between it and the Alternatives are marginal and limited to reductions in already less than significant impacts.
Alternative 1, the No Project Alternative would result in the construction of only one new home and would have very minor (i.e., no significant) environmental effects. Therefore, the No Project Alternative would be the environmentally superior alternative. However, the No Project Alternative would not achieve any of the basic Project objectives, and CEQA Guidelines require that “if the environmentally superior alternative is the ‘No Project’ Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives” (CEQA Guidelines Section 15126.6(e)(2)).

Each of the alternative access routes (existing Adobe Lane per Alternative 3, Dolores Way per Alternative 4, or easterly Donna Maria Way per Alternative 5) would have similar types of impacts on biological resources as would the Project, but the extent of these impacts would be greater. Therefore, these alternative access routes are not considered environmentally superior to the Project.

The Reduced Project Alternative (Alternative 2) would have similar or the same environmental effects as would the Project, but it would avoid impacting the site’s central ephemeral stream with a road crossing and culvert, and would also avoid development on potential landslide areas. As such, the design elements of the Project that mitigate for these impacts would not be needed. However, the proposed Project mitigates these two impacts to a less than significant level. Therefore, while this alternative would be considered environmentally superior to the Project, it is only marginally so. More importantly, the Reduced Project Alternative would not achieve two basic Project objectives:

- Maximize housing opportunities, while accommodating and integrating substantial amenities such as open space and pedestrian corridors; and
- Maximize the Project contribution to the economic vitality of the City of Orinda and region by maximizing construction jobs and generating substantial amounts of revenue in the form of taxes and lawfully imposed development fees, the latter of which will help fund vital improvements to City infrastructure, services, and amenities.

On balance, since both the Reduced Project Alternative and the Project are able to mitigate their environmental effects to a less than significant level, there are only marginal differences in impacts. However, because the Project includes a commitment to restore and rehabilitate the historic Moraga Adobe (either via the MOA with the Friends or as a community building for residents of the proposed development), the Project is marginally environmentally superior to all other alternatives considered in this EIR.
<table>
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<tr>
<th>Potential Environmental Impacts</th>
<th>Recommended Mitigation Measures</th>
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<tbody>
<tr>
<td><strong>Aesthetics</strong></td>
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<tr>
<td>Impact Aes-1: Compliance with City zoning regulations and implementation of Project elements will mitigate potential impacts so that the Project would not have a substantial adverse effect on a scenic vista. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
</tr>
<tr>
<td>Impact Aes-2: The Project site is not visible from a State scenic highway or City scenic corridor, and the Project will not substantially damage scenic resources visible from those routes. (No Impact)</td>
<td>No mitigation warranted.</td>
<td>No Impact</td>
</tr>
<tr>
<td>Impact Aes-3: The Project will not substantially degrade the existing visual character or quality of the site or its surroundings. (LTS with Mitigation)</td>
<td><strong>Mitigation Measure Aes-3: Lot 11 Screening Landscaping.</strong> The deed recorded for Lot 11 shall include notice that screening landscaping is required to be installed and maintained by the landowner between any structures built on this lot and the Moraga Adobe. The screening landscaping is intended to minimize the prominence of structures in the views from the Adobe while retaining farther-off views of the ridgeline. Proposed screening landscaping shall be reviewed and approved by the Planning Department prior to construction.</td>
<td>Less than Significant</td>
</tr>
<tr>
<td>Impact Aes-4: The Project will create new sources of light, but compliance with City zoning regulations will mitigate potential impacts so that the Project will not adversely affect day or nighttime views in the area. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
</tr>
<tr>
<td>Impact Aes-5: Compliance with City design standards and regulations, along with the</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
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</table>
# Table 2.1: Summary of Project Impacts and Mitigation Measures

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<tr>
<td>Implementation of Project elements, will ensure that the Project does not adversely contribute to cumulative aesthetic impacts. (LTS)</td>
<td>No mitigation warranted.</td>
<td>No Impact</td>
</tr>
</tbody>
</table>

## Air Quality

**Impact AQ-1:** The Project would not conflict with or obstruct implementation of the applicable air quality plan. (No Impact)

**Impact AQ-2:** With implementation of Project elements and compliance with City policies that will mitigate potential impacts, the Project would not violate air quality standards or contribute substantially to an existing or projected air quality violation of PM10 standards. (LTS with Mitigation)

**Mitigation Measure AQ-2A: Dust Control.** The Project applicant shall require demolition, grading and construction contractors to comply with all BAAQMD-recommended dust control measures, including the following:

1. Water all active construction areas at least twice daily.
2. Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard.
3. Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.
4. Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites.
5. Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public or private streets.
6. Limit traffic speeds on unpaved roads to 15 mph.
7. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
8. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes. Clear signage shall be provided for construction.
## Table 2.1: Summary of Project Impacts and Mitigation Measures

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### workers at all access points.

### 9. All construction equipment shall be maintained and properly tuned in accordance with manufacturer’s specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

### 10. Post a publicly visible sign with the telephone number and person to contact at the City regarding dust complaints. This person shall respond and take correction action within 48 hours. The Air District’s phone number shall also be visible to ensure compliance with applicable regulations.

**Mitigation Measure AQ-2B: Construction Emission Controls.** In addition to the BAAQMD Basic Control Measures, the Project applicant shall ensure that the following emission reduction measures are implemented during construction.

1. All diesel-powered construction equipment engines with a horsepower rating of 50 horsepower or greater shall implement particulate matter filters capable of attaining a minimum particulate matter control level of 60 percent.

2. Earth moving activities would be phased over at least 40 days and no more than two acres would be disturbed on a daily basis.

3. Prior to construction, the applicant shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project-wide fleet average 20 percent NOx reduction and 50 percent particulate matter (PM) reduction compared to the most recent Air Resources Board (ARB) fleet average. Acceptable options for reducing emissions include the use of late model engines, low emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available.

4. All diesel-powered construction equipment shall be turned off when not in use or limited to 5 minutes of idling time.
### Table 2.1: Summary of Project Impacts and Mitigation Measures

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<tr>
<td>Impact AQ-3: Construction of the Project will not result in emissions that would exceed City-applied thresholds of significance, or expose sensitive receptors to substantial pollutant concentrations or toxic air contaminants. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
</tr>
<tr>
<td>Impact AQ-4: The Project would not result in a significant increase of any criteria pollutant for which the region is in non-attainment (including releasing emissions which exceed quantitative thresholds for ozone precursors. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
</tr>
<tr>
<td>Impact AQ-5: The Project would not result in the exposure of new sensitive receptors (i.e., new residents at the Project site) to health risks or hazards from toxic air emissions. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
</tr>
<tr>
<td>Impact AQ-6: The Project would not create objectionable odors. (No Impact)</td>
<td>No mitigation warranted.</td>
<td>No Impact</td>
</tr>
<tr>
<td>Impact AQ-7: The Project’s construction-related emissions and operation emissions would not lead to cumulatively significant health risks that would exceed the cumulative source significance thresholds. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
</tr>
<tr>
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<tr>
<td>Biological Resources</td>
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</table>
| Impact Bio-1: With implementation of Project elements and mitigation measures that will mitigate otherwise potentially significant impacts, the Project would not have a substantial adverse effect on any identified riparian habitat or other sensitive natural community or on federally protected wetlands. (LTS with Mitigation) | Mitigation Measure Bio-1A: BMPs during Construction: The following best management practices shall be followed throughout site preparation, and will be required for development of each home:  
1. Construction will be carried out during the dry season.  
2. Construction netting will be placed at the top of stream banks and around driplines of native trees; surface disturbance and grade changes will not be allowed in these areas.  
3. Fill will not be placed within the stream bank unless it is part of a watercourse repair.  
4. All construction trash and debris will be promptly collected and disposed of appropriately. No solid or liquid materials will be dumped into the watercourse.  
5. Silt fencing, straw wattles, and/or other erosion control materials will be installed at the perimeter of each construction area to prevent soil from entering streams, wetlands, and riparian areas during construction involving soil disturbance.  
Mitigation Measure Bio-1B: BMPs for Landscaping within the Stream Bank. The following best management practices shall be followed throughout site preparation, and will be required for development of each home:  
1. When landscaping within a stream bank, soil will not be graded or moved.  
2. Fill, retaining walls, decks, fences, or other man-made structures will not be placed within a stream bank.  
3. Native vegetation will not be removed but invasive non-native plants will be removed. Standing dead trees (snags), brush, or downed woody debris will not be removed unless they pose a risk to a structure or could obstruct the flow of the watercourse.  
4. Plantings will consist of only locally native species adapted for prevailing site conditions, and grown from seed or cuttings originating from Orinda or nearby San Pablo, San Leandro and | Less than Significant |
### Table 2.1: Summary of Project Impacts and Mitigation Measures

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<td>Lafayette Creek watersheds.</td>
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<tr>
<td>5. No permanent irrigation system will be installed.</td>
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<tr>
<td>6. Complete tree cover over the watercourse will be provided if possible to keep water temperatures cool.</td>
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**Mitigation Measure Bio-1C: BMPs for Landscape Design in Setbacks outside Stream Banks.** The following best management practices shall be followed throughout site preparation, and will be required for development of each home:

1. When landscaping in setbacks outside of stream banks, grading will be minimized and fencing will be placed and designed to not impede the movements of wildlife.
2. Existing native trees and shrubs will be incorporated into the design as much as possible. Invasive non-native plants will not be planted and any found will be removed. Other plantings may be native or non-native; if a species is native to Orinda, such as coast live oak, use of locally native plant materials will be used to avoid genetic contamination of the wild population.
3. Landscaping will minimize the use of plantings that require summer water or extensive fertilizer, herbicides, or other chemicals that may enter the watercourse.
4. The use of irrigation systems will be minimized and any water collection features will be designed to discharge into any watercourse near the high-water line to minimize bank erosion.

**Mitigation Measure Bio-1D: BMPs for Landscape Design throughout the Property.** The following best management practices shall be followed throughout site preparation, and will be required for development of each home:

1. Landscaping within the drip line of native trees, especially oaks, will be drought-tolerant and not require irrigation once established.
2. Invasive non-native species will be removed and will not be planted.
3. Landscaping will be designed to minimize chemical inputs and off-season watering.
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<td>Impact Bio-2: With implementation of Project elements and mitigation measures that are specific to potentially occurring special status species, the Project would have a less than significant adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special status species. (LTS with Mitigation)</td>
<td><strong>Mitigation Measure Bio-1E: Compensation for Wetlands Fill.</strong> The Project applicant shall provide on-site compensatory mitigation or off-site purchase of wetland mitigation bank credits sufficient to achieve a no-net-loss standard, and subject to additional requirements of the permitting agencies. <strong>Mitigation Measure Bio-2A: San Francisco Dusky-footed Woodrat.</strong> Pre-construction surveys for woodrat nests will be performed in suitable habitat prior to construction. 1. If woodrat nests are observed, they will be avoided to the degree feasible. 2. If avoidance is not feasible, the nest will be dismantled by hand under biologist supervision and relocated to an undisturbed portion of suitable riparian habitat within the Project site that is a reasonable distance from the work area that will not be directly impacted. Removal of the nest should encourage any resident woodrats to disperse into adjoining areas of vegetative cover. <strong>Mitigation Measure Bio-2B: Special Status Bats.</strong> Construction activities near bat roost habitat or removal of potential bat roost habitat will commence between September and October to avoid bat maternity and hibernation periods. 1. If avoidance of maternity and hibernation periods is not feasible, pre-construction bat roost surveys for evidence of bat use (guano accumulation, acoustic or visual detections) will be performed in all trees, rock outcrops, and buildings subject to removal or demolition. 2. If evidence of bat use is found, at least three acoustic surveys using an acoustic detector will be conducted between April and November under appropriate conditions to determine whether a site is occupied. 3. If necessary, exclusion of bats from occupied roosts will be performed in the fall prior to construction. A qualified wildlife biologist shall be present during exclusion.</td>
<td>Less than Significant</td>
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<td>Potential Environmental Impacts</td>
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<td><strong>Mitigation Measure Bio-2C: Special Status Avian Species</strong> (White-Tailed Kite and Loggerhead Shrike). Construction activities in bird nesting habitat will commence during the non-breeding season (between September and October) to avoid potential impacts to nesting special status birds and avoid the bat hibernation period (November through February).</td>
<td>1. If avoidance of the breeding season is not feasible, a qualified biologist will conduct pre-construction surveys for breeding birds. If active nests are observed, no ground disturbance activities will occur within a 100-foot exclusion zone for passerine birds, and 300-foot exclusion zone for raptors and other non-passerine species. 2. These exclusion zones may vary dependent upon species and habitat, and shall remain in place around active nests until all young are no longer dependent upon the nest.</td>
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<td><strong>Mitigation Measure Bio-2D: Special Status Herpetofauna</strong> (Alameda Whipsnake, Foothill Yellow-legged Frog, and California Red-legged Frog)</td>
<td>1. An exclusion fence shall be installed around the limit of ground disturbance for the proposed Project. The fence shall incorporate one way exit funnels approximately every 100 feet. This will allow sensitive herpetofauna and other terrestrial species to vacate the area of potential disturbance on their own accord while preventing terrestrial species from entering. 2. A biological monitor shall conduct preconstruction surveys prior to the initiation of ground disturbance activities in order to determine the presence of sensitive herpetofauna. The monitor shall also be present during initial ground disturbance in order to salvage sensitive herpetofauna that may be uncovered in their refugia during construction activities. 3. Implementation of an approved Stormwater Pollution Prevention Plan (SWPPP) containing BMPs designed to prevent construction related discharge into all surface waters, including those containing sensitive herpetofauna and other aquatic species, will ensure that the Project does not result in potential</td>
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### Table 2.1: Summary of Project Impacts and Mitigation Measures

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<td>significant water quality impacts.</td>
<td>Less than Significant</td>
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<td>4. Where road widening or construction is to occur within a dispersal corridor, culverts, causeways, bridges, and/or overpasses shall be incorporated into the design to allow wildlife, including special status aquatic species, to disperse under roads, thereby reducing road kills. Similar measures shall be implemented, where feasible, to exclude wildlife species from high traffic and developed areas.</td>
<td>No mitigation warranted.</td>
<td></td>
</tr>
<tr>
<td>Impact Bio-3: With implementation of Project elements that will mitigate otherwise potentially significant impacts, the proposed Project would not 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. (LTS)</td>
<td><strong>Mitigation Measure Bio-4A: Tree Protection Plan.</strong> Pursuant to the requirements of OMC Chapter 17.21, the following measures shall be implemented as part of a Tree Protection Plan specific to the Project, intended to help maintain and improve the health and vitality of those trees that will remain post development of the Project: 1. Any plan affecting trees shall be reviewed by the Consulting Arborist. These include, but are not limited to, improvement plans, utility and drainage plans, grading plans, landscape and irrigation plans and demolition plans. 2. The Consulting Arborist shall identify a Tree Protection Zone, in which no soil disturbance is permitted. Along the new entry road, the Tree Protection Zone shall be defined as 1 foot behind the edge of construction. Elsewhere, the Tree Protection Zone shall be the dripline. If grading must encroach within the dripline, the Consulting Arborist will determine if a smaller Tree Protection Zone is possible.</td>
<td>Less than Significant</td>
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### Table 2.1: Summary of Project Impacts and Mitigation Measures

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<tr>
<td>3.</td>
<td>No underground services including utilities, sub-drains, water or sewer shall be placed in the Tree Protection Zone.</td>
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<td>4.</td>
<td>Any herbicides placed under paving materials must be safe for use around trees and labeled for that use.</td>
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<td>5.</td>
<td>Irrigation systems must be designed so that no trenching will occur within the Tree Protection Zone.</td>
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<td>6.</td>
<td>Prior to the start of site demolition and grading, the Consulting Arborist will meet with the demolition, grading and other relevant contractors to review limits of construction activity, identify areas requiring fencing, identify trees to be removed and review work procedures.</td>
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<td>7.</td>
<td>Fence all trees to be retained to completely enclose the Tree Protection Zone prior to demolition, grubbing or grading. Fences shall be 6-foot chain link or equivalent as approved by the Consulting Arborist. Fencing shall be placed at the dripline. Fences are to remain until all grading and construction is completed.</td>
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<td>8.</td>
<td>Trees to be preserved may require pruning to clean the crown, remove ivy and/or provide clearance. All pruning shall be completed by a Certified Arborist or Tree Worker and adhere to the latest edition of the ANSI Z133 Safety and A300 Pruning Standards.</td>
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<td>9.</td>
<td>No grading, construction, demolition or other work shall occur within the Tree Protection Zone. Any modifications must be approved and monitored by the Consulting Arborist.</td>
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<td>10.</td>
<td>Any root pruning required for construction purposes shall receive the prior approval of, and be supervised by, the Consulting Arborist.</td>
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<td>11.</td>
<td>If injury should occur to any tree during construction, it should be evaluated as soon as possible by the Consulting Arborist so that appropriate treatments can be applied.</td>
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<td>12.</td>
<td>Root-injured trees have a limited capacity to absorb water. Therefore, it is important to insure adequate soil moisture in the area of active roots. One to several irrigations may be needed for trees that are at risk. Irrigations should be specified by the Consulting Arborist.</td>
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<td>13.</td>
<td>No excess soil, chemicals, debris, equipment or other materials</td>
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<td>Potential Environmental Impacts</td>
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<td>shall be dumped or stored within the Tree Protection Zone. 14. Any additional tree pruning needed for clearance during construction must be performed by a Certified Arborist and not by construction personnel</td>
<td><strong>Mitigation Measure Bio-4B: Tree Replacement.</strong> Pursuant to OMC requirements for tree replacement, the Project shall provide for the replacement of removed protected trees based on the ratio of planting 1 new native tree for each six inches or fraction thereof of the aggregate diameter of trees approved for removal, and may substitute a larger number of smaller trees if approved by the Planning Director.</td>
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<tr>
<td>Impact Bio-5: The Project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. (No Impact)</td>
<td>No mitigation warranted.</td>
<td>No Impact</td>
</tr>
<tr>
<td>Impact Bio-6: The implementation of site design recommendations and requirements in biological assessments and conformance to the requirements of federal, State, and City permits would not result in significant off-site biological resource impacts. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
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<tr>
<td><strong>Cultural Resources</strong></td>
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<tr>
<td>Impact Cultural-1: The Project could cause a substantial adverse change in a historical resource by enabling residential development on adjacent parcels that would compromise the Joaquin Moraga Adobe’s integrity of setting. However,</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
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### Table 2.1: Summary of Project Impacts and Mitigation Measures

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<tr>
<td>implementation of Project design elements will mitigate potential impacts. (LTS)</td>
<td><strong>Mitigation Measure Cultural-2: Secretary of the Interior’s Standards for Rehabilitation.</strong> To ensure that the future rehabilitation of the Moraga Adobe is conducted in conformance with the Secretary of the Interior’s Standards for Rehabilitation, the Project applicant will enter into formal agreement with the City of Orinda stipulating that:</td>
<td>Less than Significant</td>
</tr>
</tbody>
</table>
| Impact Cultural-2: The Project could cause a substantial adverse change in a historical resource by enabling alteration of the Joaquin Moraga Adobe that would endanger its historic status. However, with implementation of Project elements and mitigation measures (including the requirement that any work on the Moraga Adobe must be consistent with Secretary of Interior Standards), these impacts will be reduced to less than significant levels. (LTS with Mitigation) | 1. No new, freestanding buildings, beyond those stipulated in the 2013 MOA, shall be constructed on the proposed lot occupied by the Moraga Adobe.  
2. Any future additions to the existing Moraga Adobe shall be restricted to the portion of the lot to the south of the Adobe’s front façade, where the building’s historic profile has already been changed.  
3. Any proposed future rehabilitation of the Moraga Adobe shall be reviewed by the City, or by a historic resource consultant retained by the City, to confirm its conformance with the Secretary of the Interior’s Standards for Rehabilitation.  
4. Any alterations of, or additions to the Moraga Adobe, including interpretative elements proposed in the future as a community benefit, shall be designed and built in accordance with Standards 9 and 10 of the Secretary of the Interior’s Standards for Rehabilitation:  
   (9): New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.  
   (10): New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and |
Table 2.1: Summary of Project Impacts and Mitigation Measures

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| **Impact Cultural-3: Site preparation, grading, and construction activities associated with the Project could adversely impact the Moraga Adobe site, which appears eligible for consideration as an historical resource under CEQA. However, implementation of Project elements will mitigate potential impacts to the significance of archaeological resources. (LTS with Mitigation)** | Mitigation Measure Cultural-3A: Archaeological Testing, Avoidance or Data Recovery. Prior to site clearing and grading, a test excavation program will be conducted at the Moraga Adobe by a qualified archaeologist meeting federal criteria under 36 CFR Part 61 in order to determine the extent and potential significance of the archaeological deposits. In addition, a California Department of Parks and Recreation, Archaeological Site Record form will be completed for the Moraga Adobe site.  
1. If the archaeological deposits at the Moraga Adobe are determined to be potentially significant, they will be avoided, to the extent feasible.  
2. If avoidance is not feasible, project impacts will be mitigated in accordance with the recommendations of the evaluating archaeologist and CEQA Guidelines §15126.4 (b)(3)(C), which require development and implementation of a Data Recovery Plan that would include recommendations for the treatment of the discovered archaeological materials. The Data Recovery Plan will be submitted to the City of Orinda for review and approval. Upon approval and completion of the data recovery program, the archaeologist will prepare a report documenting the methods and findings. The report will be submitted to the City of Orinda. Once the report is reviewed and approved by the City of Orinda, a copy of the report will be submitted to the Northwest Information Center.  
Mitigation Measure Cultural-3B: Training and Discovery. A qualified archaeologist shall be trained on best practices in archaeological site protection and stewardship.  
3. Any future rehabilitation or expansion of the Moraga Adobe shall be undertaken with the assistance of a historic preservation architect (meeting the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation, Professional Qualifications Standards) familiar with historic adobe buildings and with National Park Service Preservation Brief 5, Preservation of Historic Adobe Buildings. | Less than Significant |
Table 2.1: Summary of Project Impacts and Mitigation Measures

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<td>archaeologist shall conduct a training session for all construction personnel prior to the beginning of construction. Training shall address the proper procedures to follow in the event that cultural resources are uncovered during excavations and shall include an explanation of the regulatory policies protecting resources; basic identification of cultural resources; and the protocol to follow in case of a discovery of such resources. The protocol shall include the following: 1. If deposits of prehistoric or historic archaeological materials are encountered during project activities outside the Moraga Adobe site, all work within 25 feet of the discovery will be stopped and a qualified archaeologist meeting federal criteria under 36 CFR Part 61 will be contacted to assess the deposit(s) and make 2. If the deposits are determined to be non-significant, no further action is necessary. 3. If the deposits are determined to be significant, avoidance or data recovery pursuant to Mitigation Measure Cultural -3A shall be implemented.</td>
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<td>Impact Cultural-4: The Project may directly or indirectly destroy a unique paleontological resource due to the presence of the fossiliferous Siesta Formation at the Project area. However, implementation of paleontological monitoring plan, included as a required element of the Project, will mitigate potential impacts to unique paleontological resources. (LTS with Mitigation)</td>
<td>Mitigation Measure Cultural-4: Paleontological Monitoring. The Project applicant shall be responsible for preparation and implementation of a Paleontological Monitoring Plan that ensures paleontological monitoring during construction activities; avoidance measures; implementation of a paleontological salvage program developed by a professional paleontologist should artifacts be discovered; provisions for recovered specimens to be housed in an institutional paleontological repository; and preparation of a Final Report to be reviewed by a vertebrate paleontologist designated by the City.</td>
<td>Less than Significant</td>
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<tr>
<td>Impact Cultural-5: Ground disturbing activities associated with site preparation, grading, and construction activities could disturb human remains, including those interred outside of formal cemeteries. However, implementation of Project elements during the construction phases of work</td>
<td>Mitigation Measure Cultural-5: Discovery of Human Remains. In the event that human remains, or possible human remains are located during Project-related construction excavation, the following provisions of California Health and Safety Code section 7050.5(b) will be implemented. 1. In the event of discovery or recognition of any human remains in</td>
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<td>would reduce any disturbance of human remains to a less than significant level. (LTS with Mitigation)</td>
<td>any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the County Coroner has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.</td>
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2. If the County Coroner recognizes the remains as being of Native American origin, he/she is responsible to contact the Native American Heritage Commission within 24 hours. The Commission has various powers and duties, including the appointment of a Most Likely Descendant ("MLD") to the project. The MLD (or in lieu of the MLD, the Native American Heritage Commission) has the responsibility to provide guidance as to the ultimate disposition of any Native American remains.  

3. The archaeological consultant, City of Orinda, and MLD would then make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of human remains and associated or unassociated funerary objects (pursuant to CEQA Guidelines Section 15064.5[d]). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. The PRC allows 48 hours to reach agreement on these matters. If the MLD and the other parties do not agree on the reburial method, the project will follow Section 5097.98(e) of the PRC, which states that "the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface destruction or disturbance."

If the MLD and the other parties do not agree on the reburial method, the project will follow Section 5097.98(e) of the PRC, which states that the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface destruction or disturbance.
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<td>Impact Cultural-6: Implementation of Project elements will ensure that the Project does not adversely contribute to cumulative cultural resource impacts. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
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<th>Geology and Soils</th>
<th>Mitigation Measure Geo-1: Geotechnical Report Recommendations.</th>
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| Impact Geo-1: Compliance with required State building codes and City policies, and implementation of Project elements will mitigate potential impacts so that the Project would not expose people or structures to potential substantial seismic-related adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, and landslides. (LTS) | All grading and construction activity at the Project site shall comply with the recommendations of professionally prepared geotechnical reports, seismic design criteria of the CBC, and Orinda Municipal Code, including but not limited to the following:  
1. All grading work conducted at the Project site shall demonstrate compliance with the Geotechnical Report's specifications for engineering of cut and fill materials, specifications for sub-drainage on the site, and specifications for construction of retaining walls.  
2. All new home construction shall demonstrate compliance with the Geotechnical Report's specifications for structure foundations, and at such time as new homes are constructed, their construction methods shall demonstrate compliance with CBC requirements.  
3. Any remedial slide repair work shall be done under the direct observation of both an engineering geologist and a geotechnical engineer to enable detailed examination of the subsurface conditions, and a refinement (either expansion or contraction) of the areas where soils repair work is currently proposed.  
4. Any over-excavation and re-compaction operation associated with slide repair/ground improvement will involve reuse of the same on-site soils. No significant change in the permeability or infiltration rate of the soils in the areas to be graded shall result. |
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<td>Impact Geo-2: Although the Project is located on areas of unstable soil, the Project as designed, which complies with State building code requirements and City policies, will mitigate potential impacts. The Project would stabilize the Project site and would not cause or result in on- or off-site landslides, lateral spreading, subsidence, liquefaction or collapse. (LTS with Mitigation)</td>
<td>Mitigation Measure Geo-2: Slope Stability. The Project applicant shall implement the following standard practices and regulatory requirements to minimize impacts related to instability during Project construction: 1. The method for grading to repair slides or to make excavations near property lines will reflect the topography and subsurface conditions at each location in order to incorporate the safest methodology. For example, some of the slides may be repaired in small sections rather than excavating the slide mass all at once. 2. Extensive subdrainage will be installed as part of the earthwork operation, reducing the volume of water that soils will be exposed to and increasing their stability; 3. Slide repair will take place during the site preparation stage, rather than during the individual lot development stage. 4. Excavation and slide repair work will be performed during the dry season. 5. Soil stockpile areas will be selected based on existing slope inclinations, proximity of adjoining improvements, and known subsurface conditions.</td>
<td>Less than Significant</td>
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<td>Impact Geo-3: The Project as proposed, along with implementation of required National Pollutant Discharge Elimination System (NPDES) permit requirements, and City policies that will mitigate potential impacts, the Project would not result in substantial soil erosion or the loss of topsoil. (LTS with Mitigation)</td>
<td>Mitigation Measure Hydro-1A: Stormwater Pollution Prevention Plan (SWPPP) would also mitigate Impact Geo-3. (See Impact Hydro-1 for full measure.)</td>
<td>Less than Significant</td>
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| code requirements, City policies and Project-specific mitigation measures will mitigate potential impacts due to expansive soils to avoid substantial risks to life or property. (LTS with Mitigation) | foundations and slabs on grade shall be designed based on the recommendations of the Project’s geotechnical engineer (as included in the JVL Report) to ensure that buildings are not damaged by expansive soils. These design measures include:  
1. Houses on the Project site shall be supported on drilled pier foundations at least 18 inches in diameter which will extend to at least 15 feet below the existing grade or the lowest finished grade, whichever is deeper.  
2. The piers shall be designed for vertical loads, a “creep” load, and uplift pressure, as specified in the JVL Report.  
3. Slabs on grade shall be constructed on a 2-foot mat of non-expansive engineered fill, as specified in the JVL Report. | Less than Significant |
| Impact Geo-5: The capability of Project site soils to support septic tanks or alternative waste water disposal systems does not apply, as the Project will use the public sewer system. (No Impact) | No mitigation warranted.                                                                            | No Impact                      |
| Impact Geo-6: The implementation of site design recommendations and requirements in geotechnical reports, seismic design criteria of the CBC, and Orinda Municipal Code would not combine with other projects to result in cumulatively considerable off-site geologic and soil impacts. (LTS) | No mitigation warranted.                                                                            | Less than Significant          |

### Hazards and Hazardous Materials

| Impact Haz-1: Construction activities routinely utilize construction materials and fuels considered hazardous. Residential operations generally utilize only incidental amounts of household hazardous chemicals. Compliance with applicable regulations | Mitigation Measure Hydro-1A: Stormwater Pollution Prevention Plan (SWPPP) would also mitigate Impact Haz-1. (See Impact Hydro-1 for full measure.) | Less than Significant |
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<td>will ensure the Project will not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. (LTS with Mitigation)</td>
<td><strong>Mitigation Measure Haz-2: Asbestos and Lead-Based Paint Assessment.</strong> Prior to issuance of demolition, grading or building permits, the Project applicant shall submit a comprehensive assessment report to the City, signed by a qualified environmental professional, documenting the presence or lack thereof of asbestos-containing materials, lead-based paint, and any other building materials or stored materials classified as hazardous waste by State or federal law.</td>
<td>Less than Significant</td>
</tr>
<tr>
<td>Impact Haz-2: The Project will 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. (LTS with Mitigation)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
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<tr>
<td>Impact Haz-3: The Project will not produce hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste that could impact an existing or proposed school within one-quarter mile. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
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<tr>
<td>Impact Haz-4: The Project site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. (No Impact)</td>
<td>No mitigation warranted.</td>
<td>No Impact</td>
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<tr>
<td>Impact Haz-5: The Project site is not located within an airport land use, within two miles of a public airport or public use airport, or within the vicinity of a private airstrip, and therefore will not result in an airport-related safety hazard. (No Impact)</td>
<td>No mitigation warranted.</td>
<td>No Impact</td>
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<tr>
<td>Impact Haz-6: The Project will not interfere with an adopted emergency response plan or emergency evacuation plan. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
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<tr>
<td>Impact Haz-7: The Project is located within a Very High Fire Hazard Severity Zone but would incorporate recommended Project elements to minimize the risk from fires, including defensible space, sprinklers in structures, adequate provision of fire hydrants and for fire apparatus access. The Project will not expose people or structures to a significant risk of loss, injury or death involving wildland fires. (LTS with Mitigation)</td>
<td>Mitigation Measure Haz-7: Fire Safety. The Project shall comply with the City’s fire safety ordinance, the California Fire Code, fire safety provisions of the City’s building and subdivision ordinances and the California Building Code. Specifically, the Project shall incorporate the following elements: 1. Fire apparatus roadways (public, private streets, roads and in some instances driveways used for vehicle access) shall extend to within 150 feet of any portion of an exterior wall of the first story of any building. 2. Fire apparatus roadways in excess of 150 feet in length shall provide approved fire apparatus turnarounds. 3. Fire apparatus roadways shall have a minimum unobstructed width of 20 feet and an unobstructed vertical clearance of not less than 13 feet 6 inches. 4. Adjacent to fire hydrants, fire apparatus roadways shall be a minimum of 28 feet in width for at least 20 feet in both directions from the fire hydrant. 5. Fire apparatus roadways less than 36 feet in width, but more than 28 feet shall be marked as a fire lane on one side only. Fire apparatus roadways less than 28 feet in width shall be marked as fire lanes on both sides of the street. 6. Fire apparatus roadways with restricted parking designated as fire lanes shall be marked with red curbs and fire lane signs or red curbs and face of curb stenciling stating: “NO STOPPING FIRE LANE – CVC 22500.1” 7. Fire apparatus roadways shall be capable of supporting the imposed weight of fire apparatus (40,000 pounds) and shall be provided with a paved or concrete surface. 8. Fire apparatus roadways shall be installed and fire hydrants in service prior to commencement of framing. Compliance with this</td>
<td>Less than Significant</td>
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<tr>
<td>Potential Environmental Impacts</td>
<td>Recommended Mitigation Measures</td>
<td>Resulting Level of Significance</td>
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<tr>
<td>Requirement shall be verified by inspection by the Fire District.</td>
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<td>9. The Project shall include wet barrel, standard steamer type (1-4 (\frac{1}{2}) and 1-2 (\frac{3}{4})) outlet fire hydrants.</td>
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<td>10. Fire flow shall be per California Fire Code and shall be between 1,500 gallons per minute (gpm) and 2,000 gpm.</td>
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<td>11. Residential fire sprinkler systems shall be required in all structures.</td>
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<td>Impact Haz-8: The Project will not result in any cumulatively considerable significant impacts from hazards or hazardous materials. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
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</table>

**Hydrology and Water Quality**

<table>
<thead>
<tr>
<th>Impact Hydro-1: Implementation of Project elements designed to comply with required Federal, State, and City regulations regarding stormwater runoff and water discharge for the Project site will mitigate potential impacts, such that the Project would not violate water quality standards or waste discharge requirements. (LTS with Mitigation)</th>
<th>Mitigation Measure Hydro-1A: Stormwater Pollution Prevention Plan (SWPPP). Prior to issuance of a grading or building permit, the Project applicant shall prepare and submit to the City for approval a Stormwater Pollution Prevention Plan that specifies pollution prevention measures to be implemented during the construction period. Specifically, the Project will be subject to the provisions in OMC sections 18.02.080 and 18.04.010, which require that all construction activities shall conform to:</th>
<th>Less than Significant</th>
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<tbody>
<tr>
<td></td>
<td>1. the requirements of the California Stormwater Quality Association (CASQA) Stormwater Best Management Practices Handbooks, Construction, January 2003; 2. the San Francisco Bay Regional Water Quality Control Board Erosion and Sediment Control Field Manual, 2002; 3. the City’s grading and erosion control requirements, including but not limited to those indicated in OMC chapter 15.36; and 4. other generally accepted engineering practices for erosion control as required by the City. The City may establish controls on the rate, volume and duration of storm water runoff from new developments and redevelopment as may be appropriate to minimize the discharge and transport of pollutants.</td>
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<tr>
<td>Potential Environmental Impacts</td>
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<td><strong>Mitigation Measure Hydro-1B: Source Controls.</strong> To further limit potential pollutants from entering stormwater runoff, the following source control measures will be implemented:</td>
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<td>1. All on-site drain inlets will be marked as “No Dumping, Drains to Bay” or equivalent.</td>
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<td>2. New owners will receive information on stormwater pollution prevention and on integrative pest management to aid in maintaining landscaping using minimal or no pesticides.</td>
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<td>3. Existing native trees, shrubs, and ground cover will be preserved to the extent possible.</td>
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<td>4. Because of the clay soil and steep slope of the Project site (which tend to result in over-land runoff rather than ground infiltration), permeable pavement for the Project roadway is not recommended, although gravel paving should be considered at parking bays where slopes are not steep.</td>
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<td><strong>Mitigation Measure Hydro-1C: Compliance with C.3 Provisions.</strong> Final design elements of the SWCP shall conform to all applicable regulatory measures, including the Contra Costa Clean Water Program Stormwater C.3 Guidebook, including but not limited to the following:</td>
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<tr>
<td>1. Individual lot development will be subject to the review and approval of the City engineer to ensure consistency with all applicable regulatory requirements.</td>
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<td>2. As part of the Final Grading and Improvement Plans, the City shall confirm that post development runoff to lower Moraga Creek does not exceed one percent of pre-project runoff flow.</td>
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<td>3. The Final Stormwater Control Plans shall show the existing drainage pipes and direction of overland/surface flows.</td>
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<tr>
<td>4. The Final Grading and Improvement Plans shall include, if the soils report so indicates, facilities for controlling any surface and sub-surface seepage along the downslope of lots 9 through 11. These waters shall not be conveyed to the bio-retention basin.</td>
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<td>5. The repair/stabilization of soils with large diameter piers shall comply with the City’s Soil Report Standards, if determined necessary to comply with applicable regulatory requirements.</td>
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</table>
## Table 2.1: Summary of Project Impacts and Mitigation Measures

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<td>6. The City engineer shall confirm that the overflow pour wall and erosion control measures for the slope below the pour wall conform to applicable regulatory requirements. In addition, the dimensions of the bioretention basin shall be subject to the final review and approval of the City engineer to confirm their compliance with all applicable regulatory requirements.</td>
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<td>7. The Final Grading and Improvement Plans shall show the path that connects Dolores Way to Adobe Lane.</td>
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<td>8. Subdrains shall be installed as part of the slide repair and subdivision development to ensure subdrainage water is not conveyed to the bioretention basin.</td>
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<td>9. Drainage facilities for cross-lot drainage and associated drainage easements shall be included in the Final Grading and Improvement Plans; these drainage facilities shall not convey pervious runoff to the bioretention basin.</td>
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<td>10. Final review and approval of the Stormwater Control Plan and its component facilities shall be undertaken by the City engineer to ensure its consistency with the applicable C.3 Guidebook requirements.</td>
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<td>11. The City engineer shall confirm that the sizing of the bioretention basin satisfies all applicable regulatory requirements.</td>
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<td>12. Prior to submittal of the Final Grading and Improvement Plan, the applicant shall submit draft agreements identified in the Stormwater Control Plan that pertain to the transfer of ownership and/or long-term maintenance of stormwater treatment or flow control facilities (including but not limited to Operation and Maintenance Agreements and CC&amp;Rs).</td>
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<td>13. In accordance with the treatment calculations in the Stormwater Control Plan, development of each lot shall be limited to an average of 10,000 square feet of impervious surface for all of the lots.</td>
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<td>14. Lot development shall be such that runoff from impervious surfaces (roofs, driveways, patios, etc.) gravity flows to the street or to the impervious storm drain system stubs to ensure all impervious runoff is conveyed to the bioretention basin.</td>
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<tr>
<td>15. Runoff from pervious areas, and subsurface/sub-drain water from individual lots shall not be conveyed to the bioretention basin.</td>
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<td>(with the exception of pervious runoff from a portion of Lot 6). 16. Development on any lot may include permanent drainage facilities to treat and convey impervious runoff away from the street and to the tributaries on the site, subject to review and approval by the City engineer.</td>
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<tr>
<td>Impact Hydro-2: The Project will not rely on groundwater and therefore will not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
</tr>
<tr>
<td>Impact Hydro-3: The Project will not substantially alter the existing drainage pattern of the Project site in a manner that results in substantial erosion or siltation on- or off-site, or that would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. (LTS with Mitigation)</td>
<td>Mitigation Measure Hydro-3: Individual Lot Drainage. As each lot on the Project site is developed, the lot owner will be required to convey runoff from all impervious surfaces to the storm drain system that flows to the bioretention facility, and to provide appropriate structural set-backs from existing channels. A Storm Water Pollution Prevention Plan (SWPPP) will be prepared for each new home site development, and each lot owner must provide erosion control protection for drainage swales and steep ground surfaces.</td>
<td>Less than Significant</td>
</tr>
<tr>
<td>Impact Hydro-4: The Project will not place housing or structures which would impede or redirect flood flows within a 100-year flood hazard area. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
</tr>
<tr>
<td>Impact Hydro-5: The Project will not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam, or inundation by seiche, tsunami, or mudflow. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
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## Table 2.1: Summary of Project Impacts and Mitigation Measures

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<td>Impact Hydro-6: Compliance with Federal, State, regional, and City regulations, and implementation of Project elements, will ensure the Project would not combine with other projects to result in cumulatively considerable hydrology or water quality impacts. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
</tr>
<tr>
<td><strong>Noise</strong></td>
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<tr>
<td>Impact Noise-1: Permanent residents will be added to a site located in an area that experiences noise levels within City standards for residential uses. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
</tr>
<tr>
<td>Impact Noise-2: Construction of the Project will temporarily generate noise from construction equipment, vehicles and activities. However, construction activities will comply with applicable standards established in the OMC. (LTS with Mitigation)</td>
<td><strong>Mitigation Measure Noise-2: Limited Construction Hours.</strong> The Project’s construction schedule shall limit active hours to between 9:00 AM and 6:00 PM on weekdays. (This is a modification to construction hours allowable under the OMC, which would begin at 8:00 AM on weekdays and included limited hours on Saturday.)</td>
<td>Less than Significant</td>
</tr>
<tr>
<td>Impact Noise 3: The Project will generate noise levels typical of residential neighborhoods such as those existing in the vicinity. The Project would not result in a substantial permanent increase in ambient noise levels. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
</tr>
<tr>
<td>Impact Noise-4: Construction activities on the site would result in low levels of groundborne vibration that would be well below levels that could result in</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
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<tr>
<td>damage to structures. The Project will not expose people to, or generate, excessive groundborne vibration or groundborne noise levels. (LTS)</td>
<td>No mitigation warranted.</td>
<td>No Impact</td>
</tr>
<tr>
<td>Impact Noise-5: The Project site is not located in an area subjected to substantial airplane noise. The Project would not expose people to excessive noise levels from airport-related use. (No Impact)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
</tr>
<tr>
<td>Impact Noise-6: The Project would not result in a significant cumulative violation of City noise standards. (LTS)</td>
<td>No mitigation warranted.</td>
<td></td>
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</table>

**Transportation and Traffic**

| Impact Trans-1: The Project generates too few peak hour trips to have a traffic impact that would conflict with City of Orinda and Contra Costa Transportation Authority standards. (LTS) | No mitigation warranted.                                                | Less than Significant           |
| Impact Trans-2: The Project would not conflict with CCTA standards. (LTS)                                  | No mitigation warranted.                                                | Less than Significant           |
| Impact Trans-3: The Project would not result in a change in air traffic patterns. (No Impact)              | No mitigation warranted.                                                | No Impact                       |
| Impact Trans-4: The Project’s design for the residential subdivision would not substantially                  | Mitigation Measure Trans-4A: Limitations on Public Access to the Moraga Adobe. Consistent with the 2013 MOA, access for non- | Less than Significant           |
## Table 2.1: Summary of Project Impacts and Mitigation Measures

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| Increase hazards due to a design feature or incompatible uses, but large vehicles associated with public access to the historic Moraga Adobe and construction-related traffic could introduce temporary and/or intermittent transportation hazards. (LTS with Mitigation) | Residents to the Moraga Adobe shall be limited to the following:  
1. The size of vehicles used by groups to access the Moraga Adobe shall be restricted. Full sized school buses and other vehicles that accommodate 45 passengers or more shall not be used to transport visitors to the Moraga Adobe site. The number of parking spaces at the Moraga Adobe parcel shall be limited to an area where one shuttle bus may load and unload passengers, plus one handicapped parking space.  
2. The number of days that the Moraga Adobe may be toured shall be no more than 30 days per year.  
3. The maximum size of a school group visiting the Moraga Adobe site shall be 60 persons. | |

**Mitigation Measure Trans-4B: Donna Maria Way Pavement Inspection and Repair.** The Project applicant shall conduct a visual inspection of pavement conditions on Donna Maria Way prior to commencement of construction to establish a baseline of pavement conditions, followed by an inspections after construction has been complete, to determine any pavement condition changes and potential need for repair. A visual inspection by an engineer shall determine whether the roadway conditions include surface cracking, structural deficiencies and other distress signs that may indicate a need for roadway rehabilitation. Should such conditions occur, rehabilitation of the roadway surface shall be conducted by the Project applicant.

**Mitigation Measure Trans-4C: Construction Management Plan.** The Project applicant shall submit to the City for its review and approval a Construction Management Plan (CMP), addressing construction vehicle circulation and contractor rules, neighborhood traffic safety during construction, and construction hours. The CMP shall include, but not be limited to, the following limitations and restrictions:  
1. All construction activities, including staging, materials storage, and equipment parking shall be restricted to occur on the Project site.  
2. To avoid construction traffic interfering with the pedestrian and vehicular school commute to Del Rey Elementary School and...
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<tr>
<td>Miramonte High School, the construction hours set forth in the CMP shall be limited to weekdays between 9:00 AM and 6:00 PM. Classes at both nearby schools start at 8:00 AM and 8:45 AM respectively, and end in the afternoon.</td>
<td>Miramonte High School, the construction hours set forth in the CMP shall be limited to weekdays between 9:00 AM and 6:00 PM. Classes at both nearby schools start at 8:00 AM and 8:45 AM respectively, and end in the afternoon. 3. Traffic controls and/or construction equipment and material delivery escorts shall be provided on Donna Marina Way and El Camino Moraga as needed to minimize conflicts during school drop-off and pick-up times. 4. Construction-related vehicles shall be prohibited from parking along El Camino Moraga and Donna Maria Way, and access to these roadways shall be maintained free and clear to the extent practicable. 5. Provide an alternative walking path linking the adjacent neighborhood to Miramonte high School during the construction period, when access to the existing pedestrian path will be temporarily closed.</td>
<td>Less than Significant</td>
</tr>
<tr>
<td>Impact Trans-5: The Project will not result in inadequate emergency access. (LTS with Mitigation)</td>
<td>Mitigation Measure Trans-5: Fire District Recommendations. Final designs for the Project shall include the following recommendations of the Moraga Orinda Fire District: 1. The Project shall meet minimum standards for fire apparatus access and water supply. Roads and fire hydrants will be in service prior to the start of combustible construction. 2. Structures constructed on the site will comply with the construction provisions of Chapter 7A of the California Building Code and meet minimum State and Moraga-Orinda Fire District standards for vegetation management. 3. Residential fire sprinkler systems will be installed in all residences regardless of size. 4. The Project applicant will contact the Fire District for street addressing.</td>
<td>Less than Significant</td>
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<tr>
<td>Impact Trans-6: The Project would not conflict with any adopted policies, plans, or programs regarding</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
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<td>public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or</td>
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<td>safety of such facilities. (LTS)</td>
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<tr>
<td>Impact Trans-7: The Project would not combine with other projects to result in cumulatively</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
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<td>considerable transportation and traffic impacts. (LTS)</td>
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**Other Topics**

| Impact Ag-1: Development of the Project would not convert Prime Farmland, Unique Farmland or  | No mitigation warranted.          |                                |
| 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)                                                                              |                                   |                                |
| Impact Ag-2: Development of the Project would not conflict with existing zoning for           | No mitigation warranted.          |                                |
| agricultural use, or with a Williamson Act contract. (No Impact)                             |                                   |                                |
| Impact Ag-3: Development of the Project would not conflict with existing zoning for, or      | No mitigation warranted.          |                                |
| cause rezoning of, forest land or timberland zoned Timberland Production. (No Impact)        |                                   |                                |
| Impact Ag-4: Development of the Project would not combine with other projects to result in   | No mitigation warranted.          |                                |
| cumulatively                                                                                   |                                   |                                |
### Table 2.1: Summary of Project Impacts and Mitigation Measures

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<td>considerable agriculture or forest resource impacts. (No Impact)</td>
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<td>Impact GHG-1: The Project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
</tr>
<tr>
<td>Impact GHG-2: The Project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. (No Impact)</td>
<td>No mitigation warranted.</td>
<td>No Impact</td>
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<tr>
<td>Impact LU-1: Development of the Project would not physically divide an established community. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
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<tr>
<td>Impact LU-2: Development of the Project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect. (No Impact)</td>
<td>No mitigation warranted.</td>
<td>No Impact</td>
</tr>
<tr>
<td>Impact LU-3: Development of the Project would not conflict with any applicable habitat conservation plan or natural community conservation plan. (No Impact)</td>
<td>No mitigation warranted.</td>
<td>No Impact</td>
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<tr>
<td>Impact LU-4: The Project would not combine with other projects to result in cumulatively considerable</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
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<tr>
<td>land use and planning impacts. (LTS)</td>
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<tr>
<td>Impact Min-1: Development of the Project would not 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)</td>
<td>No mitigation warranted.</td>
<td>No Impact</td>
</tr>
<tr>
<td>Impact Min-2: Development of 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. (No Impact)</td>
<td>No mitigation warranted.</td>
<td>No Impact</td>
</tr>
<tr>
<td>Impact Min-3: The Project would not combine with other projects to result in cumulatively considerable mineral resources impacts. (No Impact)</td>
<td>No mitigation warranted.</td>
<td>No Impact</td>
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<tr>
<td>Impact Pop-1: Development of the Project would not induce substantial population growth in the area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure). (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
</tr>
<tr>
<td>Impact Pop-2: Development of the Project would not displace substantial numbers of existing housing or people, necessitating the construction of replacement housing elsewhere. (No Impact)</td>
<td>No mitigation warranted.</td>
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| **Impact Public Serv-1:** Due to the small size of the Project and its location within the developed area of Orinda, the Project would not require new or physically altered governmental facilities in order to maintain acceptable service ratios, response times or other performance objectives. (LTS with Mitigation) | **Mitigation Measure Public Serv-1:** Compliance with MOFD Recommendations. The Project shall meet the recommendations and requirements of the Moraga Orinda Fire District for the Project, including:  
1. The Project shall meet minimum standards for fire apparatus access and water supply.  
2. Roads and fire hydrants will be in service prior to the start of combustible construction.  
3. Structures constructed on the site will comply with the construction provisions of Chapter 7A of the California Building Code and meet minimum State and Moraga-Orinda Fire District standards for vegetation management.  
4. Residential fire sprinkler systems will be installed in all residences regardless of size.  
5. The Project sponsor will contact the Fire District for street addressing. | Less than Significant |
| **Impact Rec-1:** The Project would not increase use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of these facilities would occur or be accelerated. (LTS) | No mitigation warranted.                                                                                                                                                                      | Less than Significant                  |
| **Impact Rec-2:** Implementation of Project elements will ensure that the pedestrian paths included in the Project will not have an adverse physical effect on the environment. The Project will not require the construction or expansion of additional recreation facilities. (LTS) | No mitigation warranted.                                                                                                                                                                      | Less than Significant                  |
| **Impact Util-1:** The Project will not require or result in the construction of new wastewater treatment facilities or the expansion of existing facilities, will | **Mitigation Measure Util-1:** Sewer System Design. The Project’s on-site sewer collection system shall be designed and constructed in compliance with the design policies of CCCSD and the City of Orinda | Less than Significant                  |
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<td>not affect the CCCSD’s (Central Contra Costa Sanitary District) capacity to serve its existing commitments in addition to the Project’s projected demand, and will not cause the CCCSD wastewater facilities to exceed wastewater treatment requirements of the Regional Water Quality Control Board. (LTS with Mitigation)</td>
<td>General Plan, including: 1. Utilization of gravity service, street location specifications, public easement requirements and hillside, creek and tree protection policies. 2. General Plan performance standards require capacity to carry and treat 100 gallons per capita per day for residential users, that sewer mains should be designed to be 2/3 full, and that trunk lines should be designed to be 100% full. 3. Design of side sewers shall meet current Standard Specification of CCCSD to reduce the amount of rainfall and groundwater that will infiltrate the sewer, thereby avoiding unnecessary pumping and treatment costs.</td>
<td>Less than Significant</td>
</tr>
<tr>
<td>Impact Util-2: There is sufficient water supply from existing entitlements and resources available to serve the Project, and the Project will not require an expansion of existing water treatment facilities. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
</tr>
<tr>
<td>Impact Util-3: The Project will not cause expansion of existing off-site storm water drainage facilities that could cause a significant environmental effect. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
</tr>
<tr>
<td>Impact Util-4: The Project will comply with local statutes and regulations related to solid waste, and will be served by a landfill with sufficient permitted capacity to accommodate the Project’s solid waste disposal needs. (LTS)</td>
<td>No mitigation warranted.</td>
<td>Less than Significant</td>
</tr>
</tbody>
</table>
This chapter describes the Project site and its existing uses, details of the Project, and the Project objectives.

Project Site

Location and Existing Uses

The proposed J&J Ranch Project is located at 24 Adobe Lane in the City of Orinda, and includes two parcels (Assessor’s Parcel Numbers 271-130-003 and 271-150-002) totaling approximately 20.33 acres. The Project site is located in the southern part of Orinda on a hillside above an existing single-family residential neighborhood along Donna Maria Way. The Del Rey Elementary School is located to the north, the approved Lavenida Lane Subdivision is located to the east and the Miramonte High School is located further to the east of the Lavenida Lane Subdivision. The existing single-family residential neighborhood along Sager Court is located to the west, and the Moraga Country Club Golf Course runs along the southern site boundary, which also defines the municipal boundary line between the City of Orinda and the Town of Moraga. See Figure 3-1 for a map of the Project site and its context.

Dense vegetation exists along the north, east and west property lines. There are four existing drainages on the Project site. Lower Moraga Creek is a perennial drainage that borders the Project site on the north and runs between the Project site and the Del Rey Elementary School. Three ephemeral drainages traverse the Project site and flow generally in a northeasterly direction into Lower Moraga Creek. One of these drainages runs along the northwest portion of the Project site, another runs northeast through the site, and the third runs along the Project site’s eastern boundary.

The only structure on the property is the historic Joaquin Moraga Adobe (“Moraga Adobe” or “Adobe”), which is located at the center of the Project site. The original Moraga Adobe was constructed in 1841 and is the oldest of five remaining adobe houses in Contra Costa County. The original Moraga Adobe was a one-and-a-half story dwelling that was rectangular in plan. It was extensively altered in 1941 when the adobe walls were clad in stucco, two rectangular shaped additions were added to the rear of the house, and the original cellar was filled with rubble and capped with concrete. The Moraga Adobe became a California Historical Landmark (Landmark #509) in 1954; it was listed in the National Register of Historic Places in 1972; and became an official Orinda Landmark in 1995. The Moraga Adobe is located on an elevated yet fairly flat area in the center of the Project site, affording expansive views of the Moraga/Orinda Valley and Mt. Diablo to the east. The building faces slightly northeast. The hillside falls away sharply on the north and east side of the Moraga Adobe and the existing residential homes to the north and northeast are approximately ninety-five feet below the Moraga Adobe.

Other than the Moraga Adobe and a paved access road that leads to it, there are no other existing improvements on the Project site (see Figure 3-2).
Figure 3-1
Project Site and Vicinity
General Plan Designation and Zoning
The Project site is designated as "Low Density Residential" in the City of Orinda General Plan (see Figure 3-3). This land use designation provides for residential uses at one to two housing units per acre. The General Plan describes this land use as the density that predominates throughout Orinda. The General Plan requires future subdivisions located within this land use designation to meet a low-density standard, with development on steeper sites to be at lower densities as determined by slope-density regulations.

The Project site is zoned RL-40 Residential (see Figure 3-4) pursuant to the OMC. The RL-40 Residential zone encompasses parcels with a minimum net lot size of forty thousand (40,000) square feet, and permits single family residential uses by right.

The density of the Project, at 13 units over 20.3 acres, falls within the development density range allowed under both the General Plan and zoning regulations for this parcel.

Description of the Project
Site Design and Proposed Improvements

Site Plan
The Project will subdivide the Project site into 13 single-family clustered home sites (see Figure 3-5). Each home site would range in size from the smallest lot, at approximately ½ acre (20,900 net square feet) to the largest lot, at over 3.3-acres (147,802 new square feet). An additional, separate parcel of 2.26-acres (98,380 net square foot) is provided for the Moraga Adobe. This number of developable lots is consistent with the density permitted under existing zoning and the results of a slope density calculation based on the equation found in OMC Chapter 17.7-Residential Minimum Lot Size and Hillside Development. The site is zoned RL-40 and the average slope of the Project site is 24.05 percent.

The Project as proposed also includes dedication of an open space easement in compliance with required creek setbacks as mandated by the Orinda Municipal Code (OMC § 16.64.220), to ensure that no permanent structures are built in the vicinity of sensitive wetlands and riparian areas. The open space easement also furthers the objectives of the City's hillside development standards (OMC § 17.7.2) and the City's General Plan policies (Open Space and Parks Policies 2.2.1 (C) and 2.2.1 (D) and Land Use Policies 2.1.1. (A) and 2.1.1. (B)). The proposed open space easement will also serve as an open space buffer between the Project and the neighboring approved Lavenida Lane Subdivision site, the Del Rey Elementary school and other existing homes on Sager Court, Donna Maria Way, Estabueno Drive, and Lavenida Lane.

The Project includes construction of a new access road (Adobe Lane), extending from the westerly end of the existing Donna Maria Way, through the Project site and ending within the site at two cul-de-sacs. Parking pullouts for guest parking will be provided along this new road. Underground utilities (i.e., water, sewer, storm drains, power, and telecommunications systems) will be installed within the new roadway right-of-way, with landscaping along the sides. A new pedestrian path will be provided adjacent to the new Adobe Lane, and a second pedestrian path will connect back through the Project site to the easterly end of Donna Maria Way.

A stormwater bio-retention basin will be constructed to the north of the new roadway to collect and treat stormwater runoff from the developed portions of the site.
Figure 3.3
Existing General Plan Land Use Designation

Source: City of Orinda
Figure 3.4
Existing Zoning

Source: City of Orinda
Figure 3.5
Project Site Plan
Grading

Currently unstable slopes at the Project site will be excavated and reconstructed as engineered and compacted fill, with installation of new sub-surface drainage.\(^1\) Approximately 75,000 to 100,000 cubic yards of earthwork will be reconstructed as part of the slide repairs. An additional 10,500 cubic yards of cut and 2,250 cubic yards of fill will be conducted for site preparation and roadway grade. The excess 8,250 cubic yards of cut material will be utilized in the slide repair such that all soils work will be balanced on-site, and no earth will be imported to, or exported from, the site. With the exception of the roadway improvements and construction of the bio-retention basin, finished grade following completion of the Project’s improvements will be similar to existing grades on the site.

Home Designs

Individual home designs have not been prepared as a part of the Project. Subsequent development at each of the 13 single-family home sites will be subject to City of Orinda Design Review, as well as issuance of City building permits in accordance with OMC Chapter 17.30. All new home construction will be required to be designed and constructed in compliance with all applicable development standards and regulations of the OMC, including compliance with all local and state building ordinances and the requirements of the Moraga Orinda Fire District (MOFD).

Circulation Improvements

Access to the Project will be provided via an easterly extension of the west terminus of Donna Maria Way. The new road, identified as Adobe Lane, will extend eastward toward the existing east terminus of Donna Maria Way, but will not connect between the two unconnected Donna Maria Way roadway segments. Rather, Adobe Lane will curve upslope to the south to ascend the hillside, and then flatten near the Moraga Adobe. Once at the elevation of the Moraga Adobe, a short cul-de-sac will branch off to the south, and the main roadway will continue gradually back down the slope to the west, cross the existing creek (which will be placed within a 30-inch culvert under the roadway), and end in a cul-de-sac.

Eight on-street parking spaces are proposed as a part of the site improvements. A 10-foot wide trail and parking easement has been designated on both sides of the new roadway to accommodate additional parking. Subject to the City’s approval, there will also be one handicap parking space in the immediate vicinity of the Moraga Adobe, and an area on the Moraga Adobe parcel where one shuttle bus may load and unload passengers.

A four-foot-wide pedestrian path is proposed along the new Adobe Lane. This pedestrian path will have a gravel surface in the flat portions of the site, and concrete in the steeper portions of the site. This path will continue from the cul-de-sac at the end of Adobe Lane, adjacent to the City of Orinda/Town of Moraga boundary, and connect to the terminus of Dolores Way. Another pedestrian path will connect from the new Adobe Lane to the east terminus of Donna Maria Way, east of the Project site. This path will be four feet wide with a crushed granite surface until it reaches the wetlands area; then the path will change to become a five-foot-wide raised wooden boardwalk.

Emergency vehicle access has been designed to meet all Fire District criteria. Further details are provided in the Public Services section of this EIR.

A traffic study prepared for the Project indicates that the Project would generate approximately 9 vehicle trips during the a.m. peak hour and approximately 13 vehicle trips during the p.m. peak hour.\(^2\)

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1 Identified as Landslides A, B, C, F and I in the Preliminary Geologic and Geotechnical Reconnaissance Report prepared by Jensen-Van Lienden Associates (Appendix 8A), and incorporated herein by this reference.

2 TJKM Transportation Consultants, May 2010 (see Appendix 12A). The traffic study is incorporated by reference and all recommendations of the report are incorporated as elements of the Project.
Landscaping and Tree Removal
The landscaping plan for the Project includes the planting of at least 71 new trees along the edge of Adobe Lane as a means of screening the new development from off-site views across the valley (see Figure 3-6). The trees will be planted in clusters to resemble natural oak woodlands.

The new trees will replace 38 existing trees that are proposed to be removed, some of which are subject to the City’s tree preservation ordinance. Any further tree removal from within the site would require additional Tree Removal Permit approvals. Each residential parcel will contain an area large enough to accommodate a single-family residence with no additional tree removal required.

Utilities
The Project will be served from existing power lines, and by existing water and sewer mains located within the Donna Maria Way right-of-way. Extensions of these utilities will be installed under the new Adobe Lane roadway (see Figure 3-7). The new sanitary sewer line will be connected to the site to serve the proposed residences, and will be designed and constructed in compliance with the design policies of the Central Contra Costa Sanitary District, including utilization of gravity service, compliance with street location specifications, compliance with public easement requirements and adherence to hillside, creek and tree protection policies.

Storm Water Control and Drainage
At build-out, the Project will result in approximately 193,700 square feet of impervious surfaces, of which approximately 175,300 square feet will be new impervious surface and the remaining 18,400 square feet represents the existing Moraga Adobe. A Stormwater Control Plan (“SWCP”) has been prepared for the site, which includes estimates of stormwater flows from these impervious surfaces and a design for the stormwater system to manage this runoff. The proposed stormwater design facilities will separate runoff from the undeveloped portions of the site and from upstream lands (pervious surface flow), from the runoff coming from the developed portions of the site. Most of the Project’s post-development runoff from roads, driveways, roofs, patios and landscaping will be collected by a drainage system and conveyed to a common bio-retention basin (see Figure 3-8). The bio-retention basin (see Figure 3-9) has been designed and will be constructed in accordance with Contra Costa Clean Water Program requirements, and will function to treat and store impervious runoff generated by development, and then discharge this treated runoff into Moraga Creek at a rate that does not exceed pre-Project flows. In the event of a major storm overflow, the stormwater will flow over a retaining wall on the north side of the basin and into Lower Moraga Creek. The bio-retention basin is not a water feature; it will be dry most of the time when it is not raining and will drain within approximately 48 hours after a 10-year storm event.

Runoff from impervious surfaces not conveyed to the common bio-retention basin will be treated at individual home sites. At these individual home sites not connected to the bio-retention basin, stormwater junction boxes will be installed as part of the Project improvements, and will serve as connection points for the drainage systems installed on each home site as the houses in the subdivision are constructed. In this manner, all stormwater runoff from impervious surfaces will be collected and conveyed to a treatment facility before it is discharged into a natural drainage course.

In conformance with the requirements of the City’s National Pollutant Discharge Elimination System (“NPDES”) permit, an individual storm drain system for each of the 13 lots will be designed when homes are proposed.

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3 The Stormwater Control Plan was prepared by CDM Smith and reviewed by the City Engineer (attached as Appendix 10). This plan is incorporated by reference, with all recommendations of the report incorporated as elements of the Project.
Street Trees:

- **Pistacia chinensis** (Chinese Pistache) 24" Box
- **Umbellularia californica** (Coast Live Oak) 24" Box

Notes:
1. All trees to be planted in accordance with the City's Standards.
2. Planting must be done in a single operation to ensure proper soil conditions.
3. Trees should be watered regularly to ensure proper growth.

Source: Thomas Baak & Associates, LLP (June 2013)
Figure 3.9
Bioretention Facility
Runoff from pervious surfaces will flow over the ground surface directly to natural channels, as it does now. The perimeter of the Project site to the east, north, and west will remain undeveloped. These areas of pervious natural landscaping will not drain to the on-site bio-retention basin, as areas with natural landscaping are considered self-treating. The rate and quality of runoff from pervious surfaces will be the same as the existing runoff. Portions of the site, mostly in the southwest area of the site, will be graded to stabilize the soils on the site to prevent erosion and sedimentation.

Additionally, the Project applicant will be required to prepare a Storm Water Pollution Prevention Plan (“SWPPP”) for the Project, as required by the Regional Water Quality Control Board. The SWPPP will identify potential pollutants associated with the residential subdivision, and will provide specific practices and/or structural improvements (“Best Management Practices” or “BMPs”) to eliminate or reduce discharges of pollutants to storm water.

**Restoration, Ownership and Future Uses of the Moraga Adobe**

The Project creates a separate 98,380 square foot parcel for the Moraga Adobe. This parcel is configured to preserve existing views from the Moraga Adobe toward the north and northeast. The Moraga Adobe building will be restored and rehabilitated to its appearance circa 1848, with all restoration work conducted in accordance with the Secretary of Interior’s Standards for the Treatment of Historic Properties. Exterior alterations to the Moraga Adobe include replacement of the roof, strengthening of the roof framing, stucco repair, reconstruction of the attic stair, and replacement of the flagstone veranda with wood. The existing swimming pool, which is not a historic resource, would be removed but the existing building footprint would remain unaltered. Separate bathroom facilities and a small storage area (not to exceed 250 square feet) will be constructed on the Moraga Adobe parcel.

Interior alterations would include removal of several non-historic elements including the fireplace, kitchen, and bathroom/storage closet area; replacement of tile floors with wood floors to match the historical description; and the addition of ancillary spaces including storage. To the extent that floors and porches have experienced subsidence, these elements would be braced in accordance with applicable law and industry practice. Seismic retrofits and upgrades for the Moraga Adobe would be designed and implemented in accordance with the California Historical Building Code, the International Existing Building Code, and the Secretary of Interior’s Standards for the Treatment of Historic Properties.

These proposed improvements at the Moraga Adobe have been prepared for the Project applicant by Carey and Company, Inc. These designs also comply with the recommendations of a separate historical study prepared for the City of Orinda by Architectural Resources Group (“ARG”). The design also includes measures such as setback distances, roadway alignments and preservation of other characteristics of the Moraga Adobe site to avoid Project-related impacts.

The March 26, 2013 MOA between the Project applicant and Friends of the Joaquin Moraga Adobe (Friends), includes conveyance of title to the Moraga Adobe parcel and the rehabilitated historic structure to the Friends, subject to compliance with the terms of purchase as set forth in the MOA. If the Friends acquire the Moraga Adobe and its parcel, the Friends would be entitled to access the Moraga Adobe 30 days per year during the hours of 9:00 a.m. to 4:00 p.m. on weekdays, and 8:00 a.m. to 5:00 p.m. on weekends. It is anticipated that Friends would host local school groups and similar groups (not to exceed 60 persons) on most of the Friends’ permitted access days. In addition, the Friends would be entitled to host one fund-raising event annually (limited to 150 persons). The MOA sets forth additional requirements for access to the Moraga Adobe site by the Friends and their guests, including such transportation demand management measures as car pools and shuttle buses (detailed in Mitigation Measure Trans-4A in Chapter 12 of this EIR).

In the event that the Friends are unable to meet the terms of purchase (which include the contribution of up to $500,000 towards the estimated $1 million-plus renovation/rehabilitation costs of the Moraga Adobe), the Moraga Adobe and its 2.26-acre site would ultimately be conveyed to a homeowners’ association (HOA) established for the Project. The MOA specifies that, should this outcome occur, the HOA would make the Moraga Adobe available for public access up to five days per year, and the Project will not include fundraising events. If the Friends do not acquire the Adobe, the applicant reserves the option not to construct the separate facilities described in the MOA.
**Construction Schedule**

Site preparation (i.e., removal of the pool from the Moraga Adobe parcel and old foundations from Lots 5 and 6), mass grading, finish grading, installation of utilities, street paving and trail construction will take approximately ten and a half months to complete. Restoration of the Moraga Adobe will happen concurrently, and will commence consistent with the construction schedule described in the applicant’s letter to the City, dated November 19, 2014 (see Appendix 3A). A more detailed schedule of construction activities is shown in Table 3-1, below.

<table>
<thead>
<tr>
<th>Construction Activities</th>
<th>Schedule*</th>
<th>Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass Grading</td>
<td>3.5 Months</td>
<td>1 scraper</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 compactor</td>
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<tr>
<td></td>
<td></td>
<td>1 bulldozer</td>
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<tr>
<td></td>
<td></td>
<td>1 loader/backhoe</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 water truck</td>
</tr>
<tr>
<td>Finish Grading</td>
<td>3 Months</td>
<td>1 grader</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 bulldozer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 loader/backhoe</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 water truck</td>
</tr>
<tr>
<td>Utility Infrastructure</td>
<td>3.5 months</td>
<td>1 excavator</td>
</tr>
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<td></td>
<td></td>
<td>1 off Highway Truck</td>
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<tr>
<td></td>
<td></td>
<td>1 other general industrial</td>
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<tr>
<td></td>
<td></td>
<td>1 rubber tired loader</td>
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<tr>
<td></td>
<td></td>
<td>1 loader/backhoe</td>
</tr>
<tr>
<td>Asphalt Paving</td>
<td>.5 Months</td>
<td>4 cement mixers</td>
</tr>
<tr>
<td></td>
<td>(2 weeks)</td>
<td>1 grader</td>
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<td></td>
<td></td>
<td>1 paver</td>
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<tr>
<td></td>
<td></td>
<td>1 paving equipment</td>
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<tr>
<td></td>
<td></td>
<td>1 rubber tired loader</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 loader/backhoe</td>
</tr>
<tr>
<td>Building Construction of Individual Homes</td>
<td>2 years</td>
<td>1 crane</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 rough terrain forklift</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 generator set</td>
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<tr>
<td></td>
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<td>1 rubber tired loader</td>
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<tr>
<td></td>
<td></td>
<td>1 loader/backhoe</td>
</tr>
</tbody>
</table>

* Approximate duration of construction period.
The hours of operation of heavy construction equipment will be limited to weekdays between 9:00 am and 6:00 pm, one hour less than the 8:00 am to 6:00 pm hours of operation as allowed under OMC Section 17.39.3, in order to avoid conflicts with vehicular and pedestrian traffic to Del Rey Elementary and Miramonte High Schools. The proposed Project is also forgoing its right under the OMC to undertake construction on Saturdays in order to minimize conflicts with neighboring uses. The equipment staging area will be on-site, at the location of the proposed bio-retention basin.

The required Construction Management Plan will address construction vehicle circulation and contractor rules, neighborhood traffic safety during construction, work hours, construction-related noise, and tree protection during construction. All construction and grading activities will employ best engineering practices to avoid erosion, slides and flooding, and to minimize the Project's effect on the environment pursuant to the regulations in the California Building Code and Orinda Municipal Code.

Project Objectives
The J&J Ranch Project is designed to meet or pursue the following objectives:

- Develop an infill site within the City of Orinda that is served by existing infrastructure and located near a major transportation route.
- Maximize housing opportunities, while accommodating and integrating substantial amenities such as open space and pedestrian corridors.
- Create a visually stimulating and attractive neighborhood that effectively integrates the topography of the site.
- Ensure site planning allows for all proposed Project components as described in the Project Description, and allows for restoration of the Moraga Adobe in a manner that provides for its enhancement, protection from further vandalism and blight, and limited access by the public.
- Cluster development to limit development on steep slopes, on sensitive biological habitat (e.g., Coast Live Oak riparian forest), Coast Live Oak woodland, other riparian areas, and stream channels, and to provide buffers between Project lots and adjacent residential areas.
- Minimize disturbance to wetlands to the greatest extent feasible.
- Balance housing opportunities and amenities while minimizing off-site construction of infrastructure, to the greatest extent feasible, through careful site planning and placement of lots.
- Provide for pedestrian connections and infrastructure to adjacent uses in order to maximize walkability of proposed neighborhood development.
- Provide for on-site traffic circulation that addresses and exceeds safety concerns and standards.
- Maximize the Project contribution to the economic vitality of the City of Orinda and region by maximizing construction jobs and generating substantial amounts of revenue in the form of taxes and lawfully imposed development fees, the latter of which will help fund vital improvements to City infrastructure, services, and amenities.

Project Elements Intended to Reduce or Avoid Environmental Effects
The Project includes numerous elements such as its overall subdivision layout, infrastructure plans, and other design elements that serve to reduce and/or avoid otherwise potentially significant environmental impacts. A list of individual Project elements that are specifically intended to address environmental considerations includes the following, by the topic areas that they address.

Scenic Resources
Design elements of the Project that serve to reduce impacts on scenic vistas include:

- Future home sites are clustered on the site in order to preserve significant open space.
- Substantial existing on-site vegetation is retained.
• Individual custom home sites are proposed. Each lot will be individually graded to maximize retention of the existing topography of the site.

• New landscaping is proposed along the Project's roadway that, once matured, will provide screening of the new road and homes from off-site vantage points.

• Lot lines and building envelopes (for location and massing) for future home sites have been designed to preserve view corridors from the Moraga Adobe and across the site. For example, on Lots 12 and 13 (which are adjacent to the Moraga Adobe parcel and in its view corridor to the northeast), roof heights for new homes are limited to the finished floor elevation of the Moraga Adobe, such that views from the Moraga Adobe will look out and over these new home sites. Similarly, due to the existing steep slope and the 27 foot height limit on houses on Lots 1 and 2, structures on those lots would not be visible from the Moraga Adobe.

• Most of the on-site trees will be retained, and the Project will plant new trees to replace those trees to be removed. In addition, each residential lot may add additional trees and shrubs in conformance with the OMC Design Review guidelines. These trees will help to shield Project lighting from outside views.

**Biological Resources**

Design elements of the Project that serve to reduce impacts on biologic resources include:

• The majority of Project development will occur away from riparian areas and in non-biologically sensitive areas, avoiding streams, wetlands, and potential riparian areas.

• Structure setback lines from all on-site creeks and channels have been established, based on the requirements of OMC section 16.64.220.

• An open space easement, which comprises 7.95 acres (or more than 39% of the Project site) incorporates the creek setbacks and the majority of on-site sensitive biological areas including the coast live oak woodland located in the western edge of the Project site, riparian habitat, sensitive natural communities and protected wetlands (including a stream corridor on the southeastern edge of the property from Moraga Creek, and a stream that passes through the center of the property in a wooded ravine that leads to Moraga Creek).

• A total of at least 71 new trees are proposed to be planted as part of the Project, including 48 native coast live oaks at 24" box size, and 23 ornamental, non-native Chinese pistache.

**Cultural and Historic Resources**

Development of the Project site would include the following Project elements that reduce impacts to historical resources:

• The proposed circulation plan is generally in keeping with historic circulation patterns on the property. Adobe Lane will be aligned to the south so as not to pass within 50 feet of the Moraga Adobe.

• Front yard setbacks for homes on Lots 4 and 7 will be 25 feet. Combined with the Moraga Adobe’s 50-foot setback from Adobe Lane and the width of Adobe Lane itself, new construction on Lots 4 and 7 is separated from the Adobe by at least 100 feet.

• The lot-line separating the Moraga Adobe from Lot 11 is designed to not pass within 50 feet of the Moraga Adobe, and the eastern setback of this lot has been set at 20 feet.

• The Moraga Adobe lot extends northeasterly all the way to Adobe Lane, with lot locations set to avoid infringement on the Moraga Adobe’s existing northeasterly views of the Moraga Valley and Mt. Diablo.

• To preserve the Moraga Adobe's historic setting, including northeasterly views of the Moraga Valley and Mt. Diablo, no portion of any development or landscape element on Lot 12 and Lot 13 shall extend above the elevation of the base of the Moraga Adobe, which sits at 667.4 feet above sea level.
J&J Ranch, LLC and Friends of the Joaquin Moraga Adobe have entered into a memorandum of agreement (MOA) regarding the future ownership and treatment of the historic Moraga Adobe. The MOA lays out multiple stipulations regarding the (“Friends”) potential purchase of the Moraga Adobe by the Friends and maintenance of it for public use. The MOA specifies that, prior to any such future purchase, J&J Ranch shall seek approval from the City to rehabilitate the Moraga Adobe, in accordance with the Secretary of Interior's Rehabilitation Standards, to its appearance as depicted in the earliest available documentary evidence (circa 1848) as best determined by the expert historical consultant Carey & Co., Inc. The MOA also stipulates that J&J Ranch shall also seek approval for construction of separate facilities on the Moraga Adobe Parcel at a location to be mutually agreed upon by J&J Ranch and the Friends, not to exceed 250 square feet, consisting of (1) bathroom facilities that are compliant with the Americans with Disabilities Act (“ADA”) and (2) a storage area that is adequate in size to store Friends’ collection of historical artifacts related to the Moraga Adobe.

If the Friends are unable or unwilling to meet their obligations under the MOA, then the ownership, stewardship and maintenance of the Moraga Adobe would become the responsibility of the Home Owners Association. Preliminary programming and conceptual design for the rehabilitation of the historic Moraga Adobe as a community building has occurred, including design strategies that are intended to fully comply with the Secretary of the Interior’s Standards for the Treatment of Historic Properties.

Hazards
Design elements of the Project that serve to reduce impacts related to hazards include:

- The Project will transform large sections of the Project site in ways that will reduce the risk from wildland fire, including the removal of non-native plants and dead trees and shrubs, providing new landscape with drought-resistant native species, extending Adobe Lane (which will create a fire break in part of the Project site), and occupation and maintenance of the property which will reduce the likelihood of fuel buildup.

- Project development will expand site access for Fire Department apparatus and improved access to water supplies.

Hydrology
Development of the Project site would include the following Project elements that reduce impacts to water quality and hydrology:

- A Preliminary Storm Water Control Plan (SWCP) is designed to minimize potential adverse impacts to water quality and to ensure that soil erosion is minimized and hazardous construction materials are adequately contained. Generally, the SWCP design incorporates facilities to separate runoff from undeveloped portions of the site and upstream lands (pervious surface flow), from runoff from the developed portions of the site (impervious flow).

- The Project layout is designed to limit the area of development and minimize impervious surfaces.

- Natural channels on the Project site are preserved via the open space easement, and used to convey pervious runoff. Structure setback lines are established from these channels as well as from Moraga Creek.

- The Project will enhance and improve the existing 20-inch storm drain pipe under Donna Maria Way by way of a debris rack, replacement of the pipe or another measure, depending on final grading and improvement plans.

- Stormwater runoff from all impervious surfaces associated with existing and developed portions of the site will be diverted for treatment, as required by state and federal water quality standards, before being discharged into the natural drainage courses. Discharge will be controlled at a rate that does not exceed the pre-Project rate.
• Other than one proposed road crossing of an on-site ephemeral stream near the southerly portion of the site, no permanent structures or development of any kind (other than drainage structures) are proposed on the creek-side of established structural setback lines.

• The Project will not develop land in the western 4.4 acre portion of the Project site or alter its drainage pattern, resulting in the same runoff route and volume as under existing conditions.

• The Project will not make any changes to the 30-inch pipe or the outlet structure near the site’s boundary with the adjacent golf course, and drainage from the golf course detention pond through the Project site’s central drainage channel will not be altered.

**Required Approvals**

**City of Orinda**

The Project will require the following approvals from the City of Orinda:

• General Plan Amendment: As part of this Project, the City of Orinda requires an amendment to its General Plan to alter the land use designation for the Moraga Adobe parcel, from Low Density Residential to Parks and Recreation;

• change in Zoning: The majority of the Project site will remain RL-40, but the Moraga Adobe parcel is to be rezoned to Park and Recreation (PR) consistent with the MOA’s public access provisions. The PR District allows for cultural institutions (defined as nonprofit institution displaying or preserving objects of interest in the arts or sciences) including libraries, museums and art galleries;

• approval of a use permit for the Moraga Adobe, whether it is acquired by the Friends or used as a community clubhouse by the HOA;

• approval of a Major Subdivision to subdivide the 20.33-acre parcel into 13 single-family residential lots, plus an additional parcel for the Moraga Adobe;

• approval of a Tree Removal permit to permit removal of a total of 38 trees, some of which (those considered “protected trees” under the ordinance) are subject to the City’s tree preservation ordinance;

• subsequent Design Review approval for each new home; and

• approval of subsequent non-discretionary permits including grading permits, demolition permits, and building permits.

**Other Agencies**

The Project will also require approvals from the following agencies:

• U.S. Army Corps of Engineers

• California Department of Fish & Wildlife

• Regional Water Quality Control Board

• Bay Area Air Quality Management District

• Contra Costa County Building Division

• Contra Costa County Flood Control and Water Conservation District
This chapter evaluates the Project’s potential aesthetic impacts. It describes the existing visual character of the site and evaluates the changes that development of the Project would have with respect to visual impacts. This chapter is based on field surveys of the Project site and simulations of future views (see following Figures 4-1 through 4-8) from the Moraga Adobe and toward the Project site.

Environmental Setting

Visual Character of the Site

The Project site consists of 20.33 acres on steep terrain, ranging in elevation from 540 feet at Moraga Creek to 685 feet at the Moraga Adobe, to 710 feet at the southern property line. The Project site has only one structure, the Moraga Adobe, located roughly in the middle of the site at the top of a hill. Adobe Lane extends from the western segment of Donna Maria Way and proceeds up the hill in a southeasterly direction before turning west and leading to the Moraga Adobe.

Much of the Project site is covered with grassland, with oak woodlands clustered in two ravines which contain ephemeral streams, oaks lining the proposed Adobe Lane, and a walnut orchard. The northeast side of the Project site is bordered by Moraga Creek and the east side by a wetland featuring willow trees.

There are no sources of light and glare on the Project site; the windows on the Adobe are boarded up. The surrounding residential uses and streets include exterior lights and street lights, and the Del Rey Elementary School contains exterior building lighting. The Moraga Adobe does not produce shadows that adversely affect adjacent off-site buildings or properties.

Views of the Site

The Project site is visible from medium and long-range vantage points to the north, northeast and east. Medium-range vantage points include a segment of Ardith Drive between Beaconsfield Court and Whitehall Drive, and from segments of La Cresta Road near Pico Court (see Figures 4-1 and 4-2). Long-range views of the Project site are available from Donald Drive (see Figure 4-3). Close-range views are available from the Del Rey School (see Figure 4-4).

Local Context

Forested, undeveloped open space is located to the immediate west of the Project site. The Project site is surrounded by single family residences to the north and northwest, a school to the northeast, and a golf course to its south. The Lavenida Lane site is immediately to the east of the Project site, which is similar in appearance to the Project site, has been approved for residential development.

Views from the Project site vary due to the steep terrain. Vistas from the Moraga Adobe to the northwest, north, and northeast are of surrounding ridge lines with Del Rey Elementary School visible to the northeast (see Figures 4-5, 4-6 and 4-7).

Dense trees dominate the northern, western and eastern edges of the Project site and substantially screen the area between the site and the adjoining existing residential neighborhood, the approved Lavenida Lane Subdivision and the Del Rey School site (see Figures 4-8). The undeveloped hillsides above Dolores Way and above the golf club fairway southwest of the Project site have greater scenic qualities due to their elevation, prominence and natural forested state.
Regulatory Setting

City of Orinda General Plan – Circulation Element

Implementing Policy 2.3.2 designates scenic corridors and includes development standards. The following Implementing Policies of the Circulation Element are relevant to the Project:

P. The following routes are designated Scenic Corridors on the General Plan:
   1. Moraga Way from its intersection with Camino Pablo south to the City limits;
   2. Camino Pablo from its intersection with Santa Maria Way north to the City limits;
   3. Highway 24, designated as a California Scenic Highway within Orinda City limits.

Q. Special care shall be taken to provide a well-landscaped and open feeling along Scenic Corridors, especially at the entrance to the City, utilizing such techniques as generous landscaped setbacks and open-space acquisition, where appropriate.

R. Any proposed development or subdivision along a Scenic Corridor or Scenic Highway shall be designed to blend with and permit the natural environment to be maintained as the dominant visual element. It shall not lessen the scenic value of existing visual elements.

S. Where structures are permitted, they shall be designed to blend with and permit the natural environment to be maintained as the dominant visual element.

City of Orinda General Plan – Conservation Element

Guiding Policy 4.1.1.F directs the City to, “Achieve aesthetically sensitive grading that conforms to the natural contours, ensures safety and preserves trees and other vegetation to the greatest practical extent.”

City of Orinda General Plan – Land Use Element

Implementing Policy 2.1.2.E directs the City to consider adopting ordinances to maintain its semi-rural character with respect to the following:

- Regulating the relationship of house size in relation to lot size to maintain low-density character;
- Removal of natural vegetation;
- Disturbance of existing ground forms;
- Disturbance of creek corridors;
- Street design to avoid wide, straight streets;
- House placement in relation to ridgelines to avoid or minimize visibility around designated ridges and scenic hillsides through the adoption of an appropriate hillside and ridgeline ordinance giving due consideration to such ordinances from adjoining cities;
- Height of new houses and additions; and
- Solar orientation of new houses.

City of Orinda Planning and Zoning Code

The OMC regulates residential development by limiting home size, structural height, and property landscaping to ensure the aesthetic harmony of development (OMC sections 17.4 and 17.6). Chapter 17.15, Performance Standards, limits glare from glass and outdoor lighting. Title 17 also includes the following chapters that pertain to aesthetic issues: hillside development, tree management, and design review.
Hillside Development

OMC Chapter 17.7 states that:

…the terrain of certain areas of the city provides a unique and substantial character to the area, and forms an integral part of the city’s total environment. Due to the physical prominence of hillsides in the city’s landscape, development of hillside areas affects the visual and environmental character of the city. Hillside development should preserve the natural terrain, environmental quality and aesthetic character of the city, while providing creative, innovative and safe residential development with a variety of housing types. These goals can be achieved only when special consideration is given to those developments and subdivisions on and near hillsides, and to variations in conditions, design criteria and other requirements which must be flexible in order to achieve hillside development that is consistent with these objectives. The attractiveness of hillside and ridgeline areas and the other objectives specified in this title are important factors to the general welfare of the citizens of the city, and reasonable control of residential slope density is in the public interest.

The chapter contains limits on residential density and lot sizes related to the steepness of slope. It includes the following standards for multi-lot development:

- Ridge Views (OMC section 17.7.6.B). Off- and on-development-site views of significant ridges shall not be substantially impaired. To determine which ridges are subject to this provision, the criteria set forth in the findings and objectives sections of this chapter shall be utilized.

- Hillside Streets (OMC section 17.7.6.C). Hillside street standards shall reflect a rural rather than urban character. Street alignments, where feasible, should be parallel to contours. Where a street location between a valley and ridge is unavoidable, directional pavements should be separated, with the principle of grading being half cut and half fill. Intermittent widening of streets for parking and turnarounds at appropriate places shall be encouraged.

- Street Lighting (OMC section 17.7.6.D). Street lighting provided as part of a development in hillside areas shall be of low profile design, unobtrusive and designed to enhance a rural character of the area.

The chapter also stipulates that City approval is required for grading land that has an average slope of more than 15% or a significant ridgeline and hilltop, including a finding that the proposed grading will not have a substantial visual impact when viewed from surrounding community areas (OMC section 17.7.7). Portions of any parcels with an average slope of more than 26% are required to remain as undeveloped open area, under the terms established in the chapter (OMC section 17.7.8).

Tree Management

OMC Chapter 17.21 establishes criteria designed to preserve protected trees by requiring consideration of the extent to which development proposals can be modified to minimize removal of protected trees and requires consideration of such factors as the number of other trees to remain in an area. The Chapter also spells out standards for the replacement of protected trees.

Design Review

The City has adopted provisions in Chapter 17.30 of the OMC related to design review to address community values regarding aesthetics. Per section 17.30.1.A:

The purpose of design review is to preserve and enhance the semi-rural character of Orinda, maintain property values, conserve and enhance the visual character of the community and protect the public health, safety and general welfare of its citizens. The appearance of, and relationship between, open spaces, buildings and structures has a material and substantial relationship to the public health, safety and general welfare. Residential and commercial neighborhoods can and will deteriorate because of poor planning, neglect of proper design standards, inappropriate development on lots which are constrained by their size or shape or other physical characteristics, and the existence of buildings and structures unsuitable to and incompatible with the character of the
neighborhood and the character of the community. These changes, in turn, adversely affect property values and levels of maintenance and improvement of surrounding properties.

This chapter requires design review approval prior to issuance of a building permit for new single family homes. Design review approval requires that proposed homes meet the following standards:

- **Siting and Neighborhood Context (OMC section 17.30.5.A.1).** The proposed development is designed and located on the site so that it is visually harmonious with, but not necessarily identical to, other structures in the neighborhood. The proposed development is designed to blend into the existing landscape and natural context, protect undeveloped ridgelines and hillsides, maintain the dominance of wooded and open ridges and hillsides, and preserve significant or unique scenic vistas.

- **Design (OMC section 17.30.5.A.2).** The design elements are visually harmonious, in scale with the size of the structure, and balance environmental considerations. If the proposed development is an addition or remodel of an existing structure, the existing construction and proposed construction are visually harmonious. Facades and exterior walls shall be designed to reduce the blocky or massive features of building surfaces and provide articulation.

- **Privacy, views, light and air (OMC section 17.30.5.A.3).** The proposed development does not impair the existing views, block access to light and air, or infringe on the privacy of neighbors in a substantial fashion. In considering this factor, decision makers shall balance the importance of minimizing impacts on neighboring properties and the applicant’s ability to develop the property.
  - Per OMC section 17.22.4, "view" means a scene from the primary living area of a residence or the active use area of a nonresidential building. The term "view" includes both upslope and downslope scenes, but is generally medium or long range in nature, as opposed to short range. View includes but is not limited to distinctive geologic features, hillside terrains, wooded canyons, ridges, and bodies of water.

- **Landscaping (OMC section 17.30.5.A.4).** Primary landscaping elements complement and are appropriate for the structure, the site, and the neighborhood.

Additional review is warranted where special circumstances apply, such as development of a home greater than 7,000 square feet, on severe slopes, or within a ridgeline.

### Impacts and Mitigation Measures

#### Thresholds of Significance

Appendix G of the CEQA Guidelines (Environmental Checklist) contains a list of aesthetic impacts that may be considered significant. Based on this list, implementation of the Project would have a significant effect on the environment if it were to:

1. Have a substantial adverse effect on a scenic vista;
2. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
3. Substantially degrade the existing visual character or quality of the site and its surroundings; or
4. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

#### Scenic Vistas

**Impact Aes-1:** Compliance with City zoning regulations and implementation of Project elements will mitigate potential impacts so that the Project would not have a substantial adverse effect on a scenic vista. (LTS)
The Project will transform the Project site from open grassland and woodlands to a large lot, clustered residential subdivision. The Project will also undertake grading to correct landslides on the site (see Chapter 8: Geology and Soils for details) and to construct subdivision improvements. The majority of those portions of the Project site that are outside of the defined improvement area will be retained within an open space easement and will remain as currently seen.

Several prominent, public vantage points have been selected as representative of typical public vistas. Scenic vistas from these vantage points include the Project site. Photographs from the following public vantage points document existing representative scenic vistas across the Project site (see Figures 4-1 through 4-4):

- from Ardith Drive near Whitehall Drive, approximately 2,000 to 2,300 feet to the northeast,
- from La Cresta Road near Pico Court, approximately 2,300 feet to the north,
- from Donald Drive approximately 6,200 feet (or 1.2 miles) to the northeast, and
- from the Del Rey Elementary School, approximately 500 feet to the north of the Project site.

Generally, these views show the Project site as a heavily wooded area at approximately one-half of the elevation of the upper ridgeline on the westerly side of the East Bay Hills.

Applicable Policies and Standards

All new homes will require discretionary approval from the Planning Commission, which will consider the City’s Design Review standards (OMC section 17.30), as well as regulations to limit the visual impact of hillside development (OMC section 17.7) and protect trees (OMC section 17.21). The Zoning Code also includes regulations intended to ensure the aesthetic harmony of residential development (OMC sections 17.4 and 17.6). The approval process could result in alterations to the size, design, and location of each house such that its visual impact is further reduced.

Project Elements

Design elements of the Project that serve to reduce impacts on scenic vistas include clustering of home sites in order to preserve a large open space easement, preservation of a large majority of existing vegetation, individual and custom home site placement rather than mass grading to provide new building pads, and proposed new landscaping along the new Project roadway that will largely screen the road from off-site vantage points.

Pursuant to subsequent City design review requirements, future development of individual home sites will be required to blend into the existing landscape and natural context, protect undeveloped ridgelines and hillsides, maintain the dominance of the wooded and open ridges and hillsides, and preserve significant or unique scenic vistas. Additional landscaping will be required when the future home sites are developed, and the design of the residences will be consistent with the design review standards in the OMC and the City’s Hillside and Ridgeline Design Guidelines. Future design review for individual home sites will require consistency with the OMC, thereby reducing visibility of the development and retaining significant portions of the site’s existing open space.

To illustrate the changes in scenic vistas and the relative benefits of the Project design elements, renderings of the Project were superimposed on photographs of existing views for the three mid-range and long-range vistas (see also Figures 4.1 through 4.3). These renderings were created to approximate the Project’s impact on these scenic vistas.

As indicated in these renderings, the proposed new home sites would be partially visible among the trees from these medium- and long-range vantage points, but the scenic vistas across the Project site of the upper ridgelines would be uninterrupted by new buildings. These views would be increasingly screened over time as Project landscaping matures.
Figure 4.1
View of Site from Ardith Drive

Source: City of Orinda
Figure 4.2
View of Site from La Cresta Road

Source: City of Orinda
Figure 4.3
View of Site from Donald Drive

Source: City of Orinda
Figure 4.4
View of Site from Del Rey Elementary School

Source: Environmental Vision (May 2014)
For the nearest vantage point at Del Rey Elementary School, photographs of the Project site were taken using a digital single lens reflex camera, and employing a Global Positioning System (GPS) to verify the photo viewpoint location. Using advanced computer modeling and rendering techniques, highly accurate visual simulations were prepared showing the Project superimposed on the selected photographic view (see Figure 4-4). This advanced modeling simulation relied on generalized assumptions regarding individual homes, such as homes placed within the proposed building envelopes for each lot, maximum square footage based on a ratio of the proposed lot size (see Table 4-1), maximum building height (27 feet), assumptions regarding stepped-down foundation designs, etc. However, the simulation is not intended to be representative of final architectural design, precise home placement, or site design and landscaping of individual lots. Individual homes are not proposed as part of the Project, and will be subject to subsequent Design Review approval by the City. The simulation shows street trees on the Project site at 10 years after planting, assuming new plantings will be 24-inch box trees.

<table>
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<tr>
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<td>5,439</td>
</tr>
</tbody>
</table>

As shown on Figure 4-4, the Moraga Adobe is visible from Del Rey Elementary School, but little else about the Project site is distinguishable from the predominant views of trees and the upper ridgeline. Post construction of the Project, views of the historic Moraga Adobe remain visible and unaltered in the center of this view, and the rooflines of two new homes are also partially visible among the trees. However, new development on the Project site would not obscure the primary scenic vista of the ridgeline above, nor would it substantially alter the predominant scenic view of the tree-covered hillside and the Moraga Adobe.
Conclusions

The renderings and visual simulations shown above indicate that the Project will not substantially affect scenic vistas of, and across the Project site. Although the Project will add new residential structures that will be seen in vistas from various public vantage points, future views of and across the Project site will be quite similar to existing views of the surrounding area, will not block or alter views of the upper ridgeline, or alter vistas of the scenic undeveloped hillsides above Dolores Way and above the golf club fairway southwest of the Project site. For these reasons, the Project’s impact on scenic vistas is less than significant.

Scenic Resources

Impact Aes-2: The Project site is not visible from a State scenic highway or City scenic corridor, and the Project will not substantially damage scenic resources visible from those routes. (No Impact)

The Project site is 0.5 mile from Moraga Way, approximately 2.75 miles from Highway 24, and approximately 3.5 miles from the designated scenic segment of Camino Pablo. Due to the topography and existing landscaping in the area, the Project site is not visible from these scenic corridors and would have no impact on scenic resources.

Visual Character

Impact Aes-3: The Project will not substantially degrade the existing visual character or quality of the site or its surroundings. (LTS with Mitigation)

The existing visual character of the Project site is that of a relatively large open parcel containing grassland and oak woodlands, and bordered on the north by Moraga Creek and on the east side by a wetland featuring willow trees. Central to the site is the Moraga Adobe, which is currently fenced and boarded up.

Development of the Project will alter the appearance of the site, adding home sites primarily within the open grasslands. An open space easement will preserve approximately 40 percent of the Project site, and will include the oak groves in the ravines and along the ephemeral streams, and the wetlands on the north and east of the Project site. The Project will remove up to 38 trees from the Project site (36 of which are considered protected trees pursuant to the OMC), but 80 trees will be planted along the extension of Adobe Lane (see Figure 3-5 of the Project Description).

Applicable Policies and Standards

All new homes will require discretionary approval from the Planning Commission which will consider the City’s Design Review standards (OMC section 17.30) as well as regulations to limit the visual impact of hillside development (OMC section 17.7) and protect trees (OMC section 17.21). The Zoning Code also includes regulations intended to ensure the aesthetic harmony of residential development (OMC sections 17.4 and 17.6). The approval process could result in alterations to the size, design, and location of each house, such that visual impacts are reduced (see list of Design Review standards pursuant to OMC section 17.30.5.A, on page 4.4 of this EIR).

Under OMC section 17.30, additional City review is warranted where special circumstances apply, such as development of a home greater than 7,000 square feet (OMC section 17.30.6) or on severe slopes or within a ridgeline (OMC section 17.30.7). Subsequent individual home designs would be subject to Design Review procedures and requirements, based on the future design and location of the home.

Project Elements

Elements of the Project’s design, such as clustering, the open space easement, and landscaping will preserve a majority of the open space character of the Project site, preserve many of the existing trees,
and reduce the visibility of new development. The Project will plant new trees to replace the trees that will need to be removed.

More specifically, the site plan for the Project seeks to preserve the visual character of the site, and views from the site, as seen from the Moraga Adobe (see Figure 4-5). Lot lines and the building envelopes for the home sites have been designed to preserve view corridors from the Moraga Adobe and across the site. On Lots 12 and 13 (which are adjacent to the Moraga Adobe parcel and in its view corridor to the northeast), roof heights for new homes are limited to the finished floor elevation of the Moraga Adobe structure such that views will look out and over these new home sites. Similarly, due to the existing steep slope and the 27 foot height limit on houses on Lots 1 and 2, structures on those lots would not be visible from the Moraga Adobe.

To illustrate the visual character of the Project post construction and with incorporation of these Project elements, visual simulations were prepared that show the Project superimposed on selected photographic views from the site, specifically from the historic Moraga Adobe. These simulations relied on the same assumptions regarding future residential development as described under Impact Aes-1 (such as using the maximum possible house size and heights, and not pre-supposing the design of future landscaping on individual lots). As shown in Figure 4-6, in the future view from the northwest corner of the Moraga Adobe, a simulated house is visible on Lot 11. Although the view of the background ridgeline remains preserved above this house, and only a small portion of the panoramic view from the Moraga Adobe is affected, the proposed house on Lot 11 is prominent in the foreground view. Figure 4-7 also shows the future view from the eastern corner of the Adobe. As shown in this simulation, two future houses would be partially visible (Lots 3 and 12), but the ridgeline would remain visible over the houses, partially obscured by new street trees along Adobe Lane. A simulation was not prepared of the view from the Moraga Adobe directly to the north, as that existing view would remain unchanged by the Project.

Mitigation Measures

The Project applicant has agreed to implement the following mitigation measure, requiring screening landscaping to minimize the prominence of development on Lot 11 in views from the Adobe.

**Mitigation Measure Aes-3: Lot 11 Screening Landscaping.** The deed recorded for Lot 11 shall include notice that screening landscaping is required to be installed and maintained by the landowner between any structures built on this lot and the Moraga Adobe. The screening landscaping is intended to minimize the prominence of structures in the views from the Adobe while retaining farther-off views of the ridgeline. Proposed screening landscaping shall be reviewed and approved by the Planning Department prior to construction.

Conclusions

The visual simulations in Figure 4-6 and 4-7 and the analysis regarding development of Lots 1 and 2, show that the character of the site will change, but that character-defining views of the site and of the surrounding ridgelines from the Moraga Adobe porch will be substantially preserved. City grading and development regulations as well as the Project elements will retain the topography of the site and result in the removal of non-native species and their replacement with native species. The City's subsequent design review process will impose conditions as necessary to ensure consistency with the OMC, which may further reduce the visual impact of the Project. Implementation of Mitigation Measure Aes-3 will mitigate the potential for development on Lot 11 to significantly impact the character of views from the Adobe. As a result of the Project elements, applicable policies and standards, and Mitigation Measure Aes-3, impacts to visual character would be less than significant.
A. Panorama from outside the Adobe fence looking northeast

B. Full panorama from Adobe porch northwest corner

Adobe photo viewpoint locations
Figure 4-6
Panoramic View from Adobe (Viewpoint #1, northwest corner)

Source: Environmental Vision (December 2014)
Figure 4-7
View #2, from Adobe (east corner)
Light and Glare

Impact Aes-4: The Project will create new sources of light, but compliance with City zoning regulations will mitigate potential impacts so that the Project will not adversely affect day or nighttime views in the area. (LTS)

The Project will add homes to the Project site which will have their own external lighting as well as internal lighting which may be visible from the outside. The Project does not include any new street lighting.

Applicable Policies and Standards

OMC Section 17.15.2.C limits highly reflective glass to a maximum of 20% of a building surface visible from a street unless the applicant demonstrates it will not significantly increase glare visible from an adjacent street and property or pose a hazard for moving vehicles. It also directs outdoor security lighting to be only indirect or diffused and, per section 15.12.110, lighting fixtures shall be installed, controlled or directed so that light will not glare or be blinding on an adjoining property.

The Zoning Code requires street lighting provided as part of a development in hillside areas to be of low profile design, unobtrusive and designed to enhance the rural character of the area.

Project Elements

The Project will retain most on-site trees and plant new trees to replace those trees to be removed. In addition, each residential lot may add additional trees and shrubs in conformance with the OMC Design Review guidelines. These trees will help to shield Project lighting from outside views.

Conclusions

The Project will conform to City requirements regarding hillside lighting and glare and add landscaping which will help reduce light and glare from the Project site. As a result, light or glare from the Project would not adversely affect day or nighttime views in the area. The impact would be less than significant.

Cumulative Aesthetic Impacts

Impact Aes-5: Compliance with City design standards and regulations, along with the implementation of Project elements, will ensure that the Project does not adversely contribute to cumulative aesthetic impacts. (LTS)

The natural scenic value of off-site vistas across the Project site have already been compromised by other existing development (e.g., roadways; the nearby golf course; the nearby schools; the existing residential development in the surrounding neighborhoods; and vacant residential building pads behind and uphill of the site in the Town of Moraga). However, these vistas remain a unique and important element of the visual character of the area.

The Project is designed to preserve open space on the site, locate and design new development in a manner that minimizes its visual impacts, and will add trees and landscaping to shield new development. City policies and required subsequent Design Review will further ensure that development of the Project site will maintain the current topography and avoid the creation of excessive light and glare, and that houses will be designed and sited to fit into the existing site. The Lavenida Lane project immediately adjacent to the Project site includes eight residential lots, and will be subject to City regulations and Design Review to ensure that its development will not obstruct views of undeveloped hillsides or result in other visual impacts. Views that encompass both the Project and the Lavenida Lane project together will also include other surrounding development such as residences, the golf course, and unbuilt lots in Moraga. Together, new development from these two combined projects will not intrude upon a prominent vista, nor considerably change the visual character of the surroundings.
Since the Camino Ricardo project is located a mile from the Project site, is not visible in near or mid-range views of the Project site, and is not on or near a ridgeline or hillside, its development will not contribute to a cumulative compromise of scenic vistas or visual character.

Therefore, the Project together with other anticipated development in the area would not result in significant cumulative visual impacts.
Air Quality

This chapter evaluates the Project’s potential impacts related to air quality. It describes the existing ambient air quality conditions in the vicinity of the Project site, and evaluates the extent to which the Project as proposed would result in adverse impacts. The analysis and discussion in this section of the EIR is based on the following technical studies:

- Michael Brandman Associates, *Construction Health Risk Analysis Report for 24 Adobe Lane*, September 22, 2011 (attached as Appendix 5.1); and
- Michael Brandman Associates, *Health Risk Assessment – Impacts on Student Receptors at Del Ray Elementary School*, October 25, 2011 (attached as Appendix 5.2)

Environmental Setting

Regional Climate, Topography, and Meteorology

The Project site is within the boundaries of the San Francisco Bay Area Air Basin (SFBAAB or Basin). The Basin encompasses the nine-county region, including all of Alameda, Contra Costa, Santa Clara, San Francisco, San Mateo, Marin and Napa counties, and the southern portions of Solano and Sonoma counties. Within the Basin, 11 subregions have been defined based on their unique climatology and topography. The Project site is located within the Diablo Valley-San Ramon Valleys subregion. The air pollution potential in these valleys is relatively high. In the winter, the combination of light winds at night, a surface-based inversion, and terrain blocking to the east and west does not allow much dispersion of pollutants. In the summer, ozone can be transported into the valleys from both the Central Valley and the central Bay Area. Current ozone levels exceed State standards.¹

Ambient concentrations of air pollutant emissions are determined by the amount of emissions released by pollutant sources and the atmosphere’s ability to transport and dilute such emissions. Existing air quality conditions at the Project site are determined by such natural factors as topography, meteorology, and climate in addition to the amount of emissions that the sources of existing air pollutants release. The San Francisco Bay Area’s location in the middle latitudes and on the west coast of the North American continent places it in the relatively rare Mediterranean-type climate. The climate of the Bay Area is determined largely by a high-pressure system that is almost always present over the eastern Pacific Ocean off the West Coast of North America. During winter, the Pacific high-pressure system shifts southward, allowing more storms to pass through the region. During summer and early fall, when few storms pass through the region, emissions generated within the Bay Area can combine with abundant sunshine under the restraining influences of topography and subsidence inversions to create conditions that are conducive to the formation of photochemical pollutants, such as ozone and secondary particulates such as nitrates and sulfates.

Criteria Pollutants

Existing air quality conditions in the area surrounding the Project site can be characterized in terms of the primary ambient air quality standards that the State of California and the federal government have

¹ Bay Area Air Quality Management District, CEQA Air Quality Guidelines, June 2012. Appendix C
established for several different “criteria” pollutants. These primary standards have been set to protect public health. The criteria pollutants include ozone ($O_3$), carbon monoxide (CO), nitrogen dioxide (NO$_2$), sulfur dioxide (SO$_2$), inhalable particulate matter less than 10 microns in diameter (PM$_{10}$) and less than 2.5 microns in diameter (PM$_{2.5}$), and lead. For each criteria pollutant, those areas having pollutant levels less than the standards are called attainment areas (that is, these areas attain the air quality standard), and those with pollutant levels greater than the standards are called nonattainment areas (that is, these areas do not attain the air quality standard).

The United States Environmental Protection Agency (USEPA) has designated the SFBAAB as in attainment of the federal carbon monoxide$^2$ and SO$_2$ standards, and as unclassifiable$^3$ for NO$_2$, PM$_{10}$, and lead. The State has designated the SFBAAB as in attainment of the State CO, NO$_2$, SO$_2$, and lead standards.

The USEPA has designated the SFBAAB as in nonattainment for the federal 8-hour O$_3$ standard, the 24-hour PM$_{2.5}$ standard, and the annual PM$_{2.5}$ primary standard. The State has designated the SFBAAB as in serious nonattainment of the State 1-hour O$_3$ standard and in nonattainment of the State PM$_{10}$ and PM$_{2.5}$ standards. These pollutants of concern (O$_3$, PM$_{2.5}$, and PM$_{10}$) are described in more detail below.

Ozone

Ozone, or smog, is not emitted directly into the environment, but is formed in the atmosphere by complex chemical reactions between reactive organic gases (ROG) and oxides of nitrogen (NOx) in the presence of sunlight. Ozone formation is greatest on warm, windless, sunny days. The main sources of NOx and ROG, often referred to as ozone precursors, are combustion processes (including motor vehicle engines); the evaporation of solvents, paints, and fuels; and biogenic sources. Automobiles are the single largest source of ozone precursors in the SFBAAB. Ozone levels usually build up during the day and peak in the afternoon hours. Short-term exposure can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, it can aggravate existing respiratory diseases such as asthma, bronchitis and emphysema. Chronic exposure to high ozone levels can permanently damage lung tissue. Ozone can also damage plants and trees, and materials such as rubber and fabrics.

Inhalable Particulate Matter

Particulate Matter refers to a wide range of solid or liquid particles in the atmosphere, including smoke, dust, aerosols, and metallic oxides. In the SFBAAB most particulate matter is caused by combustion, factories, construction, grading, demolition, agricultural activities, and motor vehicles. Motor vehicles are currently responsible for about half of the particulates in the SFBAAB. Wood burning in fireplaces and stoves is another large source of fine particulates. Extended exposure to particulate matter can increase the risk of chronic respiratory disease. Some particulate matter, such as pollen, is naturally occurring. PM$_{10}$ is of concern because it bypasses the body's natural filtration system more easily than larger particles, and can lodge deep in the lungs. The USEPA and the state of California revised their PM standards several years ago to apply only to these fine particles. PM$_{2.5}$ poses an increased health risk because the particles can deposit deep in the lungs and contain substances that are particularly harmful to human health.

Ambient Concentrations

The existing air quality conditions in the area surrounding the Project site can be characterized by monitoring data collected in the region. The Bay Area Air Quality Management District (BAAQMD) monitors air quality conditions at more than 30 locations throughout the Bay Area. The closest monitoring stations to the Project site are located in Concord and San Ramon. Monitoring station measurements

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$^2$ The SFBAAB was previously designated as a CO nonattainment area. Since the area was re-designated, it is subject to federal Clean Air Act requirements for maintaining attainment, discussed in the Clean Air Act section of this document.

$^3$ Areas are designated as unclassifiable when EPA cannot designate the area as meeting or not meeting the standards based on available information. Federal Clean Air Act Section 107(d)(1)(A)(iii). Unclassifiable areas are treated the same as attainment areas under the Clean Air Act.
indicate that air quality in the vicinity of the Project performs well against State and federal standards for criteria air pollutants with few exceedances of pollutant standards between 2011 and 2013, the most recent years available. Table 5-1 summarizes exceedances of the State and federal standards at these monitoring sites.

Table 5-1: Summary of Criteria Air Pollution Monitoring Data

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Standard</th>
<th>Monitoring Site</th>
<th>Days Standard Exceeded</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2011</td>
</tr>
<tr>
<td>Ozone</td>
<td>State 1-Hour</td>
<td>Concord</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>San Ramon</td>
<td>n/a</td>
</tr>
<tr>
<td>Ozone</td>
<td>Federal 8-Hour</td>
<td>Concord</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>San Ramon</td>
<td>n/a</td>
</tr>
<tr>
<td>Ozone</td>
<td>State 8-Hour</td>
<td>Concord</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>San Ramon</td>
<td>n/a</td>
</tr>
<tr>
<td>PM$_{10}$</td>
<td>Federal 24-Hour</td>
<td>Concord</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>San Ramon</td>
<td>n/a</td>
</tr>
<tr>
<td>PM$_{2.5}$</td>
<td>State 24-Hour</td>
<td>Concord</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>San Ramon</td>
<td>n/a</td>
</tr>
<tr>
<td>PM$_{2.5}$</td>
<td>Federal 24-Hour</td>
<td>Concord</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>San Ramon</td>
<td>n/a</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>State/Federal 8-Hour</td>
<td>Concord</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>San Ramon</td>
<td>n/a</td>
</tr>
<tr>
<td>Nitrogen Dioxide</td>
<td>State 1-Hour</td>
<td>Concord</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>San Ramon</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Notes:
- Dash (-) indicates pollutant is not monitored at the site
- Ozone monitoring at San Ramon began in January 2012 for an air monitoring study. Therefore, 3-year average ozone statistics are not available.

Chapter 5: Air Quality

Toxic Air Contaminants

Besides the "criteria" air pollutants, there is another group of substances found in ambient air referred to as Hazardous Air Pollutants under the Federal Clean Air Act and Toxic Air Contaminants (TACs) under the California Clean Air Act. TACs are a broad class of compounds known to cause morbidity or mortality (cancer risk), and include, but are not limited to, the criteria air pollutants listed above. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., benzene near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and federal level.

Diesel Engine Particulate Matter

In 1998, the California Air Resources Board (ARB) identified diesel engine particulate matter as a toxic air contaminant. Diesel exhaust is the predominant TAC in urban air, and is estimated to represent about two-thirds of the cancer risk from TACs (based on the statewide average). According to the ARB, diesel exhaust is a complex mixture of gases, vapors and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by ARB, and are listed as carcinogens either under State Proposition 65 or under the Federal Hazardous Air Pollutants programs.

Particulate matter emitted from diesel-fueled engines (diesel particulate matter, or DPM) is of particular concern, since it can be distributed over large regions, thus leading to widespread public exposure. The particles emitted by diesel engines are coated with chemicals, many of which have been identified by USEPA as hazardous air pollutants, and by ARB as TACs. Diesel engines emit particulate matter at a rate about 20 times greater than comparable gasoline engines. The vast majority of diesel exhaust particles (over 90 percent) consist of PM$_{2.5}$, which are the particles that can be inhaled deep into the lung. Like other particles of this size, a portion will eventually become trapped within the lungs, possibly leading to adverse health effects.

While the gaseous portion of diesel exhaust also contains TACs, ARB's 1998 action was specific to DPM, which accounts for much of the cancer-causing potential from diesel exhaust. California has adopted a comprehensive diesel risk reduction program to reduce DPM emissions 85 percent by 2020. The USEPA and ARB adopted low sulfur diesel fuel standards in 2006 that reduce diesel particulate matter substantially.

Facilities that may have substantial diesel exhaust emissions include truck stops; warehouse/distribution centers; large commercial or industrial facilities; high volume transit centers; schools with high volume of bus traffic; high volume highways or high volume arterial/roadways with high levels of diesel traffic. The highest diesel PM emissions in the SFBAAB occur in the urban core areas of Concord, eastern San Francisco, western Alameda County, Redwood City/East Palo Alto, Richmond/San Pablo, and San Jose.

Wood Smoke

In cooler weather, smoke from residential wood combustion can be a source of TACs. Localized high TAC concentrations can result when cold stagnant air traps smoke near the ground and, with no wind, the pollution can persist for many hours, especially in sheltered valleys during winter. Wood smoke also contains a significant amount of PM$_{10}$ and PM$_{2.5}$. Wood smoke is an irritant, and is implicated in worsening asthma and other chronic lung problems. Bay Area Air Quality Management District (BAAQMD) Regulation 6, Rule 3, disallows wood-burning devices in new construction, except those meeting USEPA emissions targets and approved by the Air Pollution Control Officer of the Bay Area Air Quality Management.

Odors

Odors are also an important element of local air quality conditions. Specific activities can raise concerns on the part of nearby neighbors. Major sources of odors include restaurants, manufacturing plants, and agricultural operations. While sources that generate objectionable odors must comply with air quality regulations, the public's sensitivity to locally produced odors often exceeds regulatory thresholds.
Sensitive Receptors

For purposes of air quality and public health and safety, sensitive receptors are generally defined as land uses with population concentrations that would be particularly susceptible to disturbance from dust and air pollutant concentrations, or other disruptions associated with project construction and/or operation. The reasons for greater than average sensitivity include pre-existing health problems, proximity to emissions sources, or duration of exposure to air pollutants. Schools, hospitals and convalescent homes are considered to be relatively sensitive to poor air quality because children, the elderly and the infirm are more susceptible to respiratory disease and other air quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people usually stay home for extended periods of time, with associated greater exposure to ambient air quality. Recreational uses are also considered sensitive because vigorous exercise places a high demand on the human respiratory system with resulting greater exposure to ambient air quality conditions.

Sensitive receptors located in the vicinity of the Project site include residential uses to the north of the site and two schools: Del Rey Elementary School (abutting the north side of portions of the Project site) and Miramonte High School (located approximately 675 feet east of the Project site). No other sensitive receptors (e.g. nursing homes, retirement communities, or hospitals) are located within ½-mile of the Project site.

Regulatory Setting

Federal Regulations

Federal Clean Air Act

The federal Clean Air Act (CAA), enacted largely in its current form in 1970 and amended in 1977 and 1990, establishes the framework for federal air pollution control. The act directed the USEPA to establish the ambient air quality standards described in Table 4.2-1. An area that does not meet the federal standard for a pollutant, as shown in Table 4.2-1, is called a “nonattainment” area for that pollutant. For federal nonattainment areas, the federal CAA requires states to develop and adopt State Implementation Plans (SIPs), which are air quality plans showing how air quality standards will be attained. The Federal Clean Air Act Amendments of 1990 (FCAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution.

The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. USEPA has responsibility to review all State SIPs to determine conformation to the mandates of the FCAA, and to determine if implementation will achieve air quality goals. If the USEPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area that imposes additional control measures. Failure to submit an approvable SIP or to implement the plan within the mandated timeframe may result in sanctions, or being denied transportation funding. In California, SIPs are prepared and adopted by the local or regional air districts (in the Bay Area, by the BAAQMD) and are reviewed and submitted to the USEPA by ARB.

Federal HAP Regulations

Title III of the FCAA requires the USEPA to promulgate national emissions standards for hazardous air pollutants (NESHAPs), which can set different requirements for major and area sources. Major sources are defined as stationary sources with potential to emit more than 10 tons per year (tpy) of any HAP or more than 25 tpy of any combination of HAPs; all other sources regulated under Title III of the FCAA are considered area sources.

USEPA issues emission standards in two phases. The first phase consists of technology-based emission standards designed to produce a high level of emission reductions for major sources of HAPs, which are referred to as MACT standards. For area sources, the standards may be different, based on generally available control technology. In the second phase, USEPA must issue health risk-based emissions standards where such standards are deemed necessary to address risks remaining after implementation of MACT standards.
of the technology-based NESHAPs. These second-phase standards are generally referred to as “residual MACT” standards.

The FCAAA also required USEPA to issue vehicle or fuel standards containing reasonable requirements to control HAP emissions, applying at a minimum to benzene and formaldehyde. Performance criteria were established to limit mobile source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. In addition, Section 219 of the FCAAA also required the use of reformulated gasoline in selected U.S. cities (those with the most severe ozone nonattainment conditions) to further reduce mobile-source emissions, including air toxics.

Mobile Off-Road Engines (Construction Phase): Emission Standards for Non-road Diesel Engines

To reduce emissions from non-road diesel equipment, EPA established a series of emission standards, called Tiers, for new non-road diesel engines culminating in the 2004 Non-road Tier 4 Final Rule.\[^4\] The Tier standards apply to non-road engines such as engines found in construction, general industrial, and terminal equipment, but not locomotives or marine engines rated above 37 kilowatt (kW) (50 horsepower [HP]). The Tier 1, Tier 2, Tier 3, and Tier 4 standards require compliance with progressively more stringent emission standards. Tier 1 standards were phased in from 1996 to 2000 (year of manufacture), depending on the engine horsepower category. Tier 2 standards were phased in from 2001 to 2006 and the Tier 3 standards were phased in from 2006 to 2008. To meet these standards, engine manufacturers will produce new engines with advanced emissions control technologies similar to those already expected for on-road heavy-duty diesel vehicles. The Non-road Tier 4 standards are currently being phased in starting with smaller engines in 2008 until all but the very largest diesel engines meet NOx and PM standards in 2015.

Mobile On-Road Engines (Construction Phase): Emissions Standards for Heavy-Duty Engines and Vehicles

To reduce emissions from on-road, heavy-duty diesel trucks, USEPA established a series of increasingly strict emission standards for new engines, starting in 1988. The EPA promulgated the final and cleanest standards with the 2001 Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements Rule, more commonly known as the 2007 Highway Rule,\[^6\] which integrated engine and fuel controls as a system to gain the greatest emission reductions. This rule established a PM emission standard of 0.01 gram per horsepower-hour (g/hp-hr) for new vehicles beginning with model year 2007. NOx and non-methane hydrocarbon (NMHC) standards of 0.20 g/hp-hr and 0.14 g/hp-hr, respectively, were phased in between 2007 and 2010 on a percent of sales basis: 50 percent from 2007 to 2009 and 100 percent in 2010.

State Regulations

**California Clean Air Act (CAA)**

The California CAA of 1988 focuses on attainment of the California Ambient Air Quality Standards (CAAQS), which, for certain pollutants and averaging periods, is more stringent than the comparable federal standards. Responsibility for achieving California standards is placed on the ARB and local air pollution control districts through district-level air quality management plans.

The California CAA requires designation of attainment and nonattainment areas with respect to CAAQS. The California CAA also requires that local and regional air districts expeditiously adopt and prepare an

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air quality attainment plan if the district violates State air quality standards for CO, SO₂, NO₂, or O₃. No locally prepared attainment plans are in place for areas that violate the State PM₁₀ standards, because attainment plans are not required for those areas. This is discussed further below.

The California CAA requires that the State air quality standards be met as expeditiously as practicable, but, unlike the Federal CAA, does not set precise attainment deadlines. Instead, the act established increasingly stringent requirements for areas that will require more time to achieve the standards.

ARB is primarily responsible for developing and implementing air pollution control plans to achieve and maintain the NAAQS. The ARB is primarily responsible for statewide pollution sources and produces a major part of the SIP. Local air districts are still relied upon to provide additional strategies for sources under their jurisdiction. The ARB combines this data and submits the completed SIP to USEPA.

Other ARB duties include monitoring air quality, in conjunction with air monitoring networks maintained by air pollution control and air quality management districts; establishing CAAQS, which in many cases are more stringent than the NAAQS; determining and updating area designations and maps; and setting emissions standards for new mobile sources, consumer products, small utility engines, and off-road vehicles.

State TAC Regulations

TACs in California are primarily regulated through the Tanner Air Toxics Act (Assembly Bill [AB] 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588, or the Hot Spots Act). AB 1807 sets forth a formal procedure for ARB to designate substances as TACs. Research, public participation, and scientific peer review are necessary before ARB can designate a substance as a TAC.

To date, ARB has adopted USEPA's list of HAPs as TACs and identified more than 21 additional TACs. Most recently, Environmental Tobacco Smoke was added to ARB's list of TACs in 2007.⁷

Once a TAC is identified, ARB then adopts an Airborne Toxics Control Measure (ATCM) for sources that emit that particular TAC. If there is a concentration below which health effects are not likely, the control measure must reduce exposure below that threshold. If there is no safe concentration, the measure must incorporate “best available control technologies” (BACT) to minimize emissions.

The Hot Spots Act requires that existing facilities that emit toxic substances above a specified level prepare a toxic emissions inventory; conduct a risk assessment if emissions are significant; notify the public of significant risk levels; and prepare and implement risk reduction measures.

ARB adopted a comprehensive Risk Reduction Plan in 2000, after identifying DPM as a TAC.⁸ Pursuant to this Plan, ARB adopted diesel-exhaust control measures and stringent emission standards for various on-road mobile sources of emissions, including transit buses and off-road diesel equipment (e.g., tractors, generators). In 2007, a low-sulfur diesel fuel requirement and tighter emission standards for heavy- duty diesel trucks was put into effect, to be followed in 2011 by the same standards being applied to off-road diesel equipment. Over time, the replacement of older vehicles will result in a fleet that produces substantially lower levels of TACs than the replaced vehicles.

Mobile-source emissions of TACs (e.g., benzene, 1,3-butadiene, DPM) decreased significantly over the last decade and will be reduced further in California through a progression of regulatory measures (e.g., Low-Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies. With implementation of ARB’s Risk Reduction Plan, DPM concentrations are expected to be reduced by 85 percent in 2020 from the estimated year-2000 level. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced.

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Mobile Off-Road Engines (Construction Phase)

**ARB Off-Road Emissions Regulation for Compression-Ignition Engines and Equipment**

Engines designated as non-road engines by USEPA are known as off-road engines in California state regulations implemented by ARB. Similar to the USEPA Non-road Diesel Rule, the ARB Off-Road Emissions Regulation for Compression-Ignition Engines and Equipment\(^9\)\(^,\)\(^10\) applies to diesel engines such as those found in construction, general industrial, and terminal equipment, but not locomotives or marine engines rated above 37 kW (50 HP). Initially adopted in 2000 and amended in 2004, the regulation establishes Tier emission standards, test procedures, and warranty and certification requirements. For some model years and engine sizes, the ARB Tier emission standards are more stringent than the USEPA standards.

**ARB In-Use Off-Road Diesel Vehicle Regulation**

In July 2007 ARB adopted the In-Use Off-Road Diesel Vehicle Regulation and amended it in December 2011\(^11\),\(^12\). The regulation requires owners of off-road mobile equipment powered by diesel engines 25 HP or larger to meet the fleet average or BACT requirements for NOx and PM emissions by January 1 of each year. The regulation also establishes idling restrictions, limitations on buying and selling older off-road diesel vehicles (Tier 0), reporting requirements, and retrofit and replacement requirements. The requirements and compliance dates vary by fleet size, with performance requirements for large fleets beginning in 2014, medium fleets in 2017, and small fleets in 2019.\(^13\) Requirements regarding idling, disclosure, reporting, and labeling took effect in 2008 and 2009. In September 2013 the USEPA granted ARB authorization to enforce all provisions of the In-Use Off-Road Diesel Vehicle Regulation, including the regulation’s performance requirements. Enforcement of the restrictions on adding Tier 0 and 1 vehicles began January 1, 2014. Enforcement of the first fleet average requirements for large fleets (> 5,000 total fleet horsepower) began on July 1, 2014.\(^14\)

Mobile On-Road Engines (Construction Phase)

**Heavy Duty Diesel Truck Idling Regulation**

ARB adopted the in-use heavy duty diesel truck idling ATCM in July 2004. As a follow-up to this ATCM, the ARB approved the Heavy Duty Diesel Truck Idling regulation\(^15\),\(^16\) which affected heavy-duty diesel trucks starting in February 2005. The regulation requires in-state and out-of-state registered sleeper berth equipped trucks to shut down their engines if idling for longer than 5 minutes at a time, except in the case of queuing (if the queue is located more than 100 feet from any homes or schools). The regulation also establishes engine performance standards which require non-programmable engine shutdown systems on heavy-duty diesel engines of model year 2008 and later; these systems shut down the engine after


\(^11\) ARB, 2011. Regulation for In-Use Off-Road Diesel-Fueled Fleets. Title 13, California Code of Regulations, Section 2449.


\(^13\) On September 13, 2013, ARB issued an advisory indicating that the USEPA has granted it authorization to enforce all provisions of the In-Use Off-Road Diesel Regulation.


five minutes of idling or, alternatively, the engines can optionally meet strict emission standards for NOx emissions during idling. Trucks with engines of model year 2006 or older may use any California or federally certified diesel-fueled auxiliary power system (APS) or fuel-fired heaters.

California Green Building Standards Code (CALGreen)

CALGreen is the green building code specific to the State of California, adopted in January 2010 and effective as of January 2011 for residential and non-residential new construction projects. This code aims to improve safety, health and general welfare of the public in California by reducing the negative impacts of construction and buildings on the environment and encouraging sustainable construction practices. Through the promotion of sustainable planning and design, energy efficiency, water efficiency and conversion, material conversion and resources efficiency and environmental quality, CALGreen aims to support a high standard for green buildings in California and lower the overall impacts that buildings pose on the environment. The code is composed of mandatory measures that must be implemented by local jurisdictions as well as voluntary measures called Tiers.

Regional Regulations - Bay Area Air Quality Management District

The City of Orinda is within the jurisdiction of the BAAQMD, which regulates air quality in the San Francisco Bay Area. The most recent BAAQMD plan for attaining California Ambient Air Quality Standards, the Bay Area 2010 Clean Air Plan (2010 CAP), was adopted by BAAQMD in September 2010. The 2010 CAP serves to update the Bay Area ozone plan in compliance with the requirements of Chapter 10 of the California Health & Safety Code. In addition, the 2010 CAP provides an integrated, multi-pollutant strategy to improve air quality, protect public health, and protect the climate. The 2010 CAP demonstrates how the San Francisco Bay Area will achieve compliance with the State standards for ozone and particulate matter pollution and includes reduction measures for both.

BAAQMD adopted updated CEQA Air Quality Guidelines, including new thresholds of significance, in June 2010. Lead agencies use the thresholds of significance to evaluate potential air quality impacts. On March 5, 2012, the Alameda County Superior Court issued a judgment finding that BAAQMD’s adoption of the thresholds was a project under CEQA and therefore the thresholds should have undergone environmental analysis. Accordingly, the court set aside the thresholds on procedural grounds; it did not address any of petitioners’ claims regarding the evidence on which BAAQMD relied in adopting the thresholds. On August 13th 2013, the California First District Court of Appeal reversed the Superior Court’s decision, ruling that adoption of CEQA significance thresholds does not constitute a “project” under CEQA, and therefore does not require CEQA review. In so doing, the Court of Appeal rejected challenges that the thresholds of significance were not supported by substantial evidence. The only issue that remains unresolved by the courts is whether BAAQMD’s toxic air contaminant receptor thresholds are consistent with CEQA requirements. That issue is currently under review by the California Supreme Court.

Impacts and Mitigation Measures

Thresholds of Significance

Appendix G of the CEQA Guidelines (Environmental Checklist) contains a list of air quality effects that may be considered significant. Implementation of the Project would have a significant effect on the environment if it were to:

1. Conflict with or obstruct implementation of the applicable air quality plan;

2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

3. 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors);

4. Expose sensitive receptors to substantial pollutant concentrations; or

5. Create objectionable odors affecting a substantial number of people.

In accordance with State CEQA guidelines, in the absence of specific local government or agency thresholds, lead agencies must make significance determinations based on the substantial evidence in the record for each project. The City has determined that there is substantial evidence to support BAAQMD’s analysis as to the levels of pollutants that should be deemed significant, and the thresholds that the City should use in assessing whether the Project will have any health risk impact on the existing environment. Therefore, the City has determined that it will apply the thresholds of significance in the updated BAAQMD CEQA Guidelines (“City-applied BAAQMD standards”). These City-applied air quality thresholds include:

- During project construction result in average daily emissions of 54 pounds per day of ROG, NOx, or PM$_{2.5}$ or 82 pounds per day of PM$_{10}$.

- During project operation result in average daily emissions of 54 pounds per day of ROG, NOx, or PM$_{2.5}$ or 82 pounds per day of PM$_{10}$; or result in maximum annual emissions of 10 tons per year of ROG, NOx, or PM$_{2.5}$ or 15 tons per year of PM$_{10}$.

- During either project operation or project construction of a new source or a new receptor, expose persons to substantial levels of Toxic Air Contaminants (TACs) resulting in:
  - a cancer risk level greater than 10 in one million,
  - a non-cancer risk (chronic or acute) hazard index greater than 1.0, or
  - an increase of greater than 0.3 micrograms per cubic meter of annual average PM$_{2.5}$.

- During either project operation or project construction of a new source or a new receptor, expose persons to substantial levels of TACs resulting in a cumulative cancer risk level greater than 100 in a million, a cumulative non-cancer risk (chronic or acute) hazard index greater than 10.0, or a cumulative increase of greater than 0.8 micrograms per cubic meter of annual average PM$_{2.5}$.

- If a project exceeds the identified project-level significance thresholds, its emissions would also be cumulatively considerable.

**Conflict with Air Quality Plan**

**Impact AQ-1:** The Project would not conflict with or obstruct implementation of the applicable air quality plan. *(No Impact)*

BAAQMD recommends analyzing a project’s consistency with current air quality plan control measures. The impact would be significant if the Project would conflict with or obstruct implementation of the 2010 Clean Air Plan.

Many of the Clean Air Plan’s control measures are targeted to area-wide improvements, large stationary source reductions, or large employers, and are not applicable to the Project. The Project would not impede implementation of air quality control measures, and would have no impact related to an inconsistency with the Clean Air Plan.
Construction Period PM$_{10}$ Emissions

**Impact AQ-2:** With implementation of Project elements and compliance with City policies that will mitigate potential impacts, the Project would not violate air quality standards or contribute substantially to an existing or projected air quality violation of PM$_{10}$ standards. *(LTS with Mitigation)*

The Project is most likely to generate pollutants of concern during the construction phase. These pollutants would come from the following sources:

- **Construction Equipment Exhaust.** Construction activities cause combustion emissions from utility engines, heavy-duty construction vehicles, hauling equipment on and off site, and motor vehicles transporting construction crews. Exhaust emissions from construction activities vary daily as construction activity levels change. The use of construction equipment results in localized exhaust emissions.

- **Fugitive Dust.** Fugitive dust emissions are generally associated with demolition, land clearing, exposure of soils to the air, and cut and fill operations. Dust generated during construction varies substantially on a project-by-project basis, depending on the level of activity, the specific operations, and weather conditions.

Construction of the Project would involve excavation and site preparation, and construction of new residential structures. Although construction activities would be temporary, if uncontrolled, construction dust (expressed as PM$_{10}$) levels downwind of actively disturbed areas could possibly exceed State standards and dust fall on adjacent properties could be a nuisance. This would result in a potentially significant impact.

**Applicable Policies and Standards**

The City of Orinda mandates by ordinance (OMC § 17.15.2) that every use comply with the regulations and standards of BAAQMD. The requirement to comply with regulations and standards of BAAQMD is uniformly applicable to all proposed development within the City, and would ensure that any potential Project-related impacts resulting from uncontrolled construction dust are reduced to a less-than-significant level.

**Mitigation Measures**

The Project applicant has agreed to incorporate all BAAQMD construction-period dust and emission control measures as elements of the Project, as well as additional construction-period emission controls. The City and the County Building Department will enforce their implementation. These control measures include the following:

**Mitigation Measure AQ-2A: Dust Control.** The Project applicant shall require demolition, grading and construction contractors to comply with all BAAQMD-recommended dust control measures, including the following:

1. Water all active construction areas at least twice daily.
2. Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard.
3. Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.
4. Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites.
5. Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public or private streets.
6. Limit traffic speeds on unpaved roads to 15 mph.
7. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
8. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes. Clear signage shall be provided for construction workers at all access points.
9. All construction equipment shall be maintained and properly tuned in accordance with manufacturer’s specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
10. Post a publicly visible sign with the telephone number and person to contact at the City regarding dust complaints. This person shall respond and take correction action within 48 hours. The Air District’s phone number shall also be visible to ensure compliance with applicable regulations.

Mitigation Measure AQ-2B: Construction Emission Controls. In addition to the BAAQMD Basic Control Measures, the Project applicant shall ensure that the following emission reduction measures are implemented during construction.

1. All diesel-powered construction equipment engines with a horsepower rating of 50 horsepower or greater shall implement particulate matter filters capable of attaining a minimum particulate matter control level of 60 percent.
2. Earth moving activities would be phased over at least 40 days and no more than two acres would be disturbed on a daily basis.
3. Prior to construction, the applicant shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project-wide fleet average 20 percent NOx reduction and 50 percent particulate matter (PM) reduction compared to the most recent Air Resources Board (ARB) fleet average. Acceptable options for reducing emissions include the use of late model engines, low emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available.
4. All diesel-powered construction equipment shall be turned off when not in use or limited to 5 minutes of idling time.

Conclusion
Mitigation measures AQ-2A and -2B require the Project applicant to apply BAAQMD Basic Control Measures and additional measures to reduce construction phase dust and emissions from diesel engines. Consequently, the Project will result in less than significant impacts related to emission of PM$_{10}$ during the construction period.

Construction Period Pollutant and TAC Emissions

Impact AQ-3: Construction of the Project will not result in emissions that would exceed City-applied thresholds of significance, or expose sensitive receptors to substantial pollutant concentrations or toxic air contaminants. (LTS)

Residents and other sensitive receptors in the vicinity of the Project site would be temporarily exposed to diesel engine exhaust during initial site improvements due to grading and the operation of construction equipment.
The BAAQMD CEQA Guidelines include screening criteria to provide lead agencies and project applicants with a conservative indication of whether the proposed project could result in potentially significant air quality impacts. If all of the screening criteria are met by a proposed project, then the lead agency or applicant need not perform a detailed air quality assessment of the project's air pollutant emissions, and impacts are deemed less-than-significant. For single family developments, those projects that include more than 114 dwelling units are deemed to have the potential to result in significant criteria pollutant construction emission impacts. The Project, which consists of 13 residential units, is below the applicable screening level size specified in the BAAQMD screening criteria for criteria pollutants.

To address potential risk and hazard impacts from TACs and PM$_{2.5}$ during construction, the BAAQMD has also published a set of screening tables for air toxics evaluations. These tables provide a set of screening distances from the Project fence line for various types of land use projects, beyond which construction emissions would not normally exceed the City-applied community risk and hazard significance thresholds. Applying the BAAQMD construction screening tables for a 13-residential unit project yields the following screening distances from the Project fence line to the nearest sensitive receptor to ensure avoidance of community health risk and hazards:

- Cancer Risk from diesel particulate matter: 100 meters;
- Chronic Hazard from DPM Index: 7 meters;
- Annual Average PM$_{2.5}$ concentration: 75 meters;
- Acute Hazard Index from Acrolein: 55 meters;
- Chronic Hazard Index from Acrolein: 1 meter; and
- Combined Risk: 100 meters.

Sensitive receptors located at a distance of 100 meters or less from the Project fence line would exceed this initial BAAQMD screening distance. From a review of the area surrounding the Project site, the nearest residential sensitive receptors are located within 25 to 30 meters of the fence line along Adobe Lane, Sager Court and Donna Maria Way. Thus, the construction of the Project would exceed the screening criteria related to cancer risk threshold, acute hazard index, and the annual average PM$_{2.5}$ threshold.

As noted in the BAAQMD CEQA Guidelines, the exceedance of a screening criterion does not mean a significant impact would result. BAAQMD considers the screening procedure as environmentally conservative interim guidance and encourages project proponents and lead agencies to conduct more detailed analyses to examine further whether significant construction risks are associated with the project.

A more detailed air quality analysis and health risk assessment has been prepared, analyzing the Project’s potential impacts during the construction phase, including a Construction Health Risk Analysis Report and a supplementary report evaluating the Project’s air quality emissions and health risk to students (the MBA reports), both of which are attached as Appendices 5A and 5B, incorporated by reference. Implementation of all construction emission controls indicated in Mitigation Measure AQ-2B (above) were included in the calculation of Project-related health risk impacts. The results of the project-specific, detailed dispersion modeling analysis conducted for the Project indicate the following:

- cancer risks associated with construction of the Project are estimated to be 9.2 in one million, less than the BAAQMD and City-applied threshold of 10 in one million;
- chronic non-cancer Hazard Index from diesel particulate matter and acrolein is estimated at 0.024, less than the BAAQMD and City-applied Health Index threshold of 1.0;

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18 BAAQMD Guidelines, Table 3-1

19 Acrolein is a major component of DPM that has the highest Chronic Reference Exposure Level (REL) of the major components that comprise DPM.
• acute non-cancer Hazard Index from acrolein is estimated at 0.05, less than the BAAQMD and City-applied Health Index threshold of 1.0;

• a PM$_{2.5}$ concentration of 0.101 micrograms/m$^3$, is less than the BAAQMD and City-applied threshold of 0.3 micrograms/m$^3$.

**Conclusions**

The MBA Report's refined site-specific, project-level analysis indicates that, with implementation of required Project mitigation measures (particularly those requiring a 50% reduction in PM emissions as compared to the most recent ARB fleet average), construction of the Project would not exceed the City-applied thresholds for community cancer risk, chronic non-cancer hazard index, acute non-cancer hazard index, or the annual allowable PM$_{2.5}$ concentration. These conclusions apply generally, and in particular to the closest sensitive receptors along Adobe Lane, Sager Court and Donna Maria Way. These findings indicate that the Project would result in a less than significant impact on sensitive receptors in regards to construction-period emissions and toxic air contaminants.

**Operational-Related Criteria Pollutants**

**Impact AQ-4:** The Project would not result in a significant increase of any criteria pollutant for which the region is in non-attainment (including releasing emissions which exceed quantitative thresholds for ozone precursors. (LTS)

The BAAQMD CEQA Guidelines include screening criteria to provide lead agencies and project applicants with a conservative indication of whether the proposed project could result in potentially significant air quality impacts. If all of the screening criteria are met by a proposed project, then the lead agency or applicant need not perform a detailed air quality assessment of the project's air pollutant emissions, and impacts are deemed less-than-significant. For single family developments, those projects that include more than 325 dwelling units are deemed to have the potential to result in significant operational impacts related to criteria pollutants. The Project, which consists of 13 residential units, is below the applicable screening level size specified in the BAAQMD screening criteria.

**Conclusions**

The Project does not exceed the BAAQMD screening criteria for operational impacts related to criteria pollutants, and its impacts would be less than significant.

**Exposure of New Sensitive Receptors**

**Impact AQ-5:** The Project would not result in the exposure of new sensitive receptors (i.e., new residents at the Project site) to health risks or hazards from toxic air emissions. (LTS)

The BAAQMD has developed a geographical database of cancer risks, hazards, and PM$_{2.5}$ concentrations for most stationary sources permitted by the District since 2008. From the permitted database information compiled by the BAAQMD, there are no BAAQMD permitted stationary sources of TAC or PM$_{2.5}$ emissions identified within a 1,000 foot zone of influence of the Project site. Therefore, health risk and hazards in the Project area from permitted stationary sources of TACs are less than significant.

There are also no freeways or major highways located within a 1,000-foot zone of influence of the Project site. Daily traffic volumes along Moraga Way are estimated to be 21,500 vehicles per day. The MBA Report assessed the cumulative health risk and hazards from the construction of the Project integrated with the estimated health risk and hazards from all other emission sources located within the 1,000-foot zone of influence, including Moraga Way as well as possible concurrent construction of the Lavenida

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20 BAAQMD Guidelines, Table 3-1
Lane subdivision, and found that potential health risks remained well below BAAQMD thresholds. Therefore, health risk and hazards to new residents of the Project from mobile and temporary sources are less than significant.

Odors

Impact AQ-6: The Project would not create objectionable odors. (No Impact)

Typical sources of objectionable odors include chemical plants, sewage treatment plants, large composting facilities, rendering plants, and other large industrial facilities that emit odorous compounds. Development of the Project would not include any activities that are typical sources of objectionable odors, generate objectionable odors, or place sensitive receptors adjacent to a use that generates odors (e.g., landfill).

Cumulative Air Quality Impacts

Impact AQ-7: The Project’s construction-related emissions and operation emissions would not lead to cumulatively significant health risks that would exceed the cumulative source significance thresholds. (LTS)

By its very nature, air pollution is largely a cumulative impact. Generally, no single project is sufficient in size, by itself, to result in non-attainment of ambient air quality standards. Instead, a project’s individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project’s contribution to the cumulative condition is considerable, then the project’s impact on air quality would be considered significant. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region’s existing air quality conditions. Since the Project would not result in a significant air quality impact, the Project would not contribute to cumulatively considerable air quality impacts.

Two other projects planned in the vicinity of the Project are the adjacent Lavenida Lane Subdivision and the Camino Ricardo subdivision project in Moraga. Together, these projects would result in construction of a total of 47 units, which is still significantly lower than the BAAQMD’s screening criteria of 114 units for construction-period emissions, or 325 units for potential criteria pollutants. Furthermore, it is highly unlikely that the three projects would combine to result in cumulative impacts during construction because it is not likely that the three projects would undergo site preparation at the same time. Even in the event that the three projects were constructed simultaneously, BAAQMD guidance indicates that the analysis of construction-related analyses should disclose the types of off-site receptors and their proximity to construction activity within approximately 1,000 feet. The Camino Ricardo subdivision project in Moraga is located more than a mile from the Project site and over a ridge, and thus out of the applicable range such that localized air quality impacts would not be cumulatively affected.

Moreover, the MBA Report determined that the Project’s construction emissions, combined with emissions from possible concurrent construction of the Lavenida Lane subdivision and emissions from all other stationary and mobile sources of toxic air emissions within 1,000 feet would not result in a cumulative health risk to adjacent sensitive receptors. The Camino Ricardo subdivision project includes earthmoving activity that would add incrementally to construction emissions. However, the results of the MBA cumulative analysis indicate that the cumulative emissions as studied in that report were generally less than one-fifth of the level of emissions that would be considered cumulatively considerable. The incremental emissions that might be added from the Camino Ricardo subdivision project would not be substantial enough to trigger the significance threshold for health risks.

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22 BAAQMD CEQA Guidelines 2011, page 2-1

23 BAAQMD CEQA Guidelines 2012, page 8-7
The Project would not generate objectionable odors and is not located near any typical source of objectionable odors, and therefore would not cumulatively contribute to an odor-related impact.
Biological Resources

This chapter evaluates the Project’s potential impacts on biological resources. It describes existing biological resources in the Project vicinity and evaluates changes that could result from development of the Project. The analysis and discussion in this section of the EIR is based primarily on the following reports and assessments, which are incorporated by reference and included in the Appendix to this EIR:

- Wetlands Research Associates, Inc. (WRA), Biological Resources Assessment Update for 24 Adobe Lane, dated May 2010, attached as Appendix 6A;
- Subsequent WRA memoranda dated December 2, 2010; June 2, 2011; March 23, 2012; and September 26, 2012 (collectively, WRA Reports), attached as Appendix 6B;
- Stream and Watercourse Biotic Assessment prepared by the Project Biologist (Barbara Leitner), dated January 16, 2009, attached as Appendix 6C; and
- HortScience, Inc., Tree Report, dated October 2011, attached as Appendix 6D.

Environmental Setting

Existing Biological Resources on the Project Site

For purposes of this EIR, sensitive biological communities are those communities given special protection under CEQA and other applicable federal, State, and local laws, regulations and ordinances. Applicable laws and ordinances are discussed in the Regulatory Setting section below. The locations of these sensitive biological communities on the Project site are shown on Figure 6-1.

Non-Sensitive Biological Communities

Ruderal Non-Native Grassland

The Project site is composed primarily of ruderal herbaceous grassland. Characteristic ruderal non-native grassland species observed on the Project site include ripgut brome (*Bromus diandrus*), wild oats (*Avena* sp.), filaree (*Erodium botrys*), and cut-leaf geranium (*Geranium cicutarium*). Native species, such as purple needlegrass (*Nassella puchra*) are also present within the grassland, but not in a large enough area or a high enough density to warrant being separately identified as a native grassland. Minimal occurrences of other vegetation, such as coyote brush (*Baccharis pilularis*) and Himalaya berry (*Rubus discolor*), are also present within the grassland.

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1 The Biological Resources Assessment provides general information on the potential presence of sensitive species and habitats. It is not an official protocol level survey for listed species that may be required for Project approval by local, state, or federal agencies. The Assessment is based on information available at the time of the study and on site conditions that were observed on the dates of the site visits.
Figure 6-1
Biological Communities

Legend
- Red: Project Area
- Blue: Waters
- Green: Potential Wetland
- Dark Green: Coast Live Oak Riparian Forest
- Purple: Coast Live Oak Woodland
- Orange: Mixed Oak and Walnut Woodland
- Yellow: Ruderal Non-native Grassland
- Gray: Developed and Landscaped

Source: WRA Environmental Consultants (April 2009)
Coast Live Oak Woodland

The woodland area in the western portion of the Project site is predominantly coast live oak (*Quercus agrifolia*). This area follows two ravines containing ephemeral streams that drain toward Moraga Creek to the northeast. These streams appear to conduct only a small amount of water for a short period of the year. The vegetative community was observed to be nearly identical on ridge tops and in the bottom of the ravines, suggesting that this vegetative community is not dependent on the streams and should therefore not be considered riparian.

Mixed Oak and Walnut Woodland

A planted orchard of Northern California black walnut trees (*Juglans hindsii*) is present on the Project site, some of which appear to have been grafted with English walnut (*Juglans regia*) for nut production. Planted coast live oak trees line Adobe Lane.

Sensitive Biological Communities

Central Coast Live Oak Riparian Forest

Riparian forest on the Project site is composed mostly of large native live oak trees and generally fits the description of the Central coast live oak riparian forest community type. Additional tree species observed throughout this area include California bay (*Umbellularia californica*), poison oak (*Toxicodendron diversilobum*), and California buckeye (*Aesculus californica*). Riparian forest on the Project site is found around Moraga Creek, as well as an area extending south of Moraga Creek and along the eastern edge of the Project site. The presence of mixed willow trees (*Salix lasiolepis*) and cattail (*Typha* sp.) suggest that this community is dependent on stream flow and is therefore riparian.

Potential Wetland

An area on the eastern edge of the Project site was delineated and verified by the Army Corps of Engineers as a potential wetland due to the presence of saturated soil and areas of standing water under a canopy of willow trees, which typically grow in wetlands. Soils in this area are listed as hydric on both State and national lists of known hydric soils.

Waters

A total of 3,732 linear feet of waters, totaling 0.47 acres, are present on the Project site, including a perennial creek (Moraga Creek) and three ephemeral tributaries. The three tributaries appear to conduct water only for short periods during the rainy season. The stream and creek channels within the Project site are shaded under a heavy tree canopy and contain almost no undergrowth vegetation.

Trees

2011 Survey

As indicated above, the Project site has extensive tree canopy associated with: the planted black walnut orchard; planted coast live oaks along Adobe Lane; and riparian forests along Moraga Creek, an area extending south of Moraga Creek, and an additional area along the easterly property boundary. A tree survey was conducted in August 2011, which included a survey of those trees 4” in diameter and greater that are located within 3 areas within the Project site:

- the proposed creek crossing,
- near the Adobe, and
- along the proposed entry road.

These areas represent only a small portion of the Project site and do not include all trees located on the site, but are likely to be the areas that will be most significantly impacted by the Project because they are located in areas to be developed.
For the 2011 survey a total of 182 trees, representing 10 different species, were surveyed and evaluated. Trees were generally found in small groves, reflective of the original landscape plantings and re-establishment of oak groves. Several species are native to the Orinda area and may be indigenous to the site: coast live oak, California buckeye, California bay, California black oak and willow. Coast live oak was the most frequently occurring species (132 total surveyed trees). The largest oaks are associated with the area proposed for the creek crossing.

Each of the surveyed trees was rated for suitability for preservation based upon its age, health, structural condition and ability to safely coexist within a development environment. A total of 15 trees, including 12 coast live oak, were rated as "good" (with good health and structural stability that have the potential for longevity at the site); 74 trees, including 58 coast live oaks, were rated as having “moderate suitability for preservation” (fair health and/or structural defects that may be abated with treatment, requiring more intense management and monitoring, and may have shorter lifespans); and 93 trees, including 62 coast live oak, were rated as “poor” (with poor health or significant defects in structure that cannot be abated, can be expected to decline regardless of management, and possessing characteristics that are undesirable in landscape settings or unsuited for use in the area).

Appendix 6D shows all of the trees on the Project site that were surveyed in 2011. The map marks the location of each tree and notes its species and diameter.

2014 Survey

In 2014, for purposes of assessing various alternative access routes to the site, the tree survey was expanded to include the area near the easterly segment of Donna Maria Way, the southwesterly portion of the site near Dolores Way, and additional areas in the central portions of the site. In all, a total of 285 trees were surveyed for location, species type and size.

Adjacent Biological Resources

The Project site is located just northeast of the East Bay hills in a location where the natural vegetation of the hillsides begin to mix with urban and residential land uses. The site is situated on a hillside and bordered by Moraga Creek on its lower (northeastern) boundary. Moraga Creek runs through Moraga Valley and empties into the San Leandro Reservoir. The Project site is bounded by residential development to the north and a golf course to the southwest. Beyond the southeastern property boundary is the site of the approved and as yet undeveloped Lavenida Lane subdivision.

A biological resources assessment of the Lavenida Lane site described it as characterized largely by open space with a mix of ruderal and native plant species sprouting from recently disked bare earth. Biological resources similar to the Project site were found on the Lavenida Lane site, such as black walnut trees from a remnant orchard, coast live oaks, coyote brush, and Himalayan blackberry, with the same riparian habitat on the border between the two properties.

Potentially Occurring Special Status Species

Potential occurrence of special status species on the Project site was determined through a literature and database search followed by two site visits. The following sources were reviewed to determine which special status plant and wildlife species have been documented to occur in the vicinity of the Project site:

- California Natural Diversity Database (CNDDB)
- US Fish and Wildlife Service (USFWS) quadrangle species lists
- California Native Plant Society (CNPS) Electronic Inventory records

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2 On April 14, 2009, the Project site was traversed on foot by biologists from WRA to determine plant communities present within the Project area, if existing conditions provided suitable habitat for any special status plant or wildlife species, and if sensitive habitats were present. All plant and wildlife species encountered were recorded, as summarized in the Appendix to the WRA report. In May 2010, an additional site visit was conducted by WRA to update their report reflecting changes in the Project’s plans.
The Project site was surveyed to search for suitable habitats for species identified in the literature review as occurring in the vicinity. The potential for each special status species to occur on the Project site was evaluated as no potential, unlikely, moderate potential, high potential, or present. Habitat suitability determinations are based on observed site conditions and the habitat requirements and range of the species evaluated. Definitions for the terminology used in these evaluations are provided on page 10 of the Biological Resources Assessment. For example:

- a determination of "unlikely" does not wholly discount the potential for the species to be present at the site; it indicates that the area does not contain the core habitat necessary for the species to prey, feed, and shelter, and the potential for that species to be present is low;
- a determination of "moderate" indicates that at least some of the core habitat elements for the species are present, and the species may occur on the site, though the occurrence is not a foregone conclusion.
- a determination of "not present" is based on a complete lack of habitat, or the Project site being located outside of the species’ range.

The evaluation of habitat suitability in the WRA report includes a brief discussion of the rationale for the determination for each species.

**Plants**

Special-status plant species include those listed as endangered, threatened, rare, or proposed for listing by the U.S. Fish and Wildlife Service, the California Department of Fish and Wildlife, or the California Native Plant Society. The literature and database search found 46 special status plant species documented in the vicinity of the Project site. No special status plant species were detected on the Project site during a May 2009 visit or during a subsequent rare plant survey in May 2011. None of the 46 special status plant species have a high potential to occur on the Project site. As indicated in Table 6-1, seven of the special status plant species have a moderate potential to occur on the Project site:
<table>
<thead>
<tr>
<th>Name</th>
<th>Potential to Occur on the Project Site</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bent-flowered fiddleneck</td>
<td>Moderate</td>
<td>A California endemic annual herb in the forget-me-not family (Boraginaceae) that typically inhabits coastal bluff scrub, cismontane woodlands, and valley and foothill grasslands. It is known from Alameda, Contra Costa, Colusa, Lake, Marin, Napa, San Benito, Santa Clara, Santa Cruz, San Mateo and Yolo counties. This species is typically found from 3 to 500 meters with a blooming period of March to June.</td>
</tr>
<tr>
<td>Mt. Diablo fairy lantern</td>
<td>Moderate</td>
<td>A perennial bulbiferous herb in the lily family (Liliaceae) that inhabits cismontane woodland, valley and foothill grassland, chaparral, and riparian woodland from 30 to 840 meters in elevation. The species is known from Alameda, Contra Costa and Solano counties and blooms from April to June.</td>
</tr>
<tr>
<td>Round-leaved filaree</td>
<td>Moderate</td>
<td>An annual herb in the geranium family (Geraniaceae) that typically occurs in cismontane woodland and valley and foothill grassland. This species is known from many counties throughout California at elevations from 15 to 1200 meters with a blooming period of March through May.</td>
</tr>
<tr>
<td>Diablo helianthella</td>
<td>Moderate</td>
<td>A perennial herb in the sunflower family (Asteraceae) that blooms from March to June. It is found in a variety of plant communities: broadleaf upland forest, chaparral; cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland. It is known from 60 to 1300 meters in elevation in Alameda, Contra Costa, Marin, Santa Clara, San Mateo, and San Francisco counties. It tends to occur in rocky, azonal soils and partial shade at interfaces between chaparral, woodland, and grassland communities.</td>
</tr>
<tr>
<td>Mt. Diablo cottonweed</td>
<td>Moderate</td>
<td>An annual herb in the sunflower family (Asteraceae) that blooms from March to May. It occurs on bare, grassy, or rocky slopes in broadleaf upland forest, chaparral, cismontane woodland, and valley and foothill grassland. It has been recorded in Alameda, Contra Costa, Colusa, Lake, Monterey, Marin, Napa, Santa Barbara, Santa Clara, Santa Cruz, San Joaquin; San Luis Obispo, Solano, and Sonoma counties at elevations from 45-825 meters.</td>
</tr>
<tr>
<td>Robust monardella</td>
<td>Moderate</td>
<td>A California endemic perennial rhizomatous herb in the mint family (Lamiaceae) that typically inhabits broad-leafed upland forest, chaparral (openings), cismontane woodland, coastal scrub, and valley and foothill grassland. It is known from Alameda, Contra Costa, Humboldt, Lake, Mendocino, Napa, Santa Clara, Santa Cruz, San Mateo, and Sonoma counties. The species typically occurs from 100 to 915 meters with a blooming period of June to July.</td>
</tr>
</tbody>
</table>
Table 6-1: Special Status Plant Species that have a Moderate Potential to Occur on the Project Site

<table>
<thead>
<tr>
<th>Name</th>
<th>Potential to Occur on the Project Site</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oval-leaved viburnum (Viburnum ellipticum)</td>
<td>Moderate</td>
<td>A deciduous shrub in the honeysuckle family (Caprifoliaceae) that typically inhabits chaparral, cismontane woodland, and lower montane coniferous forest habitats. It is known from Contra Costa, El Dorado, Fresno, Glenn, Humboldt, Mendocino, Napa, Placer, Sonoma and Shasta counties as well as in Oregon and Washington. The species typically occurs from 215 to 1400 meters and with a blooming period of May to June.</td>
</tr>
</tbody>
</table>

Wildlife

Special-status wildlife species are defined as animals which are listed under either the Federal Endangered Species Act or the California Endangered Species Act, or which are classified as Species of Special Concern by the California Department of Fish and Wildlife, are on the CDFW Watch List, or are tracked by the California Natural Diversity Database (CNDDB). The literature and database search found 70 special status wildlife species documented in the vicinity of the Project site: 5 invertebrate, 7 fish, 8 amphibian and reptile, 34 bird, and 16 mammal species.

The site visit observed evidence of one special status wildlife species—the stick houses of the San Francisco Dusky-footed Woodrat (Neotoma fuscipes annectens)—on the Project site. None of the other 69 special status wildlife species have a high potential to occur on the Project site. As indicated in Table 6-2, fifteen of the special status wildlife species (2 birds, 2 amphibians, 1 reptile, and 10 mammals) have a moderate potential to occur on the Project site:

Table 6-2 Special Status Wildlife Species that have a Moderate Potential to Occur on the Project Site

<table>
<thead>
<tr>
<th>Name</th>
<th>Potential to Occur on the Project Site</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Francisco Dusky-footed Woodrat</td>
<td>Present: The stick houses of this species were observed in the central coast live oak riparian forest and abandoned structures of the Project site.</td>
<td>Inhabits hardwood forests of moderate canopy with a moderate to dense understory. The subspecies occurs in Coast Ranges between San Francisco Bay and the Salinas River. It prefers brushy riparian habitats, coast live oak woodland, and dense scrub communities. Prominent stick houses provided evidence of its presence. Nests are constructed out of leaves, shredded grass, and other material.</td>
</tr>
<tr>
<td>(Neotoma fuscipes annectens)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pallid Bat</td>
<td>Moderate: Mature trees, snags and unused buildings in the Project site may provide suitable roosting habitat for this species.</td>
<td>Found in a variety of low elevation habitats throughout California. It selects a variety of day roosts including rock outcrops, mines, caves, hollow trees, buildings, and bridges. Night roosts are usually found under bridges, but also in caves, mines, and buildings. Pallid Bats are sensitive to roost disturbance. Unlike most bats, Pallid Bats primarily feed on large ground-dwelling arthropods, and many prey are taken.</td>
</tr>
<tr>
<td>(Antrozous pallidus)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Table 6-2 Special Status Wildlife Species that have a Moderate Potential to Occur on the Project Site

<table>
<thead>
<tr>
<th>Name</th>
<th>Potential to Occur on the Project Site</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Townsend’s Big-Eared Bat</td>
<td><strong>Moderate:</strong> Unused buildings in the Project site may provide suitable roosting habitat for this species.</td>
<td>Primarily found in rural settings in a wide variety of habitats including oak woodlands and mixed coniferous-deciduous forest. It requires caves, mines, tunnels, buildings, or other human-made structures for roosting.</td>
</tr>
<tr>
<td>(Corynorhinus townsendii)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western Mastiff Bat</td>
<td><strong>Moderate:</strong> Mature trees, snags and unused buildings in the Project site may provide suitable roosting habitat for this species.</td>
<td>Is found in a wide variety of habitat. Distribution appears to be tied to large rock structures, which provide suitable roosting sites, including cliff crevices and cracks in boulders. Crevices in cliff faces, high buildings, trees and tunnels are required for roosting.</td>
</tr>
<tr>
<td>(Eumops perotis californicus)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silver-haired Bat</td>
<td><strong>Moderate:</strong> Mature trees, snags and unused buildings in the Project site may provide suitable roosting habitat for this species.</td>
<td>Distribution includes coastal and montane forests from the Oregon border south along the coast to San Francisco Bay and along the Sierra Nevada and Great Basin region to Inyo County. It is primarily a forest dweller, feeding over streams, ponds, and open brushy areas. It roosts in hollow trees, snags, buildings, rock crevices, caves, and under bark.</td>
</tr>
<tr>
<td>(Lasionycteris noctivagans)</td>
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</tr>
<tr>
<td>Western Red Bat</td>
<td><strong>Moderate:</strong> Mature trees and snags in the Project site may provide suitable roosting habitat for this species.</td>
<td>Roosting habitat includes forests and woodlands from sea level up through mixed conifer forests. It feeds over a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands. It prefers edges or habitat mosaics that have trees for roosting and open areas for foraging.</td>
</tr>
<tr>
<td>(Lasiurus blossevillii)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hoary Bat</td>
<td><strong>Moderate:</strong> Mature trees and snags in the Project site may provide suitable roosting habitat for this species.</td>
<td>Most abundant in the forests and croplands of the plains states and in forests of the Pacific Northwest, and is also found in the forests of the eastern United States and the arid deserts of the Southwest. Diverse woodland habitats with a mixture of forest and small open areas that provide edges seem ideal for this species. This species has been found in Spanish moss, squirrel nests, woodpecker holes, and out in the open on the trunks of trees. Summer tree roosts are typically located along edge habitats close to feeding grounds. Most females rear young in deciduous trees, while males prefer to roost in conifers. Both sexes appear to prefer older trees as roosts, which they use for up to 5 weeks, and apparently provide greater safety.</td>
</tr>
<tr>
<td>(Lasiurus cinereus)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long-eared Myotis</td>
<td><strong>Moderate:</strong> Mature trees, snags and unused buildings in the Project site may provide suitable roosting habitat for this species.</td>
<td>Primarily a forest and woodland associated species. Day roosts are found in hollow trees, under exfoliating bark, rock outcrop crevices and buildings. Other roosts include caves, mines and under bridges.</td>
</tr>
<tr>
<td>(Myotis evotis)</td>
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</tbody>
</table>
### Table 6-2 Special Status Wildlife Species that have a Moderate Potential to Occur on the Project Site

<table>
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<tr>
<th>Name</th>
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</thead>
<tbody>
<tr>
<td>Fringed Myotis (Myotis thysanodes)</td>
<td>Moderate: Mature trees, snags and unused buildings in the Project site may provide suitable roosting habitat for this species in the Project site.</td>
<td>Associated with a wide variety of habitats including mixed coniferous-deciduous forest and redwood/sequoia groves. Buildings, mines and large snags are important day and night roosts.</td>
</tr>
<tr>
<td>Long-legged Myotis (Myotis volans)</td>
<td>Moderate: Mature trees, snags and unused buildings in the Project site may provide suitable roosting habitat for this species.</td>
<td>Generally associated with woodlands and forested habitats. Large hollow trees, rock crevices and buildings are important day roosts. Other roosts include caves, mines and buildings.</td>
</tr>
<tr>
<td>Birds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White-tailed Kite (Elanus leucurus)</td>
<td>Moderate: Suitable breeding habitat exists in the mature oak trees in the Project site.</td>
<td>Occurs in low elevation grassland, agricultural, wetland, oak woodland, and savannah habitats. Riparian zones adjacent to open areas are also used. Vegetative structure and prey availability seem to be more important than specific associations with plant species or vegetative communities. Lightly grazed or un-grazed fields generally support large prey populations and are often preferred to other habitats. Kite primarily feed on small mammals, although, birds, reptiles, amphibians, and insects are also taken. Nest trees range from single isolated trees to trees within large contiguous forests. Preferred nest trees are extremely variable, ranging from small shrubs (less than 10 feet tall), to large trees (greater than 150 feet tall).</td>
</tr>
<tr>
<td>Loggerhead Shrike (Lanius ludovicianus)</td>
<td>Moderate: Suitable breeding habitat exists in the shrubs and trees in the Project site.</td>
<td>A common resident and winter visitor in lowlands and foothills throughout California. It prefers open habitats with scattered trees, shrubs, posts, fences, utility lines or other perches. Nests are usually built on a stable branch in a densely foliaged shrub or small tree and are usually well-concealed. The highest densities occur in open canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian pinion-juniper, juniper, and desert riparian habitats. While this species eats mostly arthropods, they also take amphibians, small to medium-sized reptiles, small mammals and birds, and are also known to scavenge on carrion.</td>
</tr>
<tr>
<td>Reptile</td>
<td></td>
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</tr>
<tr>
<td>Alameda Whipsnake (Masticophis lateralis euryxanthus)</td>
<td>Moderate: The Project site does not contain the scrub habitat and rock outcroppings normally associated with this species, but is within the</td>
<td>Restricted to the inner Coast Range in western and central Contra Costa and Alameda Counties. The Alameda Whipsnake requires open and partially open, low-growing shrub communities. This habitat provides cover for snakes during dispersal, cover from predators and a thermal gradient of microhabitats where they move to regulate their</td>
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Table 6-2 Special Status Wildlife Species that have a Moderate Potential to Occur on the Project Site

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<td>dispersal capabilities of this species from a nearby, barrier-free occurrence. The nearest documented whipsnake occurrence is approximately 0.7 miles to the west/southwest. In addition, Critical Habitat is designated for this species approximately 0.15 miles to the southwest of the Project site.</td>
<td>body temperature. The primary constituent elements for the Alameda Whipsnake include scrub vegetation communities with a mosaic of open and closed canopy; other lands immediately adjacent to scrub vegetation of varying vegetation types; talus, rock outcrops, and small mammal burrows in close association or embedded within the essential core scrub or adjacent areas; and accessible dispersal habitat of varying vegetation type for movement between such sites. Sparse shrub canopy is ideal since it also provides a visual barrier from avian predators. Grassland areas that are linked to scrub by rock outcrops or river corridors are also considered primary constituent elements by the USFWS.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Foothill Yellow-legged Frog</td>
<td>Moderate: Moraga Creek provides suitable foraging and dispersal habitat and marginal breeding habitat for this species. The nearest documented Foothill Yellow-legged Frog occurrence is approximately one mile to the northwest of the Project site. This occurrence is hydrologically connected to Moraga Creek and the Project site and is approximately 1.2 miles away when following the stream channel.</td>
</tr>
<tr>
<td>(Rana boylii)</td>
<td>California Red-legged Frog</td>
<td>Moderate: The section of Moraga Creek adjacent to the Project site provides suitable CRLF aquatic foraging habitat and contains some plunge pools that may provide marginal CRLF breeding habitat if winter water flows are not excessive. In addition, the Project site may provide suitable dispersal habitat during wet weather. The nearest documented CRLF occurrence is approximately 2 miles to</td>
</tr>
</tbody>
</table>
Table 6-2 Special Status Wildlife Species that have a Moderate Potential to Occur on the Project Site

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<td></td>
<td>the northwest of the Project site. In addition, CRLF ponds have been constructed as mitigation for the Wilder subdivision approximately 0.5 miles to the southwest of the Project site.</td>
<td>breeding sites. They can be encountered living within streams at distances exceeding 1.8 miles from the breeding site and have been found greater than 1,640 feet from water, but are typically within 328 feet of water.</td>
</tr>
</tbody>
</table>

*Wetlands Research Associates, 2010 and 2012*

**Species Not Evaluated**

Several species of interest were not evaluated, for the following reasons:

- Rainbow trout is not a protected species.
- Steelhead trout, which is protected, cannot pass the San Leandro reservoir and therefore Moraga Creek does not constitute habitat for this species.
- California tiger salamander (CTS) – a recent search of the California Natural Diversity Database (CNDDB) shows no occurrences of CTS in the East Bay in the area west of the Highway 680 corridor and north of Pleasanton, other than historic occurrences believed to be extirpated and located 9 to 16 miles from the Project site; this lack of documented occurrences suggests a high likelihood that CTS are not present in the vicinity of the Project site. Aerial photos appear to show four ponds between 1,700 and 3,000 feet southwest of the Project site, located over the ridgeline. However, available evidence indicates that these ponds do not support ponding at depth and duration required for CTS breeding, and are separated from the Project site by barriers to migration and atypical dispersal habitat, and are at distances that are at the upper ranges of the established CTS dispersal range. Based on historic imagery, at least two of these ponds were apparently created in 2007, and no evidence could be found that the ponds hold water for the period of time necessary for successful CTS breeding (a minimum of 10 weeks but typically a period of 3 to 6 months). Available aerial photographs also show brush in the center of the nearest ponds with an aerial photograph signature that appears to be coyote brush, a species that is intolerant of ponding for the minimum duration required for CTS breeding. Therefore, there is no evidence to support a conclusion that these ponds are suitable breeding habitat for CTS. Even if these ponds did hold water for a sufficient duration to support CTS breeding, for individual CTS to reach the Project site from these ponds, they would have to pass down a wooded slope, through an area graded for development, over an access road, and through a golf course which has been in place for many years. To move back to the breeding ponds, the CTS would need to do this in reverse, climbing up a substantial elevation gradient. Even if CTS were present in the ponds, due to the presence of barriers to migration and atypical habitat types, it is unlikely that CTS would migrate between the ponds and the Project site. Even minor habitat modifications that traverse the area between the breeding and refuge sites (such as roads, berms, and certain types of pipelines or fences) can impede or even prevent breeding migrations. While the distance between the Project site and these ponds is within the maximum recorded dispersal distance.

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3 For a further discussion on steelhead trout in the vicinity of the Project site, see the Lavenida Lane Environmental Review, Appendix F, Biological Resources Assessment, available on the City of Orinda website at: [https://cityoforinda.box.com/s/5lnqd5le3nwdw1k414yd](https://cityoforinda.box.com/s/5lnqd5le3nwdw1k414yd)
(of 7,200 feet), the probability of an individual travelling this distance is extremely low. Based on the
combination of all of these factors, the Project site was determined to lack suitable habitat for CTS.

- Western pond turtles do utilize upland areas, but are primarily found in and around suitable aquatic
habitat, habitats with abundant basking sites, underwater refugia, and standing or slow-moving
waters. Moraga Creek adjacent to the Project site is shaded by a tree canopy and thus has few
opportunities for basking (e.g., overhanging banks, in-stream vegetation and woody debris). The
creek in this area is fairly uniform in width and depth and does not have large pools with suitable
underwater refugia. The creek contains very little water for much of the year, and is subject to brief,
powerful floods during the rainy season. These conditions are not conducive to establishment of a
breeding population for this species. Thus, while it is possible that pond turtles may utilize or move
through this portion of Moraga Creek, their use of both the stream and surrounding upland habitat is
considered unlikely. This determination, along with the fact that the Project will not impact Moraga
Creek and will include upland buffers around all creeks on the property, supports the conclusion that
the Project will not have a substantial adverse effect on this species and is not further evaluated in
this EIR.

- Golden eagles are present in the vicinity and could conceivably forage on the Project site. However,
the small size of the Project site (at 0.03 square miles) comprises only between 0.06% and 0.08% of
the foraging area needed for a given golden eagle, whose territories are estimated at between 36 and
48 square miles (Zeiner et al., 1990). Further, the Project site is located at the edge of an urbanized
area, is partially developed under existing conditions, and is surrounded by developed areas. The
Project site is therefore not considered core foraging habitat and does not comprise a substantial
area of foraging habitat for golden eagles, and the Project would not result in a substantial adverse
effect on this species or its habitat.

- Northern harrier is present in the vicinity of the Project but habitat for northern harrier within the
Project site is less than ideal. Of 16 Bay Area nesting/breeding occurrences in the CNDDB, 15 were
located in marshes or other areas more flat, low, and open than the Project site. While this species is
not restricted to lowlands and marshes, it is frequently found in those areas. Typical nesting habitat
for this ground-nesting species should also have a low level of disturbance and potential threats. Both
domestic and feral cats are likely to be present at the Project site due to the proximity of residential
areas, and pedestrians and joggers with dogs frequently pass along Donna Maria Way. For these
reasons, the site is unlikely to support this species. The area of highest suitability for potential
northern harrier nesting habitat is the area surrounding the stream and seasonal wetland in the
northeastern portion of the site. This area is completely avoided by the Project and would be
protected by an open space easement. The Project would therefore not result in the loss of nesting
habitat for this species, even though the probability of finding a northern harrier nest in the Project site
remains unlikely. Northern harrier is known to forage throughout a wide range of habitat types,
including open areas within and adjacent to developed and partially developed areas. The Project
would not have a substantial adverse effect on the use of these areas for foraging by northern harrier,
as the conditions following Project construction would still be suitable for foraging by this species.

- Alameda song sparrow is endemic to California, where it is generally restricted to tidal salt marshes
on the fringes of South San Francisco Bay (Grinnell and Miller 1944). This tidal marsh habitat is at
least 6 miles east of the Project site, and separated from the Project site by the Oakland Hills. The
nearest occurrence record (within 2.5 miles of the Project site) is a single atypical occurrence of this
species on the western side of the Oakland Hills, while the Project site is located on the eastern side
of the Oakland Hills. All other occurrence records for this species in the CNDDB are within relatively
close proximity to the Bay (CDFG 2012). The nearest recorded occurrence (at 4 miles from the Bay),
is further from the Bay than any other documented occurrence. The Oakland Hills are a natural
barrier for this species, and no occurrences have been documented on the eastern side of these hills.
Based on these facts, the Project site is determined to be outside of the range of an Alameda song
sparrow. It is highly unlikely that a song sparrow observed by WRA at the site was the protected
Alameda subspecies. However, in the unlikely event that the observed song sparrow was an
Alameda song sparrow, impact minimization measures for nesting birds would prevent direct impacts
to this species, and stream setback areas containing trees and shrubs suitable for nesting will be
protected. Thus, the Project will not have a substantial adverse effect on this species.
American badger is considered unlikely to be present. This assessment of habitat suitability for American badger draws on a range of information about this species. In the vicinity of the Project site, badger digs are often found in association with California ground squirrel colonies (Quinn 2008). Little ground squirrel activity was noted at the Project site. Badger is typically found in areas with friable soils (Zeiner et al. 1990), often described as loamy or sandy soils. Soils at the Project site have a high clay content (USDA 1981), making them less friable. Badgers often have home ranges of hundreds of acres (Zeiner et al 1990). They are understood to be very sensitive to habitat fragmentation (Crooks 2002) and may only persist in contiguous habitat blocks (Quinn 2008). Based on the facts that the Project site is a small area compared to areas typically utilized by American badger, the Project site is partially developed in its existing condition, and is mostly surrounded by developed areas, the habitat at the Project site is unlikely to support American badger. While it cannot be said that badger could never be found at the site, these data sources regarding the species’ ecology support the determination that the species is unlikely to be present; and thus the Project is not likely to result in a substantial adverse effect on American badger.

Sharp-shinned hawk and Yuma myotis are no longer included in the official CDFG list of species of special concern (CDFG 2005; CDFG 2011), and so are not specifically evaluated. There are also a number of other bird species protected under California Department of Fish and Game (CDFG) Code Section 3.503.5, which protects birds of prey and their nests. For example, red-tailed hawk and sharp-shinned hawk have been observed at and/or near the site, as well as many other commonly occurring species not specifically designated as special status species, but which are protected under CDFG Code section 3503.5.

**Regulatory Setting**

This section briefly describes federal, State, and local regulations, permits, and standards pertaining to biological resources and wetlands as they apply to the Project. The following sections explain the regulatory context of the Project’s biological assessment, including applicable laws and regulations that were applied to the field investigations and analysis of potential Project impacts.

**Special Status Species**

Special status species include those plants and wildlife species that have been formally listed, are proposed as endangered or threatened, or are candidates for such listing under the federal Endangered Species Act (ESA) or California Endangered Species Act (CESA). These acts afford protection to both listed and proposed species. In addition, California Department of Fish and Game (CDFG) Species of Special Concern, which are species that face extirpation in California if current population and habitat trends continue, U.S. Fish and Wildlife Service (USFWS) Birds of Conservation Concern, sensitive species included in USFWS Recovery Plans, and CDFG special-status invertebrates are all considered special status species. Although CDFG Species of Special Concern generally have no special legal status, they are given special consideration under CEQA.

In addition to regulations for special status species, most birds in the United States, including non-status species, are protected by the Migratory Bird Treaty Act of 1918. Under this legislation, destroying active nests, eggs, and young is illegal.

California Fish and Game Code Section 3503 states it is unlawful to take, possess, or destroy birds, their nests or eggs of any bird. Disturbance that causes nest abandonment and/or loss of reproductive effort (killing or abandonment of eggs or young) is considered “take.” All raptors, their active nests, eggs and young are protected. Additionally, section 3511 of the Fish and Game Code lists fully protected bird species, such as the white-tailed kite and golden eagle that may not be taken or possessed except in certain limited circumstances.

Plant species on California Native Plant Society (CNPS) Lists 1 and 2 are also considered special status plant species. Impacts to these species are considered significant according to CEQA. CNPS List 3 plants have little or no protection under CEQA, but are included in this analysis for completeness.
Critical Habitat

Critical habitat is a term defined and used in the Federal Endangered Species Act as a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. The FESA requires federal agencies to consult with the USFWS to conserve listed species on their lands, and to ensure that any activities or projects they fund, authorize, or carry out will not jeopardize the survival of a threatened or endangered species. For those species with critical habitat, federal agencies must also ensure that their activities or projects do not adversely modify critical habitat to the point that it will no longer aid in the species' recovery. In many cases, this level of protection is similar to that already provided to species by the FESA "jeopardy standard." However, areas that are currently unoccupied by the species but which are needed for the species' recovery, are protected by the prohibition against adverse modification of critical habitat.

Sensitive Biological Communities

Sensitive biological communities include habitats that fulfill special functions or have special values, such as wetlands, streams, and riparian habitat. These habitats are protected under federal regulations (such as the Clean Water Act), state regulations (such as the Porter-Cologne Act, the CDFG Streambed Alteration Program, and CEQA), or local ordinances or policies (City or County Tree Ordinances, Special Habitat Management Areas, and General Plan Elements).

Waters of the United States

The U.S. Army Corps of Engineers (Corps) regulates "Waters of the United States" under Section 404 of the Clean Water Act. "Waters of the U.S." are defined broadly as waters susceptible to use in commerce, including interstate waters and wetlands, all other waters (intrastate water bodies, including wetlands), and their tributaries. Potential wetland areas, according to the three criteria used to delineate wetlands stated in the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987), are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Areas that are inundated for sufficient duration and depth to exclude growth of hydrophytic vegetation are subject to Section 404 jurisdiction as "other waters" and are often characterized by an ordinary high water mark (OHWM). Other waters, for example, generally include lakes, rivers, and streams. The placement of fill material into "Waters of the US" (including wetlands) generally requires an individual or nationwide permit from the Corps under Section 404 of the Clean Water Act.

Waters of the State

The term "Waters of the State" is defined by the Porter-Cologne Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." The Regional Water Quality Control Board (RWQCB) protects all waters in its regulatory scope, but has special responsibility for wetlands, riparian areas, and headwaters. These water bodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs. RWQCB jurisdiction includes "isolated" wetlands and waters that may not be regulated by the Corps under Section 404. "Waters of the State" are regulated by the RWQCB under the State Water Quality Certification Program which regulates discharges of fill and dredged material under Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. Projects that require a Corps permit, or fall under other federal jurisdiction, and have the potential to impact "Waters of the State" are required to comply with the terms of the Water Quality Certification determination. If a proposed project does not require a federal permit, but does involve dredge or fill activities that may result in a discharge to "Waters of the State," the RWQCB has the option to regulate the dredge and fill activities under its state authority in the form of Waste Discharge Requirements.

The National Pollutant Discharge Elimination System (NPDES)

The NPDES framework also would apply to the Project. The Clean Water Act ("CWA") requires local jurisdictions to address the problem of pollutants in storm water runoff from development. The CWA provides for the control of the discharge of any pollutant into navigable waters from any point sources. To regulate point source pollution, the CWA provides that the EPA may issue NPDES permits. NPDES
permits are issued by the federal Environmental Protection Agency ("EPA") or by the states under EPA-approved permit programs that incorporate CWA's technological standards. California's permit program is implemented through the State Water Resources Control Board ("SWRCB") and the Regional Water Quality Control Boards ("RWQCBs").

Section 402(p) of the CWA establishes a framework for regulating municipal and industrial storm water discharges under the NPDES program, and requires controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and systems, design and engineering methods. The regional boards implement the CWA's municipal storm water requirements through the state's Municipal Storm Water Permitting Program. In September 2009, the SWRCB adopted a new NPDES General Permit for the storm water discharges associated with construction and land disturbance activities (No. 2009-0009-DWQ) that, among other things, requires compliance with certain numeric effluent limitations. This General Permit became effective on July 1, 2010.

In addition to setting effluent limitations, the permit requires development of a site-specific SWPPP that specifies Best Management Practices ("BMPs") that would prevent construction pollutants from contacting storm water with the interest of keeping all products of erosion from moving off site to receiving waters. This General Permit is implemented and enforced by the nine RWQCBs.

Streams, Lakes and Riparian Habitat

Streams and lakes, as habitat for fish and wildlife species, are subject to CDFW’s jurisdiction under Sections 1600-1616 of the State Fish and Game Code. Alterations to, or work within or adjacent to, streambeds or lakes generally require a 1602 Lake and Streambed Alteration Agreement. The term stream, which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as: "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation". In addition, the term stream can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (CDFG 1994). Riparian is defined as "on, or pertaining to, the banks of a stream;" therefore, riparian vegetation is defined as, "vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself" (CDFG 1994). Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from CDFW.

CEQA Guidelines Section 15206 specifies that a project shall be deemed to be of statewide, regional, or area-wide significance if it would substantially affect sensitive wildlife habitats, including but not limited to riparian lands, wetlands, bays, estuaries, marshes, and habitats for rare and endangered species.

Other Sensitive Biological Communities

Other sensitive biological communities not discussed above include habitats that fulfill special functions or have special values. Natural communities considered sensitive are those identified in local or regional plans, policies, regulations, or by the CDFW. CDFW ranks sensitive communities as "threatened" or "very threatened" and keeps records of their occurrences in its Natural Diversity Database. Sensitive plant communities are also identified by CDFW on its List of California Natural Communities Recognized by the CNDDB. Impacts to sensitive natural communities identified in local or regional plans, policies, regulations or by the CDFW or USFWS must be considered and evaluated under CEQA (California Code of Regulations: Title 14, Div. 6, Chap. 3, Appendix G). Specific habitats may also be identified as sensitive in City or County General Plans or ordinances.

Oak Woodlands

The Oak Woodlands Conservation Act became law on January 1, 2005 and was added to CEQA as section 21083.4. This statute, which protects oak woodlands that are not protected under the State Forest Practice Act, requires that if a City determines that a project may result in a significant impact on oak woodlands, the City shall require one or more of the following mitigation measures:

1. Conserve oak woodlands through the use of conservation easements;
2. Plant an appropriate number of trees, including maintenance of plantings and replacement of failed plantings;

3. Contribute funds to the Oak Woodlands Conservation Fund for the purpose of purchasing oak woodlands conservation easements;

4. Other mitigation measures developed by the county.

Local Policies and Regulations

Orinda Protected Tree Ordinance

OMC Chapter 17.21 establishes criteria designed to preserve protected trees. A “protected tree” means a live tree located on public or private property meeting one or more of the following standards that are applicable at the Project site:

1. A tree located on an assessor’s parcel upon which there is an existing structure, which has a trunk diameter equal to or greater than twelve (12) inches at 4.5 feet above its existing grade, and which is one of a number of listed species of oaks.

2. A tree of any size designated to be protected and preserved on an approved development plan or as a condition of approval of a tentative map, a tentative parcel map, or other development approval or land use entitlement or permit issued by the city.

3. A native riparian tree located within thirty (30) feet of the edge of a creek bank, or a tree beyond thirty (30) feet but in such proximity to a creek bank that it requires or tolerates soil moisture levels in excess of that available in adjacent uplands; with a trunk diameter (or a multi-trunk native riparian tree with a cross-sectional area of all trunks) of four inches at 4.5 feet above its existing grade.

4. A tree with a trunk diameter equal to or greater than six inches in diameter at 4.5 feet above its existing grade on a vacant or undeveloped assessor’s parcel (excepting trees identified on the Disallowed Plant List maintained by the Planning Department).

5. A tree of any size designated to be protected and preserved on an approved development plan or as a condition of approval of a tentative map, a tentative parcel map, or other development approval or land use entitlement or permit issued by the city.

Category II Tree permits are required for removal of all protected trees on property that is the subject of a development application. Development applications that may subsequently require a building or grading permit on a lot with a protected tree shall concurrently apply for a tree permit if construction related activity may remove or destroy a protected tree.

Approval or disapproval of applications for protected trees are based on consideration of the effect of tree removal on shade, views, privacy, fire safety, soil erosion and flow of surface water; as well as on the number, species, size and location of other trees that will remain in the area. A permit may be granted or denied based on the following additional factors and guidelines:

- The necessity for alteration, destruction, removal or relocation of a protected tree in order to construct a required improvement on public property, or within a public right-of-way; or to construct an improvement that allows reasonable economic enjoyment of private property;

- The extent to which a proposed improvement may be modified to preserve and protect a protected tree; and

- The extent to which a change in the existing grade within the protected perimeter may be modified to maintain and preserve a protected or heritage tree.

Each permit shall require, as a condition of approval, that: (1) if a protected tree proposed for removal can be relocated, the applicant shall move the tree to a suitable location; (2) provide a guarantee for the health and vigor of each protected tree for a period of two years after construction is complete; and (3)
replace protected trees in accordance with provided ratios based on tree size. Applicants may also make an in lieu payment for each replacement tree otherwise required.

**Orinda Heritage Tree Ordinance**

OMC Chapter 17.24 defines and seeks to protect and preserve heritage trees. OMC section 17.24.2 defines a heritage tree as follows:

...a tree designated by the City Council because of the tree’s association with some person or event of historical significance or because of its exceptional size which exceeds fifteen (15) inches in diameter, its condition, or its aesthetic qualities. The city shall maintain a heritage tree map, upon which each heritage tree must be identified. Each heritage tree shall be identified on the tree’s site with a permanent marker or other approved city sign.

The City Council reviews heritage tree nominations for approval. The property owner’s consent is required for registration of a heritage tree by resolution.

An applicant who desires to remove, destroy or prune a heritage tree is required to file an application on a form provided by the City. No heritage tree may be removed or destroyed unless it poses a hazard or would impose extreme hardship on the property owner. The Planning Director shall make a determination and recommend the approval or disapproval of the application to the City Council based on the factors and guidelines listed in the Ordinance.

If a proposed development or work on-site encroaches upon the protected perimeter of a heritage tree, the applicant shall take special measures, as approved by the Director, to allow tree roots to obtain oxygen, water and nutrients as needed. “Protected perimeter” means the area around the tree within the dripline plus a ten-foot-wide strip of ground surrounding the dripline. “Dripline” means the outermost edge of the tree’s canopy. When depicted on a map, the dripline appears as an irregularly shaped circle that follows the contour of the tree’s canopy as seen from above.

**Watercourse Alteration Permit**

Pursuant to OMC section 18.03.2, no person, firm, or corporation may impair, impede, redirect, or affect waters in a watercourse; construct, alter, or repair a watercourse; excavate, grade, or otherwise alter the surface of land so as to affect the capacity of a watercourse; destroy or significantly alter vegetation at or near a watercourse; or install or construct a new structure or improve or expand an existing structure within or across a watercourse without first obtaining a written permit from the Planning Director. The City, in issuing a watercourse alteration permit, may impose any conditions reasonably related to the public health, safety and welfare, including but not limited to riparian habitat restoration.

**Drainage Setbacks and Easements**

Pursuant to OMC section 16.64.220, a structure setback line shall be established along all unimproved earth channels (i.e., natural watercourses) within a subdivision. No permanent structures of any kind, other than drainage structures, may be constructed within, under, or over any structure setback area, although fencing and landscaping (including trees and shrubs) are excluded from this restriction. The structure setback line for unimproved channels less than 20 feet deep and with existing side slopes steeper than 2.5:1 (2.5 feet horizontal to one foot vertical) is determined by measuring from the toe of slope a distance of two-and-one-half times the channel depth plus thirty (30) feet. The structure setback line for unimproved channels less than 20 feet deep and with existing side slopes of 2.5:1 or flatter is thirty (30) feet as measured from the top of bank. The development rights for that portion of the lot on the creek side of the setback line shall be offered for dedication to the City of Orinda.

**City of Orinda General Plan**

**Conservation Element**

General Plan Policy 4.1.1 sets forth policies to preserve rare and endangered species; preserve valuable wildlife habitats (particularly riparian habitats); preserve oak woodlands and other native trees, protect
creeks, achieve aesthetically sensitive grading that conforms to natural contours, ensure safety and preserve trees and other vegetation and encourage planting and reforestation of oaks and other natives in hillside areas.

General Plan Policy 4.1.2 is designed to implement Policy 4.1.1 and requires an “environmental habitat assessment for any major development determined to be in an environmentally sensitive area.”

Land Use Element

General Plan Policy 2.2.1 sets forth policies to preserve open space; retain steep and unstable slopes as open space; and retain creeks and wildlife access corridors as open space.

Impacts and Mitigation Measures

Thresholds of Significance

Appendix G of the CEQA Guidelines (Environmental Checklist) contains a list of biological resource impacts that may be considered significant. Based on this list, implementation of the Project would have a significant impact on biologic resources if it would:

1. have a substantial adverse effect on any riparian habitat or other sensitive natural community (e.g., oak woodland) identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;
2. have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act;
3. have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;
4. 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;
5. conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
6. conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Riparian Habitat, Sensitive Natural Communities, and Protected Wetlands

Impact Bio-1: With implementation of Project elements and mitigation measures that will mitigate otherwise potentially significant impacts, the Project would not have a substantial adverse effect on any identified riparian habitat or other sensitive natural community or on federally protected wetlands. (LTS with Mitigation)

The Project site includes three sensitive biological communities: central coast live oak riparian forest, wetland, and waters, all of which are riparian in nature. The Project site also includes Coast live oak woodland, which may be considered a sensitive natural community under the Oak Woodlands Conservation Act.

The Project includes the following actions that could potentially affect these sensitive biological communities:

- Realignment of Adobe Lane and preparatory work for the residential lots will require the removal of 38 trees from the Project site and result in ground disturbance which could result in large areas of loose, exposed soil which could enter nearby stream, wetland, and riparian habitat if adequate precautions are not taken.
• The extended Adobe Lane will cross one of the Project site’s ephemeral streams. This crossing will be 35 feet wide and include a roadway as well as a pedestrian sidewalk. The creek channel will be placed in a culvert at this location (see Figure 6-2).

• Entry drives for the individual lots could occur within the drip line of existing trees (this may only occur on Lot 10).

• The proposed trail connecting both ends of Donna Maria Way will cross a narrow portion of wetlands approximately 50 feet wide. The connection will be constructed as a boardwalk supported by footings on compacted gravel pads, requiring limited fill within the wetland. The total area of wetland fill is anticipated to be less than 100 square feet (or .002 acres), leaving the remainder of the wetland area undisturbed (see Figure 6-2).

• Outfall for the stormwater management systems that drain to Moraga Creek will require placement of a pipeline and energy dissipater within a riparian area. This work would occur below the top-of-bank of Moraga Creek but avoid the creek itself. Installation of the pipeline and energy dissipater may require limited soil disturbance and removal of vegetation within the riparian zone of Moraga Creek.

The Project will also result in construction of homes in areas that currently contain annual grasslands, which wildlife species use as habitat. However, the annual grassland habitat in the Project area is not of high quality for use by special status species assessed, and is not crucial to the survival or reproductive success of special status species. In addition, the loss of annual grassland (approximately 9 acres) will be relatively minimal.

**Applicable Policies and Standards**

To address those Project actions listed above that could potentially affect sensitive biological communities, the Project applicant shall obtain all necessary permits from the RWQCB, CDFW, USACE and potentially the City of Orinda for installation and operation of the storm drain outfall, for the culvert of the waterway under the proposed roadway, and for construction of the path/boardwalk traversing the wetland.

The ephemeral stream to be crossed by Adobe Lane falls within the jurisdiction of the Corps, the RWQCB, and CDFW. Placement of a culvert within a creek channel is considered “fill” and will require Section 404 and 401 permits from the Corps and the RWQCB. Work done within the stream channel will also require a Section 1602 permit from CDFW. The Project may also require a Watercourse Alteration Permit from the City pursuant to OMC section 18.03.050. These permits will require the Project applicant to implement environmental safeguards and mitigations, such as work windows that avoid the rainy season, placement of silt fences and straw wattles to reduce sedimentation in the creek channel, replanting of disturbed soils with native seed, and compensatory mitigation through the restoration of stream habitat elsewhere on the site.

Furthermore, the design review application for each new residential structure must include a landscape plan that provides appropriate native riparian vegetation and other improvements to protect the environment, including allowance for wildlife movement and construction practices protective of native trees (OMC sections 17.7.1 and 18.04.010).
Adobe Lane Creek Crossing

Pedestrian Path Connection through Wetland Area

Figure 6-2
Impacts to Wetlands and Waters

Source: Schell and Martin, Inc. (June 2013)
Project Elements

The layout of the Project has been designed such that the majority of Project development will occur away from riparian areas and in non-biologically sensitive areas, avoiding streams, wetlands, and potential riparian areas. The open space easement encompasses the structural setback line from all on-site creeks and channels pursuant to OMC section 16.64.220 (see Figure 6-3), and establishes an open space buffer between the Project site and surrounding developed properties. This open space easement comprises 7.95 acres, or more than 39 percent of the Project site (see Figure 6-4). The Project would not remove or otherwise impact the coast live oak woodland located in the western edge of the Project site. Structure setback lines are also established at each new lot to avoid future placement of structures within sensitive biological areas. These Project elements will substantially avoid impacts to riparian habitat, sensitive natural communities and protected wetlands.

Mitigation Measures

The Project applicant has agreed to implement the following mitigation measures containing actions, procedures and designs related to construction and landscaping to preserve the quality of sensitive biological communities within and adjacent to the Project site, as recommended by the Project biologist (see Appendix 6B):

Mitigation Measure Bio-1A: BMPs during Construction: The following best management practices shall be followed throughout site preparation, and will be required for development of each home:

1. Construction will be carried out during the dry season.
2. Construction netting will be placed at the top of stream banks and around driplines of native trees; surface disturbance and grade changes will not be allowed in these areas.
3. Fill will not be placed within the stream bank unless it is part of a watercourse repair.
4. All construction trash and debris will be promptly collected and disposed of appropriately. No solid or liquid materials will be dumped into the watercourse.
5. Silt fencing, straw wattles, and/or other erosion control materials will be installed at the perimeter of each construction area to prevent soil from entering streams, wetlands, and riparian areas during construction involving soil disturbance.

Mitigation Measure Bio-1B: BMPs for Landscaping within the Stream Bank. The following best management practices shall be followed throughout site preparation, and will be required for development of each home:

1. When landscaping within a stream bank, soil will not be graded or moved.
2. Fill, retaining walls, decks, fences, or other man-made structures will not be placed within a stream bank.
3. Native vegetation will not be removed but invasive non-native plants will be removed. Standing dead trees (snags), brush, or downed woody debris will not be removed unless they pose a risk to a structure or could obstruct the flow of the watercourse.
4. Plantings will consist of only locally native species adapted for prevailing site conditions, and grown from seed or cuttings originating from Orinda or nearby San Pablo, San Leandro and Lafayette Creek watersheds.
5. No permanent irrigation system will be installed.
6. Complete tree cover over the watercourse will be provided if possible to keep water temperatures cool.
Figure 6-3
Creek Setbacks (per OMC section 16.64.220)
Figure 6-4
Open Space Easement

Source: Schell and Martin, Inc. (June 2013)
Mitigation Measure Bio-1C: BMPs for Landscape Design in Setbacks outside Stream Banks. The following best management practices shall be followed throughout site preparation, and will be required for development of each home:

1. When landscaping in setbacks outside of stream banks, grading will be minimized and fencing will be placed and designed to not impede the movements of wildlife.
2. Existing native trees and shrubs will be incorporated into the design as much as possible. Invasive non-native plants will not be planted and any found will be removed. Other plantings may be native or non-native; if a species is native to Orinda, such as coast live oak, use of locally native plant materials will be used to avoid genetic contamination of the wild population.
3. Landscaping will minimize the use of plantings that require summer water or extensive fertilizer, herbicides, or other chemicals that may enter the watercourse.
4. The use of irrigation systems will be minimized and any water collection features will be designed to discharge into any watercourse near the high-water line to minimize bank erosion.

Mitigation Measure Bio-1D: BMPs for Landscape Design throughout the Property. The following best management practices shall be followed throughout site preparation, and will be required for development of each home:

1. Landscaping within the drip line of native trees, especially oaks, will be drought-tolerant and not require irrigation once established.
2. Invasive non-native species will be removed and will not be planted.
3. Landscaping will be designed to minimize chemical inputs and off-season watering.

Additionally, the following mitigation measure is recommended to address the Project’s impacts related to the road crossing of an ephemeral stream and the culverting of the stream at that location, and the limited fill of wetlands associated with the boardwalk-supported trail connection between both ends of Donna Maria Way.

Mitigation Measure Bio-1E: Compensation for Wetlands Fill. The Project applicant shall provide on-site compensatory mitigation or off-site purchase of wetland mitigation bank credits sufficient to achieve a no-net-loss standard, and subject to additional requirements of the permitting agencies.

Conclusion

The Project incorporates designs to prevent or minimize impacts to central coast live oak riparian forest, wetland, waters (all of which are riparian in nature), and Coast live oak woodlands. These Project elements include the open space easement and structural setback lines located to prevent impacts to sensitive habitat. Additionally, the Project applicant has agreed to implement mitigation measures related to construction and landscaping standards as recommended by the Project biologist for this site, and to provide compensatory mitigation to ensure no net loss of wetlands as a result of the Project.

The Project applicant is also required to obtain numerous federal, State and City permits. Conditions of approval pursuant to these applicable permits will comprehensively address proposed construction work in or near riparian habitats on the Project site (such as the ephemeral streams, wetland and Moraga Creek). As a result of the Project elements, implementation of mitigation measures and subsequent implementation of applicable policy and regulatory standards and requirements, (including OMC sections 17.7.1, 18.04.010, 18.03.050; Section 401 and 404 permits from the Corp and RWQCB and a Section 1602 from CDFW) Project impacts to riparian habitat, sensitive natural communities and protected wetlands would be less than significant.
Special Status Species and Associated Habitat

**Impact Bio-2:** With implementation of Project elements and mitigation measures that are specific to potentially occurring special status species, the Project would have a less than significant adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special status species. *(LTS with Mitigation)*

The rare plant survey performed on May 25, 2011 (Appendix 6A) found no special status plant species on the Project site; therefore any impacts to special status plant species as a result of the proposed Project would be less than significant.

**Sensitive Status Species Habitat**

Potential impacts to special status wildlife species could include direct habitat loss due to vegetation removal for construction and development activities, changes in habitat quality due to increased human presence, and loss or degradation of sensitive habitat.

**Project Elements**

The layout of the Project has been designed to avoid riparian areas, and the majority of development undertaken for the Project will occur in non-sensitive biological areas, avoiding the majority of potential special status wildlife species and their habitat. An open space easement encompasses all of the required creek setbacks and creates construction buffers from the surrounding developed properties. This easement comprises 7.95 acres, or more than 39 percent of the Project site (see Figure 6-4). The Project would not remove or otherwise impact the coast live oak woodland located in the western edge of the Project site. Structure setback lines are also established to avoid placement of structures within sensitive biological communities. These Project elements will substantially avoid impacts to special status wildlife species and their habitat.

Upland areas of annual grassland (such as those at the Project site where development is proposed) can have value for wildlife species, including some special status species. However, due to the lack of many desirable habitat features, these species would be unlikely to utilize the upland habitat at the Project site for crucial activities such as nesting, estivation and refuge. This applies to a large number of special status birds, amphibians, reptiles, and mammals, many of which may use stream and riparian areas for nesting, refuge and other uses. The Project’s impacts to special status species will be minimized through preservation of the stream and riparian areas. Based on facts presented for each individual species, upland habitat at the Project site is unlikely to support sensitive status species.

**Applicable Policies and Standards**

As noted above (Impact Bio-1), the Project applicant will be required to apply for and obtain all necessary permits from the RWQCB, CDFW, USACE and potentially the City of Orinda for installation and operation of the storm drain outfall, for the culvert of the waterway under the proposed roadway, and for construction of the path/boardwalk traversing the wetland. These permits will require the Project applicant to implement environmental safeguards and mitigations protective of wildlife species, including allowance for wildlife movement.

The Project also includes additional mitigation measures specifically formulated to avoid impacts to those special status species identified as being potentially present or moderately likely to occur in the Project site, as discussed below.

**San Francisco Dusky-footed Woodrat**

San Francisco Dusky-footed Woodrat is found in stream corridors and riparian areas, and its stick houses have been observed in the riparian and woodland habitat and within some of the unused structures within the Project site. Removal of riparian or woodland habitat could result in direct impacts to individuals and reduction in dispersal habitat. However, the riparian or woodland habitats on the Project site will be almost entirely preserved and protected through stream setbacks. The loss of habitat for this species as a
result of the Project will be negligible. Installation of the culvert on the Adobe Lane cul-de-sac and the stormwater outfall to Moraga Creek will occur in stream/riparian areas potentially occupied by woodrat nests. Although these activities will result in very small areas of impact, the impact is potentially significant. Additionally, indirect impacts could occur with increased disturbance from pets.

Mitigation Measures

The following mitigation measure has been agreed to by the Project applicant to ensure that the Project does not result in significant impacts to this wildlife species:

Mitigation Measure Bio-2A: San Francisco Dusky-footed Woodrat.

1. Pre-construction surveys for woodrat nests will be performed in suitable habitat prior to construction.
2. If woodrat nests are observed, they will be avoided to the degree feasible.
3. If avoidance is not feasible, the nest will be dismantled by hand under biologist supervision and relocated to an undisturbed portion of suitable riparian habitat within the Project site that is a reasonable distance from the work area that will not be directly impacted. Removal of the nest should encourage any resident woodrats to disperse into adjoining areas of vegetative cover.

Conclusions

Implementation of Mitigation Measure Bio-2A will prevent direct mortality of individual woodrats and loss of individual nests. The small number of individuals dislocated by nest removal should have the ability to relocate because there will be virtually no loss of riparian habitat. Dismantling nests would apply only if a nest is found in a work area, almost all of which are located in upland areas with few or no woodrat nests. Ultimately, only a small number of nests (if any at all) would need to be dismantled. Woodrats are a relatively common species known to occupy areas that are surrounded by developed land, and are commonly known to be resilient to disturbances in their environment. On this basis, the mitigation measures related to dusky-footed woodrat are adequate to reduce any potential impact to a level that is less than significant.

Special Status Bat Species

Roosting and foraging habitat is present for a number of special status bat species (Pallid Bat, Townsend's Big-Eared Bat, Western Mastiff Bat, Silver-haired Bat, Western Red Bat, Hoary Bat, Long-eared Myotis, Fringed Myotis, and Long-legged Myotis), which typically use buildings, trees, bridges, and rock crevices for roost habitat. Foraging habitat is also present over most upland and aquatic habitats. Because these species are able to travel great distances to forage, however, impacts to foraging habitats are considered less than significant. If hibernation or maternal roost sites are present in the Project site, construction activities may remove or damage them, potentially resulting in direct mortality and reduction in reproductive success. This impact is potentially significant.

Mitigation Measures

The following mitigation measure has been agreed to by the Project applicant to ensure that the Project does not result in significant impacts to this wildlife species:

Mitigation Measure Bio-2B: Special Status Bats.

1. Construction activities near bat roost habitat or removal of potential bat roost habitat will commence between September and October to avoid bat maternity and hibernation periods.
2. If avoidance of maternity and hibernation periods is not feasible, pre-construction bat roost surveys for evidence of bat use (guano accumulation, acoustic or visual detections) will be performed in all trees, rock outcrops, and buildings subject to removal or demolition.
3. If evidence of bat use is found, at least three acoustic surveys using an acoustic detector will be conducted between April and November under appropriate conditions to determine whether a site is occupied.

4. If necessary, exclusion of bats from occupied roosts will be performed in the fall prior to construction. A qualified wildlife biologist shall be present during exclusion.

Conclusions

Implementation of Mitigation Measure Bio-2B will mitigate potential impacts of the Project on special status bat species to a level of less than significant.

Special Status Avian Species

The special status avian species potentially present at the Project site (White-Tailed Kite and Loggerhead Shrike) may use trees, shrubs, man-made structures or the ground for nesting habitat. Permanent impacts to potential nesting habitat on or adjacent to the Project site could occur during construction as a result of tree and shrub removal, removal of riparian habitat, ground disturbance, equipment movement, increased nighttime lighting, or by direct mortality. These impacts are potentially significant.

Mitigation Measures

The following mitigation measure has been agreed to by the Project applicant to ensure that the Project does not result in significant impacts to this wildlife species:

Mitigation Measure Bio-2C: Special Status Avian Species (White-Tailed Kite and Loggerhead Shrike).

1. Construction activities in bird nesting habitat will commence during the non-breeding season (between September and October) to avoid potential impacts to nesting special status birds and avoid the bat hibernation period (November through February).

2. If avoidance of the breeding season is not feasible, a qualified biologist will conduct pre-construction surveys for breeding birds. If active nests are observed, no ground disturbance activities will occur within a 100-foot exclusion zone for passerine birds, and 300-foot exclusion zone for raptors and other non-passerine species.

3. These exclusion zones may vary dependent upon species and habitat, and shall remain in place around active nests until all young are no longer dependent upon the nest.

Conclusion

Implementation of Mitigation Measure Bio-2C will mitigate potential impacts of the Project on special status avian species to a level of less than significant. The preconstruction breeding bird surveys and other protective measures to avoid potential impacts from potential take of active nests and maternity roosts will also serve to avoid take of other bird species that are not identified as sensitive species, but which are afforded protected status under California Department of Fish and Game (CDFG) Code Section 3.503.5, which protects birds of prey and their nests.

Special Status Herpetofauna

The Project site does not contain the typical rock outcroppings and chaparral habitat components that are normally associated with Alameda Whipsnake (AWS), but the Project site is located within the dispersal capabilities of this species from a known occurrence with no known barriers. If AWS are present in the Project site, construction within the Project site may result in direct mortality. The proposed Project may also impede AWS dispersal by widening roadways and developing areas between two or more essential habitats. Expansion and construction of new roads along with increased traffic may increase vehicular mortality to AWS individuals. Increased human presence in the Project site may increase harassment and predation of AWS individuals by humans, unleashed pets, and urban wildlife such as raccoons.
Foothill Yellow-legged Frog (FYLF) is known to occur adjacent to the Project site. Although optimal habitat is not present within the Project site, FYLF may occur in Moraga Creek. If FYLF are present in the Project site, construction within or along Moraga Creek may result in direct mortality. Development in the Project site may also impede FYLF dispersal by placement of fill in drainages, widening of roadways, and development of areas between two or more essential aquatic habitats. Other potential impacts to FYLF are analogous to those of the California Red-legged Frog discussed below.

If California Red-legged Frog (CRLF) are present in the Project site, construction within the Project site may result in direct mortality. Development in the Project site may also impede CRLF dispersal by placement of fill in drainages, widening of roadways, and development of areas between two or more essential aquatic habitats. According to USFWS, dispersal habitat is defined as barrier-free aquatic, upland, and wetland or other non-breeding aquatic habitat that connects two or more breeding habitats within 0.7 miles (approximately 1.2 kilometers). Barriers can include buildings and other such structures placed between two or more breeding habitats. Other potential impacts to CRLF from the proposed Project include increased traffic, alteration of hydrology and water quality in neighboring habitats, potential introduction of predatory non-native species, such as mosquito fish, increased high intensity lighting from streets, and increased harassment by people and pets. Expansion and construction of new roads along with increased traffic may increase vehicular mortality to CRLF individuals. Changes to the hydrology of the Project site post-construction, increased sedimentation during construction, and input of other substances such as oil and gasoline into streams or wetlands during and after construction may reduce water quality in aquatic habitat containing CRLF. Increased human presence on the Project site may increase harassment and predation of CRLF individuals by humans, unleashed pets, and urban wildlife such as raccoons. These impacts are potentially significant.

**Mitigation Measures**

The following mitigation measure has been agreed to by the Project applicant to ensure that the Project does not result in significant impacts to these wildlife species:

**Mitigation Measure Bio-2D: Special Status Herpetofauna** (Alameda Whipsnake, Foothill Yellow-legged Frog, and California Red-legged Frog)

1. An exclusion fence shall be installed around the limit of ground disturbance for the proposed Project. The fence shall incorporate one way exit funnels approximately every 100 feet. This will allow sensitive herpetofauna and other terrestrial species to vacate the area of potential disturbance on their own accord while preventing terrestrial species from entering.

2. A biological monitor shall conduct preconstruction surveys prior to the initiation of ground disturbance activities in order to determine the presence of sensitive herpetofauna. The monitor shall also be present during initial ground disturbance in order to salvage sensitive herpetofauna that may be uncovered in their refugia during construction activities.

3. Implementation of an approved Stormwater Pollution Prevention Plan (SWPPP) containing BMPs designed to prevent construction related discharge into all surface waters, including those containing sensitive herpetofauna and other aquatic species, will ensure that the Project does not result in potential significant water quality impacts.

4. Where road widening or construction is to occur within a dispersal corridor, culverts, causeways, bridges, and/or overpasses shall be incorporated into the design to allow wildlife, including special status aquatic species, to disperse under roads, thereby reducing road kills. Similar measures shall be implemented, where feasible, to exclude wildlife species from high traffic and developed areas.
Conclusion

Implementation of Mitigation Measure Bio-2D will mitigate potential impacts of the Project on special status herpetofauna species (i.e., Alameda Whipsnake, Foothill Yellow-legged Frog, and California Red-legged Frog) to a level of less than significant.

Overall Conclusions

The Project incorporates design elements, formulated by experts, to prevent or minimize impacts to habitat associated with the special status species moderately likely to occur on the Project site. These Project design elements include open space easements and structure setback lines which are located to prevent impacts to sensitive habitat including waterways and trees.

Additionally, the Project applicant has agreed to implement a number of species-specific mitigation measures (Mitigation Measures Bio-2A, -2B, -2C and -2D), that have also been formulated by experts, that include pre-construction surveys and actions designed to minimize impacts to special status wildlife species, and construction and landscaping standards recommended by the Project biologist for this site.

The numerous regulatory measures that apply to the Project and Project site, including federal, State and City permits, would also ensure that no significant environmental effects would occur to special status species due to Project implementation. Applicable federal, state, and local regulatory frameworks comprehensively address construction work in or near riparian habitats on the Project site, such as the ephemeral streams, wetland, and Moraga Creek, and will maintain current levels of water quality in those habitats.

As a result of the Project elements and these applicable policies and standards (including OMC sections 17.7.1, 18.04.010, 18.03.050; Section 401 and 404 permits from the Corp and RWQCB and a Section 1602 from CDFW), impacts to special status wildlife species and their associated habitats would be less than significant.

Wildlife Movement and Nursery Sites

Impact Bio-3: With implementation of Project elements that will mitigate otherwise potentially significant impacts, the proposed Project would not 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. (LTS)

The primary function of wildlife corridors and landscape linkages is to connect two larger habitat blocks, also referred to as core habitat areas. Wildlife corridors should not direct wildlife to developed areas or areas that are otherwise void of core habitat. Good quality core habitat exists in the hills to the south and west of the Project site, but the area to the north and east is largely urban and unsuitable for most wildlife species. Thus it would be inappropriate to direct wildlife toward these areas, as this may be detrimental to their survival. Moraga Creek includes a narrow riparian band that passes through urban areas for some distance both upstream and downstream and has limited value in connecting core habitats.

Project Elements

The only undeveloped connection between the Project site and the open space to the west is an approximately 200-foot wide reach in the western corner of the site. This area is transected by a road and is surrounded by developed areas. This area is protected within the Project's open space easement, and will not be impacted by the Project. Additional protected areas within the Project area include a stream corridor on the southeastern edge of the property from Moraga Creek, and a stream that passes through the center of the property in a wooded ravine that leads to Moraga Creek. These protected stream corridors connect to the point of passage, preserving connections between Moraga Creek and the habitat to the south and west.

The movement of CRLF, foothill yellow-legged frog and western pond turtle over the ridge between Moraga and San Leandro Creek is not likely to be a frequent occurrence. There are no suitable CRLF
breeding pools near enough to the top of Moraga Ridge to conclude that such movement would be likely. CRLF rarely move further than the nearest refugia habitat. The potential that a frog or turtle would move up the long slope from San Leandro Creek, past areas containing suitable refugia habitat and through areas containing no suitable refugia habitat, over the ridge and down the slope to Moraga Creek is low enough to be considered insignificant. If this movement were to occur, the Project’s protected riparian areas would be sufficient to maintain the ability of CRLF, FYLF and western pond turtle to move between these two areas.

For other species, the existing condition at the Project site requires wildlife to navigate between existing developed areas to reach Moraga Creek. The Project would not result in a substantial change to this existing condition, and analysis of the site for wildlife movement leads to the conclusion that wildlife movement is already, in its existing condition, only a narrow strip of land containing natural vegetation. These considerations support a determination that the Project’s influence on wildlife corridors is less than significant.

There are no known wildlife nursery sites in or around the Project site. See the discussion under Impact Bio-2 regarding Project procedures to avoid significant impacts to wildlife in the process of breeding or nesting.

**Conclusion**

The Project’s open space easement will preserve existing wildlife corridors between core habitat areas. As a result, the impact would be less than significant.

**Consistency with the Orinda Tree Management Ordinance**

**Impact Bio-4:** The Project would not conflict with any local policies or ordinances protecting biological resources, including the OMC’s Tree Management ordinance. (LTS)

A tree assessment was undertaken for the Project site in summer of 2011 (Tree Report, Appendix 6C). Most of the on-site trees are located within the central coast live oak riparian forest which will be protected by the Project’s open space easement, and within the Coast live oak woodland located in the western edge of the Project site. The Project would generally not remove or otherwise impact trees within the coast live oak riparian forest or within the coast live oak woodland, and these areas were not fully assessed as part of the 2011 survey. However, Project development activities are proposed within four areas where tree cover exists: at the proposed creek crossing; near the Moraga Adobe; at the site of the proposed retention basins; and along the proposed entry road. These areas represent only a small portion of the site, but are the most significantly impacted by the Project.

Within those areas surveyed in 2011, a total of 182 trees representing ten different species were identified. Trees were generally found in small groves, reflective of the original landscape plantings and re-establishment of oak groves. Several species are native to the Orinda area and may be indigenous to the site, including coast live oak, California buckeye, California bay, California black oak, and willow. Of the 182 total trees surveyed in 2011, the Project would result in removal of 38 trees.  

Construction of the Adobe Lane extension and creek crossing will result in the removal of 29 trees (1 of which is located off-site but will be impacted by construction of the new road), construction of the proposed stormwater bio-retention facility will remove 8 trees, and grading to remediate geologic slide conditions will remove 1 tree (see Figures 6-5 and 6-6). Of the 38 trees proposed to be removed, 36 trees qualify as protected trees pursuant to the OMC.

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4 Note: The 2011 survey identified removal of 35 trees, but an updated 2014 survey identifies this total as now being 38 removed trees
Figure 6-5
Trees Proposed for Removal

Source: Schell and Martin, Inc, April 2014
Alternative Access Study
Figure 6-6
Trees Proposed for Removal, Detail Sheets

Source: Schell and Martin, Inc, April 2014
Alternative Access Study
It is also possible that the subsequent design for the entry driveway at Lot 10 could occur within the dripline of existing trees. Furthermore, damage to other existing trees along Donna Maria Way may occur during the construction process when large equipment is brought to the site. As the portion of Donna Maria Way leading to the Project site is a private right-of-way, access and rights to trim trees along this route to accommodate large equipment may be a matter of private negotiations.

The Tree Survey identifies one protected tree on off-site private property that may be impacted by construction of the new Adobe Lane. This tree is a coast live oak with a diameter of 11 inches and is identified as #364 (see previous Figure 6-6). Relocation or removal of this tree will require a tree permit from the City, and compliance with all of the applicable standards and conditions of approval. So long as the applicant adheres to the permit requirements, no significant impact will occur; relocation or removal of the tree is not in and of itself an environmental impact under CEQA.

**Applicable Policies and Standards - Tree Management**

OMC Chapter 17.21, Tree Management (see the Regulatory Setting section above) establishes requirements to minimize impacts to protected trees prior to site construction, including fencing and limits on construction activity within a protected perimeter, and standards for the re-planting or replacement of protected trees proposed for removal.

No trees in or adjacent to the Project site have been designated as a heritage tree by the City Council, and therefore these regulations are not applicable to the Project.

**Project Elements**

The layout of the Project has been designed to occur away from riparian areas and away from the coast live oak woodland located in the western edge of the Project site. An open space easement includes a large majority of on-site trees. The Project would not remove or otherwise impact trees within this easement area.

A total of at least 71 new trees are proposed to be planted as part of the Project, including 48 native coast live oaks at 24” box size, and 23 ornamental, non-native Chinese pistache (*pistachia chinenses*) at 24” box size (see previous Figure 3-5 of the Project Description).

**Mitigation Measures**

The Project applicant has agreed to implement the following mitigation measures, requiring preparation and implementation of a Tree Preservation Plan to ensure tree survival during development, and to provide for the appropriate replacement of trees to be removed as part of the Project.

**Mitigation Measure Bio-4A: Tree Protection Plan.** Pursuant to the requirements of OMC Chapter 17.21, the following measures shall be implemented as part of a Tree Protection Plan specific to the Project, intended to help maintain and improve the health and vitality of those trees that will remain post development of the Project:

1. Any plan affecting trees shall be reviewed by the Consulting Arborist. These include, but are not limited to, improvement plans, utility and drainage plans, grading plans, landscape and irrigation plans and demolition plans.

2. The Consulting Arborist shall identify a Tree Protection Zone, in which no soil disturbance is permitted. Along the new entry road, the Tree Protection Zone shall be defined as 1 foot behind the edge of construction. Elsewhere, the Tree Protection Zone shall be the dripline. If grading must encroach within the dripline, the Consulting Arborist will determine if a smaller Tree Protection Zone is possible.

3. No underground services including utilities, sub-drains, water or sewer shall be placed in the Tree Protection Zone.

4. Any herbicides placed under paving materials must be safe for use around trees and labeled for that use.
5. Irrigation systems must be designed so that no trenching will occur within the Tree Protection Zone.

6. Prior to the start of site demolition and grading, the Consulting Arborist will meet with the demolition, grading and other relevant contractors to review limits of construction activity, identify areas requiring fencing, identify trees to be removed and review work procedures.

7. Fence all trees to be retained to completely enclose the Tree Protection Zone prior to demolition, grubbing or grading. Fences shall be 6-foot chain link or equivalent as approved by the Consulting Arborist. Fencing shall be placed at the dripline. Fences are to remain until all grading and construction is completed.

8. Trees to be preserved may require pruning to clean the crown, remove ivy and/or provide clearance. All pruning shall be completed by a Certified Arborist or Tree Worker and adhere to the latest edition of the ANSI Z133 Safety and A300 Pruning Standards.

9. No grading, construction, demolition or other work shall occur within the Tree Protection Zone. Any modifications must be approved and monitored by the Consulting Arborist.

10. Any root pruning required for construction purposes shall receive the prior approval of, and be supervised by, the Consulting Arborist.

11. If injury should occur to any tree during construction, it should be evaluated as soon as possible by the Consulting Arborist so that appropriate treatments can be applied.

12. Root-injured trees have a limited capacity to absorb water. Therefore, it is important to insure adequate soil moisture in the area of active roots. One to several irrigations may be needed for trees that are at risk. Irrigations should be specified by the Consulting Arborist.

13. No excess soil, chemicals, debris, equipment or other materials shall be dumped or stored within the Tree Protection Zone.

14. Any additional tree pruning needed for clearance during construction must be performed by a Certified Arborist and not by construction personnel.

Mitigation Measure Bio-4B: Tree Replacement. Pursuant to OMC requirements for tree replacement, the Project shall provide for the replacement of removed protected trees based on the ratio of planting 1 new native tree for each six inches or fraction thereof of the aggregate diameter of trees approved for removal, and may substitute a larger number of smaller trees if approved by the Planning Director.

Conclusion

The open space easement established by the Project will protect most of the trees on the Project site during the construction period, and the majority of development activities will occur outside of the dripline of trees that grow along the main stream corridors. In addition, tree protection measures will be implemented to ensure protection of all retained trees.

Within the Tree Protection Zone, the protection of individual trees to be retained will be ensured by coordinating construction activity with the approved Tree Protection Plan. The Project will include landscaping with native species appropriate for the site conditions, providing for replacement trees in a manner and consistent in number with the requirements of the City’s Tree Management ordinance, such that the Project will be consistent with the OMC regulations and impacts to protected trees will be less than significant.

Conservation Plans

Impact Bio-5: The Project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. (No Impact)
The Project site is not located within the boundaries of an adopted habitat conservation plan or natural community conservation plan. Therefore, no impacts would occur as a result of Project implementation.

**Cumulative Biological Resource Impacts**

**Impact Bio-6:** The implementation of site design recommendations and requirements in biological assessments and conformance to the requirements of federal, State, and City permits would not result in significant off-site biological resource impacts. *(LTS)*

The biological resource assessments of the Project site consider the impacts of the Project on protected species that may be present and on the broader habitat and movements of protected species both on and off site. These assessments do not find any special status species, their habitats, or other protected biological communities to be unique to the Project site. The measures recommended in the assessments to avoid direct and indirect impacts to protected species and habitats are incorporated into the proposed Project as Project elements. In particular, the open space easement will conserve much of the sensitive habitat on the Project site and the existing wildlife movement corridors through the Project site to and from off-site core habitat. The Project includes procedures and actions before and during construction to avoid or minimize impacts to species and habitat on the Project site. The proposed Project is also subject to compliance with comprehensive regulatory provisions that ensure minimization of impacts to off-site biological resources.

The environmental review for the adjacent Lavenida Lane project found no special status plants and only a low potential for special status wildlife to occur. Construction on the Project site would be unlikely to affect any special status species on the adjacent Lavenida project. The biological resources assessment for Lavenida Lane identified the marshland on its western edge, as well as Moraga Creek, as potential wildlife movement corridors. The open space easement on the Project site includes Moraga Creek and forms a buffer to the Lavenida Lane site, preserving the existing wildlife corridor and riparian habitat between the sites, and helping ensure that activities on the Project site during the construction period and operational period will not affect biological resources on the Lavenida Lane site.

The Camino Ricardo project is located about one mile from the Project site, separated by single family residential uses and Moraga Way, but both projects are located on tributaries of Moraga Creek. Preservation of the Moraga Creek corridor will permit wildlife to move between these sites. The Camino Ricardo EIR found one special status animal (the Western pond turtle), which may also pass through the Project site via Moraga Creek. However, this is not considered core habitat for the turtle due to the shaded nature of the creek at the Project site. The Project preserves the Moraga Creek corridor through its open space easement, and includes as Project elements appropriate landscaping near stream banks. These Project elements will ensure that the Project will not significantly impact the Moraga Creek wildlife corridor, and will not result in a cumulatively considerable effect on movement of the Western pond turtle or other species.

The Camino Ricardo EIR also found that White-tailed kite, Loggerhead shrike, Townsend’s big-eared bat, Pallid bat, Western red bat, and the Western mastiff bat are special status wildlife species moderately likely to occur on the Camino Ricardo site. These same species are also moderately likely to occur at the Project site due to suitable habitat and range. The development of both the Project site and the Camino Ricardo site would cumulatively reduce the available roosting, nesting, and foraging habitats for these species. However, the Camino Ricardo project includes a 1.62-acre open space easement and the Project has a 7.95 acre open space easement, both of which will preserve existing habitat for roosting and nesting. Both developments are also located in close proximity to the East Bay hills, which provide a large amount of roosting, foraging and other appropriate habitat for these species. Both projects also include mitigating measures to avoid direct mortality to these species during construction.

Consequently, the proposed Project along with the Lavenida Lane and Camino Ricardo projects will not have a cumulatively significant impact on biological resources.
This chapter describes cultural resources on the Project site and evaluates the extent to which the Project may affect these resources. The analysis and discussion in this section of the EIR is based on the following technical studies:

- ARG letter to City of Orinda, September 28, 2012 (attached as Appendix 7C), and
- ARG *Update to Historical/Cultural Resources Study*, March 2014, addressing changes in the Project since the earlier report (attached as Appendix 7D).

All recommendations contained in the above reports have been incorporated as Project elements and/or mitigation measures, as presented in the analysis in this chapter.

**Methodology**

In completing its *Historical/Cultural Resources Study* and update, ARG evaluated historical architectural resources on the site, and WSA did the same for archaeological resources and paleontological resources.

**Archival Research**

WSA consulted with the California Historical Resources Information System, Northwest Information Center (NWIC) at Sonoma State University, Rohnert Park to conduct a records search of the 20.33-acre Project site to identify known cultural resources and previous surveys in or near the Project area. The search covered the entire Project area and a one-quarter mile radius adjacent to the site. ARG and WSA reviewed the results of the record search, which included information on all previous cultural resource surveys, known historic sites, and listed or eligible National Register of Historic Places or California Register of Historical Resources properties within the Project area. The NWIC records search indicated two cultural resources studies that include the Project area. One of the studies is a regional overview and did not include field reconnaissance, and while the second cultural study did involve an archaeological survey, only a very small portion of the current Project area was included in that study's survey area.

Three additional cultural resources studies have been undertaken within a quarter-mile of the Project area. No archaeological sites have been recorded within the Project area or within the records search area.

ARG conducted additional archival research on May 29 and June 3, 2009, reviewing materials pertinent to the Moraga Adobe that are located at the City of Orinda Planning Department, the Orinda Historical Society, and the Moraga History Center. These materials included newspaper articles, historic photographs, city ordinances, county recorder documents and past evaluations of the Moraga Adobe.

**Site Surveys**

ARG and WSA examined and photographed the subject property and its setting during a site visit on May 27, 2009. This site visit included examination of the interior and exterior of the Moraga Adobe. The nearby
barn, caretaker’s residence and adjacent garage were also assessed at that time though these were demolished later that year (discussed below). In addition to examining these buildings, ARG inspected the brick walls and in-ground pool behind the Adobe.

An archaeological survey was conducted by WSA on June 2, 2009. No prehistoric cultural material was identified during this survey. The historic Moraga Adobe site and an isolated historic artifact were located during the survey. Because the dense ground cover severely limited the surveyor’s ability to see archaeological materials or soils around the Moraga Adobe, limited archaeological shovel testing was also conducted.

A subsequent site visit was conducted by ARG on August 7, 2013, that included visual examination and photography of the Moraga Adobe’s exterior and surroundings, including the adjacent adobe walls and nearby pool.

Native American Heritage Commission Consultation

On June 5, 2009, WSA contacted the Native American Heritage Commission (NAHC) by letter to request information on known Native American sacred lands within the Project area and to request a listing of individuals or groups with a cultural affiliation to the Project area. The NAHC responded by letter on June 18, 2009 that a search of the sacred land file had failed to indicate the presence of Native American cultural resources in the immediate Project area.

Paleontological Assessment

Professor James R. Allen, geologist and paleontologist at California State University, East Bay performed a paleontological resources assessment and prepared a Paleontological Identification Report (PIR) for the Project. Professor Allen’s study included reviews of pertinent geological and paleontological literature at California State University, East Bay on June 3, 2009; at the United States Geological Survey on June 5, 2009 and at the University of California Berkeley on June 8, 2009. Allen also conducted an online fossil locality search using the University of California Museum of Paleontology online database, and a site reconnaissance on May 27, 2009.

Rehabilitation of the Joaquin Moraga Adobe

In September 2010, Carey & Co, Inc. was asked to provide programming and conceptual design services for the rehabilitation of the historic Moraga Adobe as a community building at the core of the proposed development. CEQA requires that projects relating to historic resources must comply with the Secretary of the Interior’s Standards for the Treatment of Historic Properties, and thus Carey & Co.’s programming, design, and repair recommendations comply with the Secretary's Standards. The Project applicant is committed to perform the rehabilitation of the Adobe, in accordance with Carey and Co.’s recommendations.

The Carey & Co. recommendations for the design of the Moraga Adobe would retain the building footprint as unaltered. The Adobe would be repaired, seismically upgraded, and given new building systems.

- Historic 1841 Adobe section. The fireplace which is not historic (built in 1941), would be removed and necessary adobe wall repairs implemented. The tile floors would be replaced with wood floors to match the historic description.
- Non-historic 1941 wood addition. This section of the house would be altered to provide the recommended ancillary spaces including: storage, men's and women's toilet rooms, and a catering kitchen.
- Non-historic 1941 adobe additions. The existing residential kitchen and the bathroom /storage closet area would be removed. The walls and trim would be given a similar appearance to the unaltered

1 J&J Ranch LLC, Letter to E. Ursu, November 19, 2014 (attached as Appendix 7E.)
rooms. The fireplace in the southernmost bedroom, which appears sound, could remain as an amenity.

- The exterior envelope would be repaired, including re-roofing, stucco repair, re-construction of the attic stair, and replacement of the flagstone veranda with wood.

The Carey & Co.'s 2010 Pre-Design Report also includes a number of recommendations pertaining to building conditions and repair, adobe conservation and stucco cladding, building systems, the roof, and structural systems. Specific recommendations include:

- Further investigation to confirm the apparent intactness of the adobe walls. This investigation should be conducted from the building's interior.
- Unless adobe deterioration is discovered, or seismic stabilization requires disturbance, rehabilitation of the existing stucco cladding should be limited to crack repair.
- A geotechnical engineer should determine the cause of the subsidence visible at the floor of the adobe and make recommendations for mitigation of the subsidence.

Seismic upgrade of the 1841 portion of the building should be limited to addition of a continuous steel strap at the attic floor level that is anchored through the wall to the attic floor joists. The roof framing should also be anchored to the tops of the adobe walls.

The landscape around the house would be designed in a way to create an appropriate setting and entry for the users. Site elements for consideration include:

- Parking, assuming two regular parking spaces, one disabled access space with offloading zone, and one parking space for deliveries/catering truck, sited in the proximity of the house. The final parking count will be determined by Orinda Planning Department as part of the Project approval process. Opportunities for additional parking could occur in parallel along the access road to mitigate the appearance of a large parking lot.
- Interpretive signage: As part of the public visitation component, an illustrated interpretive sign could be added as part of the site design in the vicinity of the Adobe. It would address the nature of Adobe construction and the history of the Moraga family as Mexican land grant settlers.
- Designed outdoor space: To the south of the house is a broad flat area that could serve as an outdoor extension to indoor assembly spaces. In particular, the central room in the southern Adobe addition has two floor-to-ceiling openings that overlook the south yard, providing an opportunity for connection to the outside. This portion of the site could be designed for reception or outdoor assembly with paving and plantings.

2013 MOA between J&J Ranch, LLC and Friends of the Joaquin Moraga Adobe

On March 26, 2013, J&J Ranch, LLC and Friends of the Joaquin Moraga Adobe entered into a memorandum of agreement (MOA) regarding the future ownership and treatment of the Moraga Adobe. The MOA lays out multiple stipulations regarding the Friends group’s potential purchase of the Moraga Adobe and maintenance of it for public use. The MOA specifies that, prior to any such future purchase, J&J Ranch shall seek approval from the City to rehabilitate the Moraga Adobe, in accordance with the Secretary of Interior's Rehabilitation Standards, to its appearance as depicted in the earliest available documentary evidence (circa 1848) as best determined by the expert historical consultant Carey & Co., Inc.

This MOA specifies that the rehabilitation will be conducted according to the treatment spelled out in Carey & Co.’s 2010 Pre-Design Report. This report includes a number of recommendations that encourage sensitive treatment of the Moraga Adobe’s historic materials. Carey & Co.’s report, however, is

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2 Memorandum of Agreement between Friends of the Joaquin Moraga Adobe and J&J Ranch LLC, March 26, 2013 (attached as Appendix 1C.)
necessarily preliminary in nature, as no specific rehabilitation plans for the Moraga Adobe have been developed.

The MOA also stipulates that J&J Ranch shall seek approval for construction of separate facilities on the Moraga Adobe Parcel at a location to be mutually agreed upon by J&J Ranch and the Friends group, not to exceed 250 square feet, consisting of (1) bathroom facilities that are compliant with the Americans with Disabilities Act ("ADA") and (2) a storage area that is adequate in size to store Friend’s collection of historical artifacts related to the Moraga Adobe.3

If the Friends acquire the Adobe and the Adobe Parcel, access to the Adobe will be allowed thirty (30) days annually during daytime hours and for an annual fundraising event as specified in the MOA. The MOA limits school group size to 60 persons and specifies that visiting groups arrive by shuttle bus or carpool, with a maximum bus capacity of 45 persons.

Community Clubhouse Option

If the Friends are unable or unwilling to purchase the Adobe and the Adobe parcel, consistent with the terms of the MOA, then the ownership, stewardship and maintenance of the historic Moraga Adobe would become the responsibility of the thirteen future property owners of the Project, using a Home Owners Association as an organizational model. In this case, as per the applicant’s letter to the City dated November 19, 2014, the applicant is committed to rehabilitating the Adobe but reserves the option not to construct the separate facilities required under the MOA. While the user group would predominantly be residents of the Project if the Friends do not acquire the Adobe and the Adobe parcel, additional users would include infrequent visiting groups from the broader community. They would use the facilities on a scheduled, invited, rental or appointment basis. If the Friends do not acquire the Adobe, the MOA specifies that the Adobe shall remain open to the public five days per year.

Given that the Moraga Adobe would be financially supported by the Project’s resident community, the primary program for use would likely reflect the needs of the development’s residents. The Moraga Adobe could potentially house after-school programs; resident community meetings (HOA or other); general resident community events (holiday celebrations, BBQ, etc.); rental for private resident functions; dance, martial arts or yoga space (not requiring fixed equipment); exercise space; a library/reading room; or HOA offices, though a use permit would be required. In addition, there may be some functions that would require a Temporary Event Permit under Chapter 17.37 of the municipal code. Such uses would include an arts and crafts show, commercial filming, philanthropic event, and other similar events. By code, the required ancillary spaces to accommodate the programming needs of the facility would be restrooms with fixture quantities reflecting the maximum number of users. A small "catering kitchen" with a sink, refrigerator, microwave, cabinets and counter space could be installed to stage and serve food prepared off site. The design would include storage space to accommodate folding tables and chairs for the maximum occupancy.

Environmental Setting

The ARG / WSA Historical/Cultural Resources Study includes a detailed chronological history of the Project area dating from the prehistoric period, through its historic context, to present day. This contextual information is included in Appendix 7A. The following information is extracted from that report, and focuses specifically on those potentially historic and cultural resources specific to the Project site.

Moraga Adobe

The Joaquin Moraga Adobe is located about four miles southeast of downtown Orinda, atop a knoll overlooking the Moraga Valley. The 20-acre property was once part of the 13,000-acre Rancho Laguna de los Palos Colorados land grant, the bulk of which has since been subdivided, primarily for housing.

3 J&J Ranch LLC, Letter to E. Ursu, November 19, 2014 (attached as Appendix 3A)
developments. The Moraga Adobe was built by Joaquin Moraga, a member of one of the most influential families in pre-statehood California. The Moraga Adobe is an especially early and rare example of a type of construction specific to the early Hispano-Anglo settlement of California.

The Moraga Adobe is listed on the Office of Historic Preservation Historic Properties Database, the California Inventory of Historic Resources, and the Contra Costa County Historic Resources Inventory. The Moraga Adobe, a California Historical Landmark, is listed on the National Register of Historic Places (NRHP) and the California Register of Historical Resources, and was designated as a City of Orinda Landmark in 1995. Because it is listed on the NRHP, the Moraga Adobe is considered a historical resource.

The Moraga Adobe is a one-and-a-half-story dwelling that faces slightly northeast. The building’s hipped roof flares outward to form a veranda supported by chamfered posts and a stone foundation. Four large window openings with entablatures and fluted surrounds puncture the west, north, and east walls of the building. The Moraga Adobe walls, which date to 1841, have been completely covered with stucco. Two rectangular-in-plan additions dating from the 1940s have been attached to the rear (south) wall of the building. Concrete walls dating from the 1940s extend southwesterly from the rear of the Adobe. These walls formerly enclosed a courtyard. A concrete pool sits approximately 100 feet west of the Moraga Adobe. The Moraga Adobe is currently in a state of disrepair. Its windows have been boarded and it has been subject to vandalism in recent years (see Figure 7-1)

**Historic Significance**

The NRHP nomination, completed in 1972, did not specify the Moraga Adobe's period of significance, nor did it identify which features of the altered building contributed to its historic significance.

**City of Orinda Landmark Findings**

The 1995 ordinance designating the Moraga Adobe a City of Orinda landmark includes a detailed description of the building's multi-faceted historic significance. The City Council found that an original portion of the Joaquin Moraga Adobe residence at 24 Adobe Lane:

- has character, interest, and value as part of the development, heritage, and cultural characteristics of Orinda, Contra Costa County, California, and the United States of America: The Moraga Adobe is synonymous with the early Mexican heritage established in Orinda. The Adobe and its grazing and farming land that surround it contributed to the early cultural, social and economic vitality of the area.

- is a site of significant historic importance: The Adobe home was the first nonindigenous residence built in Orinda. In 1954, the Contra Costa Historical Society marked the Adobe with a memorial plaque designating it as State landmark #509. The Adobe was placed on the National Register of Historical Places in March, 1972.

- identifies with a person who significantly contributed to the culture, history, and development of Orinda: Land grants were made to families of distinguished men who had fought for and ruled the early California lands. The Moraga Adobe is situated on the Rancho de los Palos Colorados (Redwood Ranch, originally 13,316 acres) which was granted in 1835 to Don Joaquin Moraga whose grandfather, Jose Joaquin Moraga, was the founder and First Commandante of the Presidio of San Francisco. His cousin, Don Juan Bernal, was the son of an officer who was a member of the 1776 expedition led by Don Juan Bautista de Anza through California lands.

- represents a distinctive example of an architectural period and style: The construction and style of the Adobe is typical of an early Mexican home. Built in 1841, the Moraga Adobe is believed to be the oldest adobe structure still standing in Contra Costa County.

- exemplifies the cultural, economic, social and historic heritage of Orinda: The Moraga Adobe is synonymous with the early Mexican heritage established in Orinda. The Adobe and its grazing and farming land that surround it contributed to the early cultural, social and economic vitality of the area.
Figure 7-1
Existing Joaquin Moraga Adobe

Looking north

Looking northwest

Source: Architectural Resources Group, March 2014
• embodies materials, design, craftsmanship and construction materials used in early California: The Moraga Adobe was made of adobe bricks formed on the site by native peoples, had beams made from redwood taken from trees growing in the area, and overhanging exterior redwood beams to protect the exterior portion of the adobe bricks from weather. In 1941, the home was saved from probable ruin by Katherine Brown White Irvine who purchased the Adobe and restored it into a modern home.

• is associated with important social development of Orinda: The Moraga Adobe was the site of the early "fandangos" (festive dinner-dances which attracted people from throughout the Bay Area).

The 1995 City of Orinda landmark designation applies only to the north, east and west adobe walls of the structure, which are completely encased by stucco that was added one hundred years after the Adobe was built.

ARG Current Assessment

ARG concurs with the City’s 1995 landmark findings. In ARG's professional opinion, the Joaquin Moraga Adobe is:

• significant under NRHP Criterion A/CRHR Criterion 1 for its direct association with the pre-statehood, Rancho period settlement of California,

• significant under NRHP Criterion B/CRHR Criterion 2 for its association with Joaquin Moraga, whose expansive Rancho gave rise to the local communities of Orinda, Moraga, Lafayette, Canyon and Rheem Valley, and

• significant under NRHP Criterion C/CRHR Criterion 3 for embodying the distinctive characteristics of a type and period of construction (mid-nineteenth century adobe) that is quite rare in the region.

As described above, the Moraga Adobe was extensively altered in the 1940s when several changes were made to the surrounding property. The Adobe's 1972 National Register nomination does not address whether these alterations should themselves be considered historic, and the 1940s alterations were not included in the Moraga Adobe's 1995 local landmark designation. In ARG's professional opinion, the extensive alterations made to the Moraga Adobe in 1941 and 1942 should not be considered historic, despite being more than 50 years old. These alterations are not associated with the use of the property as a ranch, nor with any other events that have made a significant contribution to local, state or national history. Nor are the alterations undertaken in the 1940s associated with persons significant to the area's past. The Adobe was owned by Katherine Irvine at that time, and while she was married to prominent landowner James Irvine, there is no evidence that Mr. Irvine ever resided at the Adobe or had any direct association with it. Nor was any evidence uncovered that Katharine Irvine made a significant contribution to local, California, or national history. In addition, none of the 1941-2 alterations exhibits distinctive architectural characteristics or represents the work of a master. Finally, none of the 1941-2 alterations appears likely to yield information important to prehistory or history.

In ARG's professional opinion, the Moraga Adobe's period of significance extends from 1841, its approximate date of construction, until 1941, just before the building was extensively altered. Based on this period of significance, ARG identified the following character-defining features for the Moraga Adobe:

• The original adobe walls, which remain inside the north, east, and west walls of the building (including the walls’ relative orientation);

• The 4’ by 7’ door opening in the center of the north façade, flanked by two 4’ by 5’ window openings;

• The hipped roof form and one-and-a-half story height at the front portion of the building;

• Access to the attic via an external staircase on the building’s west side (although the staircase itself is a replacement and does not appear to be historic); and

• The building’s rural setting atop a knoll, with views from the building.

This list of historic features is more expansive than the list included in the City's landmark designation.
In ARG's professional opinion, none of the other buildings or structures on the Project site are considered historical resources for purposes of CEQA. They were each constructed after the Moraga Adobe's period of significance and are not associated with the Moraga family's occupation or historic use of the property. The concrete pool and adobe walls appear to date from the 1940s and are not connected with the site’s significant historical past.

Fieldwork reconnaissance did not uncover any other architectural elements on site. In particular, all of the many wooden outbuildings that formerly stood near the Adobe have been cleared away. Nor did site reconnaissance uncover any landscape elements that would indicate the Adobe’s former role as the central residence of a large rancho. Thus, as explained in detail below, no cultural landscape appears to be present.

Historic Integrity of Adobe Structure

The City of Orinda's historic preservation ordinance (Chapter 17.25 of the OMC) does not include any reference to historic integrity or specify that historic integrity is a prerequisite for historic designation. As a result, the Moraga Adobe’s status as a City of Orinda Landmark is independent of any discussion of the building's integrity. However, the Adobe’s historic integrity is relevant to its eligibility for state and national designation (see National Register of Historic Places’ aspects of integrity, below).

In assessing the Moraga Adobe's integrity, it should be noted that as a pre-1850 adobe in California, even a partially intact one, it is an especially early and rare example of a type of construction specific to the early Hispano-Anglo settlement of California. The historic importance of the Moraga Adobe offsets, in part, the integrity concerns described below.

The Moraga Adobe retains integrity of location because it has not been moved and also retains integrity of setting. While the residential development of the former rancho lands over the past one hundred years has transformed the surrounding area, the Moraga Adobe’s immediate setting is still relatively rural and its panoramic views remain.

Other aspects of the Moraga Adobe's integrity have been diminished, however. The configuration and materials of the front and side adobe walls are all that remain from the period of significance. These walls have since been covered with stucco on both the interior and exterior. The attic and the rear wall of the Adobe have been reconstructed and two extensions added onto the building. These changes have compromised the Moraga Adobe's integrity of feeling and association because they have reduced the Moraga Adobe's ability to convey its historic significance.

The Moraga Adobe’s integrity of design, materials and workmanship is difficult to assess, as the walls have been covered. Given the stability of the building's original design, however, the original workmanship of the Moraga Adobe walls is likely intact.

While the Moraga Adobe's front door is on the building's northeast elevation, that elevation has not served as the primary means of ingress and egress for decades. Given the topography of the site, road access to the building appears to always have been via a circular path ending near the Moraga Adobe's southeast wall.

Surrounding Landscape

A "cultural landscape" is generally defined under the National Park Service's Guidelines for the Treatment of Cultural Landscapes (NPS Guidelines) as a "geographic area (including both cultural and natural resources and the wildlife or domestic animals therein), associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values."4

According to the NPS Guidelines, in assessing whether a cultural landscape is present, it is most critical to consider the arrangement, spatial organization, and interrelationship of character-defining features of a

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4 See the National Park Service, Guidelines for the Treatment of Cultural Landscapes, Defining Landscape Terminology, available online at: http://www.nps.gov/lps/standards/four-treatments/landscape-guidelines/terminology.htm
landscape as they existed during its period of significance. Spatial relationships may change over time due to a variety of factors, including plant growth and succession, and changes in land use and technology. The NPS Guidelines identify five categories of character-defining features that collectively contribute to the historic character of a cultural landscape: topography; vegetation; circulation; water features; and structures, site furnishings and objects. As explained in the NPS Guidelines, "Individual features in the landscape should never be viewed in isolation, but in relationship to the landscape as a whole."

The NPS Guidelines identify several factors to consider when identifying whether a cultural landscape is present and selecting an appropriate treatment:

- Change and continuity of form, order, use, features, or materials
- Geographic context, including circulation, views and vistas into and out of the landscape, natural features, clusters of structures, division of properties
- Historic, current and proposed use
- Archeological resources
- Existing natural systems

Based upon on-site field work and archival research, ARG did not find evidence that a historic vernacular landscape is present at the Moraga Adobe property. ARG was unable to identify any landscape elements on the Project site that were related to the Moraga Adobe's former role as the central residence of a large rancho or that reflect the physical, biological, and cultural character of its past inhabitants. Over time, many material changes have been made to the Moraga Adobe, and the spatial layout of the site has also changed. None of the structures on the site other than the Moraga Adobe itself appear to be historical resources. While the property has not been significantly re-graded in the recent past, it has been host to a changing array of outbuildings and other ancillary structures, few of which remain (see Figure 7-2).

**Archeological Resources**

No archaeological sites were recorded within the Project site prior to 2009. The archaeological survey (WSA, 2009), revealed that there are archaeological deposits around the Adobe, and the likelihood of encountering previously unknown, intact historical archaeological deposits within the vicinity of the Moraga Adobe is considered extremely high. The testing program, however, was not designed to evaluate the extent and integrity of the deposits nor to recover sufficient artifacts to assess their significance. Therefore, it is not possible at this time to evaluate the potential significance of the archaeological deposits. Because the Moraga Adobe site is associated with the Moraga Adobe, it is considered a potentially significant resource until such time as further archaeological investigations can be undertaken to determine its significance. The Moraga Adobe site may also meet the criteria of a unique archaeological resource due to the potential antiquity of archaeological deposits associated with the Moraga Adobe, which may date back to the 1840s. Therefore, for the purposes of CEQA, the Moraga Adobe site is considered a significant and a unique archaeological resource.

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5 ARG, Historical/Cultural Resources Study, Joaquin Moraga Adobe, August 26, 2010 and as updated March 30, 2011 and supplemented by a letter to City of Orinda, September 28, 2012 (attached as Appendices 7A and 7C).
Figure 7-2
Moraga Adobe Site and Accessory Structures

Source: Architectural Resources Group
Chapter 7: Cultural Resources

Paleontological / Geologic Resources

A Paleontological Identification Report (PIR) was prepared for the Project site in 2009. The PIR was based on reviews of pertinent geological and paleontological literature, an on-line fossil locality search using the University of California Museum of Paleontology on-line database, and a May 27, 2009 site reconnaissance. The PIR identified the presence of the fossiliferous Siesta Formation in the Project area. The Siesta Formation contains significant, non-renewable, paleontological resources. Some of the fossils reported from this geologic formation in other locations include fresh water gastropods (snails), fossil rodent remains similar to beaver, and extinct horse species, camel, hare/ancient rabbits, and elephant, mammoth and extinct deer.

The Project site is classified as having "High Potential" to contain rock units from which vertebrate or significant invertebrate fossils have been recovered and are considered to have a potential for containing significant non-renewable fossiliferous resources. Therefore, the site is considered highly sensitive for paleontological resources.

Native American Resources

The Native American Heritage Commission (NAHC) stated in 2009 that a search of the sacred land file had failed to indicate the presence of Native American cultural resources in the immediate Project area.

Regulatory Setting

The following regulatory background provides an overview of local, state and federal criteria used to assess historic significance.

Federal

National Register of Historic Places

The National Register of Historic Places (NRHP) is the Nation's master inventory of known historic resources and includes listings of buildings, structures, sites, objects and districts that possess historic, architectural, engineering, archaeological or cultural significance at the national, state or local level. As described in National Register Bulletin Number 15, *How to Apply the National Register Criteria for Evaluation*, a property must have both historical significance and integrity to be eligible for listing in the NRHP. To be significant, a property must be "associated with an important historic context." The National Register identifies four possible context types, of which at least one must be applicable to the property at the national, state, or local level. As listed under Section 8, "Statement of Significance," of the NRHP Registration Form, these are:

A. Property is associated with events that have made a significant contribution to the broad patterns of our history.
B. Property is associated with the lives of persons significant in our past.
C. Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
D. Property has yielded, or is likely to yield, information important to prehistory or history.

Second, for a property to qualify under the National Register's Criteria for Evaluation, it must also retain "historic integrity of those features necessary to convey its significance." While a property's significance relates to its role within a specific historic context, its integrity refers to "a property's physical features and how they relate to its significance." To determine if a property retains the physical characteristics corresponding to its historic context, the National Register has identified seven aspects of integrity:
- Location is the place where the historic property was constructed or the place where the historic event occurred.
- Setting is the physical environment of a historic property.
- Design is the combination of elements that create the form, plan, space, structure, and style of a property.
- Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.
- Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.
- Feeling is a property's expression of the aesthetic or historic sense of a particular period of time.
- Association is the direct link between an important historic event or person and a historic property.

Since integrity is based on a property's significance within a specific historic context, an evaluation of a property's integrity can only occur after historic significance has been established.

State of California

California Register of Historical Resources

The California Register of Historical Resources (CRHR) is the authoritative guide to the State's significant historical and archaeological resources. It serves to identify, evaluate, register and protect California’s historical resources. The CRHR program encourages public recognition and protection of resources of architectural, historical, archaeological and cultural significance, identifies historical resources for state and local planning purposes, determines eligibility for historic preservation grant funding and affords certain protections under CEQA. All resources listed on or formally determined eligible for the NRHP are eligible for the CRHR. In addition, properties designated under municipal or county ordinances are also eligible for listing in the CRHR.

The California Register criteria are modeled on the National Register criteria discussed above. A historical resource must be significant at the local, state, or national level under one or more of the following criteria:

1. It is associated with events or patterns of events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.
2. It is associated with the lives of persons important to local, California, or national history.
3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values.
4. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, state or the nation.

State Historical Resources Commission

The State Historical Resources Commission (SHRC) is responsible for reviewing, commenting on, and approving nominations to the NRHP, CRHR, California Historical Landmarks, and California Points of Historical Interest. Properties recommended and approved for listing by the SHRC as California State Historical Landmarks and California State Points of Historical Interest are also listed on the CRHR.

CEQA

CEQA Guidelines section 15064.5 defines a substantial adverse change in the significance of an historical resource as physical demolition, destruction, relocation, or alteration of the resource or its immediate
surroundings such that the significance of an historical resource would be materially impaired. Material impairment occurs when a project demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion or eligibility for inclusion in the CRHR or a local register of historical resources. Generally, a project that satisfies the Secretary of the Interior’s Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings or Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (Weeks and Grimmer, 1995), is considered to have mitigated potential impacts on the historical resource to a level of less than significant.

Section 15064.5(c) applies to the analysis of effects on archaeological sites. When a project would affect an archaeological site, a lead agency must determine whether the site is an historical resource, and therefore subject to the CRHR criteria listed above (particularly Criterion D4), or whether the site is a unique archaeological resource, as defined in CEQA section 21083.2, and whether the mitigation provisions of that section apply. If a lead agency determines that an archaeological site is neither historic nor unique, the resource requires no further consideration other than recordation of its existence if the lead agency so elects.

Archeological and Paleontological Resources

The following regulations from the State Public Resources Code (PRC), the California Code of Regulations (CCR), and the California Penal Code apply to archaeological and paleontological resources:

PRC, Division 5, Chapter 1.7, Section 5097.5 establishes that unauthorized removal of archaeological and paleontological resources on sites located on public lands is a misdemeanor. As used in this section, "public lands" means lands owned by, or under the jurisdiction of the state, or any city, county, district, authority or public corporation, or any agency thereof.

PRC, Division 5, Chapter 1.75, Section 5097.98 prohibits obtaining or possessing Native American artifacts or human remains taken from a grave or cairn; and sets penalties.

PRC, Division 13, Chapter 2.6, Section 21083.2 establishes that the CEQA lead agency determines whether a project may have a significant effect on unique archaeological resources. If a potential for damage to unique archaeological resources can be demonstrated, the project must avoid such resources. If the archaeological resources can't be avoided, mitigation measures shall be required. Section 21083.2 identifies a number of additional provisions regarding the treatment of a project's archaeological resources, including, but not limited to: excavation as mitigation; the maximum cost of mitigation measures undertaken for housing projects and for commercial or industrial projects; the time frame for completing the field excavation; and mitigation of unexpected resources.

California Penal Code, Title 14, Section 622.5 establishes that anyone who damages an item of archaeological or historic interest is guilty of a misdemeanor.

CCR, Title 14, Division 3, Chapter 1, addresses paleontological resources. Section 4307: Geological Features states that "No person shall destroy, disturb, mutilate, or remove earth, sand, gravel, oil, minerals, rocks, paleontological features, or features of caves." Section 4309: Special Permits states that "The Department may grant a permit to remove, treat, disturb, or destroy plants or animals or geological, historical, archaeological or paleontological materials; and any person who has been properly granted such a permit shall to that extent not be liable for prosecution for violating the forgoing."

City of Orinda

General Plan – Conservation Element

The Conservation Element of the Orinda General Plan contains goals and policies that address the identification and preservation of historic structures and sites, including:

- Guiding Policy 4.1.1.A. Preserve Orinda's historic structures and sites, unique trees and landforms.
• Implementing Policy 4.1.2.A. Conduct an archival study of resources, map the general locations of resources, and review development proposals to determine the potential impacts on archaeological and historic resources and the need for more detailed study. Require additional study of development proposals on sites with moderate probability that such resources exist.

• Implementing Policy 4.1.2.8. Adopt a Landmarks Preservation Ordinance to protect structures, sites and areas having a special historical, architectural, natural, or aesthetic interest or value.

Landmarks Preservation Ordinance

The purpose of OMC Chapter 17.25 is to preserve, protect, perpetuate, enhance, and use historic landmarks. The ordinance allows the City Council to designate a site, building, structure, monument, tree, work of art, or other object in the city as a historical landmark. In order to designate a landmark, the City Council must find at least three of the following conditions:

A. The character, interest or value is part of the development, heritage or cultural characteristics of Orinda, the state of California, the United States of America or Native Americans;
B. The location is an area or site of a significant historic event;
C. The proposed landmark is associated with a person who significantly contributed to the culture, history and development of the city;
D. It represents a distinctive example of an architectural period, style or movement or its identification as the work of an architect or master builder whose work has influenced the development of the city;
E. It contains elements of architectural design, detail, materials or craftsmanship which represent a significant architectural innovation;
F. It is a distinct work of art;
G. It is associated with important religious, cultural, governmental or social factors in the development of the city; or it exemplifies the cultural, educational, economic, patriotic, social or historic heritage of the city;
H. It has a unique location or a singular physical characteristic representing an established and familiar visual feature of a neighborhood or of the entire city.

A landmark improvement plan must be submitted to and approved by the City prior to making changes to any building or object with landmark status. Changes are defined as exterior alteration, destruction or removal, interior alteration that could affect an area customarily open to the public and that has special historic or aesthetic value, or onsite physical changes to the grounds, as defined in the landmark designation.

Impacts and Mitigation Measures

Thresholds of Significance

Appendix G of the CEQA Guidelines (Environmental Checklist) contains a list of impacts on cultural resources that may be considered significant. Implementation of the Project would have a significant effect on historic or cultural resources if it were to:

1. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5;
2. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5;
3. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
4. Disturb any human remains, including those interred outside of formal cemeteries.

**Historic Resource Definition**

For the purposes of this analysis, the term "historical resources" shall be consistent with the definition provided in CEQA Guidelines Section 15064.5:

1. A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in, the California Register of Historical Resources (Pub. Res. Code Section 5024.1, Title 14 CCR, Section 4850 et.seq.);
2. A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant;
3. Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing in the California Register of Historical Resources (Public Resources Code Section 5024.1, Title 14 CCR, Section 4852) as follows:
   - Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
   - Is associated with the lives of persons important in our past;
   - Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
   - Has yielded, or may be likely to yield, information important in prehistory or history. (Guidelines Section 15064.5)

**Historic Resources – Integrity of the Moraga Adobe Setting**

The Project site contains two historical resources for purposes of CEQA: the Moraga Adobe, which is a designated historical resource, and the Moraga Adobe site, which, based on preliminary archaeological site reconnaissance, appears eligible for listing as a historical resource. These two resource categories are discussed separately, beginning with a discussion of the Moraga Adobe site, below.

**Impact Cultural-1:** The Project could cause a substantial adverse change in a historical resource by enabling residential development on adjacent parcels that would compromise the Joaquin Moraga Adobe's integrity of setting. However, implementation of Project design elements will mitigate potential impacts. (LTS)

The demolition of the barn, caretaker's residence and garage in 2009 did not constitute a significant impact on historic resources. None of these structures were considered a historical resource for purposes of CEQA. Nor were any of these three buildings sufficiently close to the Moraga Adobe that their demolition impacted the Moraga Adobe through ground vibration or inadvertent debris contact.
Similarly, the currently proposed removal of the concrete pool and the low adobe garden walls immediately behind the Moraga Adobe does not constitute an impact on historic resources, as these structures are not historical resources and their removal is unlikely to cause any inadvertent damage to the Moraga Adobe.\(^6\)

**Project Elements**

Development of the Project site would include the following Project design elements that reduce impacts to historical resources:

- The proposed circulation plan is generally in keeping with historic circulation patterns on the property. Adobe Lane will be aligned to the south so as not to pass within 50 feet of the Moraga Adobe.
- Front yard setbacks for homes on Lots 4 and 7 will be 25 feet. Combined with the Moraga Adobe's 50-foot setback from Adobe Lane and the 25-foot width of Adobe Lane itself, new construction on Lots 4 and 7 are separated from the Adobe by at least 100 feet.
- The lot-line separating the Moraga Adobe from Lot 11 is designed to not pass within 50 feet of the Moraga Adobe, and the eastern setback of this lot has been set at 20 feet.
- The Moraga Adobe lot extends northeasterly all the way to Adobe Lane, with lot locations set to avoid infringement on the Moraga Adobe's existing northeasterly views of the Moraga Valley and Mt. Diablo (see Figure 7-3).
- To preserve the Moraga Adobe's historic setting, including northeasterly views of the Moraga Valley and Mt. Diablo, no portion of any development or landscape element on Lot 12 and Lot 13 shall extend above the elevation of the base of the Moraga Adobe, which sits at 667.4 feet above sea level.
- Implementation of the Street Tree Plan will ensure that new roadways will be largely screened by planted trees, topography and naturally occurring vegetation.
- Consistent with OMC requirements, the development standards that apply to all residential properties within the Project include a maximum height of 27 feet and an aggregate maximum height of 35 feet and a maximum of 2.5 stories; a minimum front yard setback of 25 feet; and a minimum side yard setback of 20 feet.

**Conclusions**

In view of these Project design elements, single-family residential development on the thirteen proposed lots is not anticipated to cause a substantial adverse change in a historical resource and, in particular, is not anticipated to compromise the Moraga Adobe's integrity of setting. The OMC height and setback restrictions, along with the additional Project elements and restrictions identified above, are adequate to minimize potentially significant impacts to the Moraga Adobe.

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\(^6\) Carey & Co. Architecture, Moraga Adobe Pre-Design Report, September 23, 2010 (attached as Appendix 7B),
Figure 7-3
Moraga Adobe Parcel, as part of the Project

Source: Schell and Martin, Inc., Tentative Map of J&J Ranch
Historic Resources – Historic Integrity of the Moraga Adobe

Impact Cultural-2: The Project could cause a substantial adverse change in a historical resource by enabling alteration of the Joaquin Moraga Adobe that would endanger its historic status. However, with implementation of Project elements and mitigation measures (including the requirement that any work on the Moraga Adobe must be consistent with Secretary of Interior Standards), these impacts will be reduced to less than significant levels. (LTS with Mitigation)

As part of the subsequent development of the Project site, efforts may be undertaken to rehabilitate or otherwise alter the Moraga Adobe. If care is not taken, such future rehabilitation could compromise the Moraga Adobe’s historic integrity. This would result in potentially significant impacts.

Project Elements

The 2013 MOA specifies rehabilitation of the Moraga Adobe in accordance with the Secretary of Interior’s Rehabilitation Standards to accommodate the proposed use by the Friends or, if they do not purchase the site, by the HOA. (See discussion of the MOA as it related to rehabilitation and use of the Adobe beginning on page 7-2.)

Mitigation Measures

The Project applicant has agreed to implement the following mitigation measures, consistent with the MOA and the recommendations of the Carey & Co. report:

Mitigation Measure Cultural-2: Secretary of the Interior’s Standards for Rehabilitation. To ensure that the future rehabilitation of the Moraga Adobe is conducted in conformance with the Secretary of the Interior’s Standards for Rehabilitation, the Project applicant will enter into formal agreement with the City of Orinda stipulating that:

1. No new, freestanding buildings, beyond those stipulated in the 2013 MOA, shall be constructed on the proposed lot occupied by the Moraga Adobe.

2. Any future additions to the existing Moraga Adobe shall be restricted to the portion of the lot to the south of the Adobe’s front façade, where the building’s historic profile has already been changed.

3. Any proposed future rehabilitation of the Moraga Adobe shall be reviewed by the City, or by a historic resource consultant retained by the City, to confirm its conformance with the Secretary of the Interior’s Standards for Rehabilitation.

4. Any alterations of, or additions to the Moraga Adobe, including interpretative elements proposed in the future as a community benefit, shall be designed and built in accordance with Standards 9 and 10 of the Secretary of the Interior’s Standards for Rehabilitation:

   (9): New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

   (10): New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

5. Any future rehabilitation or expansion of the Moraga Adobe shall be undertaken with the assistance of a historic preservation architect (meeting the Secretary of the Interior’s Standards and Guidelines for Archaeology and Historic Preservation, Professional
Conclusion

With implementation of the above Project elements and mitigation measures, the Project would not cause a substantial adverse change to the Moraga Adobe nor compromise the Moraga Adobe’s integrity of setting. Significant impacts associated with the rehabilitation of the Moraga Adobe are avoided by ensuring that future treatment will be done in accordance with the Secretary of the Interior's Standards for Rehabilitation. As a result, the impact would be less than significant.

Historic Archaeological Resources

Impact Cultural-3: Site preparation, grading, and construction activities associated with the Project could adversely impact the Moraga Adobe site, which appears eligible for consideration as an historical resource under CEQA. However, implementation of Project elements will mitigate potential impacts to the significance of archaeological resources. (LTS with Mitigation)

While there are no recorded archaeological sites within the Project site, the field survey determined the likelihood of encountering previously unknown, intact historical archaeological deposits within the vicinity of the Moraga Adobe is considered extremely high though the significance of any archaeological deposits discovered would need to be evaluated. The Moraga Adobe site may meet the criteria of a unique archaeological resource due to the potential antiquity of archaeological deposits associated with the Moraga Adobe. Damage of these resources would be a potentially significant impact.

Mitigation Measures

The Project applicant has agreed to implement all of the following recommendations from the ARG / WSA Study.

Mitigation Measure Cultural-3A: Archaeological Testing, Avoidance or Data Recovery. Prior to site clearing and grading, a test excavation program will be conducted at the Moraga Adobe by a qualified archaeologist meeting federal criteria under 36 CFR Part 61 in order to determine the extent and potential significance of the archaeological deposits. In addition, a California Department of Parks and Recreation, Archaeological Site Record form will be completed for the Moraga Adobe site.

1. If the archaeological deposits at the Moraga Adobe are determined to be potentially significant, they will be avoided, to the extent feasible.

2. If avoidance is not feasible, project impacts will be mitigated in accordance with the recommendations of the evaluating archaeologist and CEQA Guidelines §15126.4 (b)(3)(C), which require development and implementation of a Data Recovery Plan that would include recommendations for the treatment of the discovered archaeological materials. The Data Recovery Plan will be submitted to the City of Orinda for review and approval. Upon approval and completion of the data recovery program, the archaeologist will prepare a report documenting the methods and findings. The report will be submitted to the City of Orinda. Once the report is reviewed and approved by the City of Orinda, a copy of the report will be submitted to the Northwest Information Center.

Although the likelihood of encountering intact archaeological deposits outside the vicinity of the Moraga Adobe is considered extremely low, there is the possibility that archaeological material may be located during future construction activities enabled by the Project. The following mitigation measure, agreed to by the Project applicant, addresses this possibility:
**Mitigation Measure Cultural-3B: Training and Discovery.** A qualified archaeologist shall conduct a training session for all construction personnel prior to the beginning of construction. Training shall address the proper procedures to follow in the event that cultural resources are uncovered during excavations and shall include an explanation of the regulatory policies protecting resources; basic identification of cultural resources; and the protocol to follow in case of a discovery of such resources. The protocol shall include the following:

1. If deposits of prehistoric or historic archaeological materials are encountered during project activities outside the Moraga Adobe site, all work within 25 feet of the discovery will be stopped and a qualified archaeologist meeting federal criteria under 36 CFR Part 61 will be contacted to assess the deposit(s) and make recommendations.

2. If the deposits are determined to be non-significant, no further action is necessary.

3. If the deposits are determined to be significant, avoidance or data recovery pursuant to Mitigation Measure Cultural -3A shall be implemented.

**Conclusions**

With implementation of these mitigation measures, the Project would not result in significant impacts to historic archaeological resources or unique archaeological resources.

**Paleontological / Geologic Resources**

**Impact Cultural-4:** The Project may directly or indirectly destroy a unique paleontological resource due to the presence of the fossiliferous Siesta Formation at the Project area. However, implementation of paleontological monitoring plan, included as a required element of the Project, will mitigate potential impacts to unique paleontological resources. (LTS with Mitigation)

The Project site has high potential to contain rock units from which vertebrate or significant invertebrate fossils have been recovered and are considered to have a potential for containing significant non-renewable fossiliferous resources. If the excavations for the Project disturb the underlying Siesta Formation bedrock, there is a high probability that potentially fossiliferous sediments may be affected. This impact would be potentially significant.

**Mitigation Measures**

The Project applicant has agreed to implement all of the recommendations from the WSA and ARG Study, including the following.

**Mitigation Measure Cultural-4: Paleontological Monitoring.** The Project applicant shall be responsible for preparation and implementation of a Paleontological Monitoring Plan that ensures paleontological monitoring during construction activities; avoidance measures; implementation of a paleontological salvage program developed by a professional paleontologist should artifacts be discovered; provisions for recovered specimens to be housed in an institutional paleontological repository; and preparation of a Final Report to be reviewed by a vertebrate paleontologist designated by the City.

**Conclusions**

Implementation of the paleontological monitoring plan pursuant to Mitigation Measure Cultural-4 would ensure that the Project’s potential adverse impact on paleontological resources would be less than significant.
Human Remains

Impact Cultural-5: Ground disturbing activities associated with site preparation, grading, and construction activities could disturb human remains, including those interred outside of formal cemeteries. However, implementation of Project elements during the construction phases of work would reduce any disturbance of human remains to a less than significant level. (LTS with Mitigation)

The potential to uncover Native American human remains exists in locations throughout California. According to the ARG Study, although not anticipated, human remains may be encountered during site-preparation and grading activities, potentially resulting in a significant impact to Native American cultural resources.

Mitigation Measures
The Project applicant has agreed to implement all of the recommendations from the Historical/Cultural Resources Study, including the following.

Mitigation Measure Cultural-5: Discovery of Human Remains. In the event that human remains, or possible human remains are located during Project-related construction excavation, the following provisions of California Health and Safety Code section 7050.5(b) will be implemented.

1. In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the County Coroner has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.

2. If the County Coroner recognizes the remains as being of Native American origin, he/she is responsible to contact the Native American Heritage Commission within 24 hours. The Commission has various powers and duties, including the appointment of a Most Likely Descendant ("MLD") to the project. The MLD (or in lieu of the MLD, the Native American Heritage Commission) has the responsibility to provide guidance as to the ultimate disposition of any Native American remains.

3. The archaeological consultant, City of Orinda, and MLD would then make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of human remains and associated or unassociated funerary objects (pursuant to CEQA Guidelines Section 15064.5[d]). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. The PRC allows 48 hours to reach agreement on these matters. If the MLD and the other parties do not agree on the reburial method, the project will follow Section 5097.98(e) of the PRC, which states that “the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance.”
Conclusions

With implementation of the Mitigation Measure Cultural-5 above, the Project would ensure that any disturbance of human remains would be handled in a manner that would avoid significant impacts to Native American cultural resources, and the impact would be less than significant.

Cumulative Cultural Resources Impact

Impact Cultural-6: Implementation of Project elements will ensure that the Project does not adversely contribute to cumulative cultural resource impacts. (LTS)

The Project incorporates elements that ensure adherence to the Secretary of Interior’s Standards for Rehabilitation, incorporates investigations and monitoring conducted by technical experts in archaeology and paleontology, and incorporates a subdivision design that minimizes any potential impacts to cultural resources such that the Project would not make a considerable contribution to any significant, cumulative impact related to cultural resources. In addition, the regulations, policies and standards discussed above are applicable to both the Lavenida Lane Subdivision and the Project, as well as to any other development proposed in Orinda so that cumulative impacts to cultural resources would be minimized. Compliance with these requirements will ensure the Project, along with other anticipated development in the area, would not result in significant cumulative impacts to cultural resources.
This chapter evaluates the Project’s potential impacts related to geology and soils. It describes the existing geology and soil conditions in the vicinity of the Project site, and evaluates the extent to which geology and soil conditions may affect development of the Project. The analysis and discussion in this section of the EIR is based on the following technical studies:

- Jensen-Van Lienden Associates (JVL), *Preliminary Geologic and Geotechnical Reconnaissance Report* (JVL Report), dated July 28, 2009, attached as Appendix 8A—note that the JVL Report itself has six appendices, lettered A through F;
- Alan Kropp and Associates report (AKA Report) of 2008, attached as Appendix 8B;
- Darwin Myers peer review of the JVL Report on behalf of the City of Orinda in 2010, attached as Appendix 8C; and
- JVL letter reports, dated November 28, 2011; March 15, 2012; September 17, 2012; and October 1, 2012. These letter reports provide additional discussion of geotechnical elements of the Project addressing soils repair methods, effects on adjacent properties, and the likelihood of naturally occurring asbestos being located on this site. The JVL letter reports are attached as Appendix 8D.

To date, the Project site has been explored with 36 conventional borings, 29 test pits, 4 long exploratory trenches, and 2 large-diameter borings. The studies have included aerial photograph interpretation, reviews of data collected on adjoining sites, laboratory testing, and site reconnaissance.

### Environmental Setting

#### Geologic Setting

The Project site lies within the Central Coast Ranges geomorphic province, a region dominated by northwest trending ridges and valleys. These topographic features are generally parallel to the major geologic structures such as the San Andreas system of active faults. Within the East Bay Hills, the Coast Ranges consist primarily of a thick sequence of Tertiary-age sedimentary and volcanic rocks that overlie older Mesozoic-age rocks. The Tertiary-age rocks are generally tightly folded along northerly to northwesterly fold axes. In low-lying areas the Mesozoic and Tertiary younger, unconsolidated, Quaternary-age sediments such as alluvium and bay mud often blanket the bedrock.

Sedimentary rocks of the Siesta Formation underlie the Project site. The ridge above the site is composed of sedimentary and volcanic rock of the Moraga Formation. Neither of the formations contain Serpentine bedrock or any other ultramafic rock that would contain naturally occurring asbestos. The chances of encountering naturally occurring asbestos at this site are extremely low.\(^1\)

These rocks are locally overlain by younger soils including landslide deposits of colluvium, debris flow deposits of probably Pleistocene age (typically medium to large cobbles and boulders of basalt), and younger surficial soils of Holocene age.

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\(^1\) Jensen-Van Linden, March 15, 2012
Faulting and Seismicity

Seismicity in the Orinda area is related to activity on the San Andreas Fault system, including major active faults lying both east and west of the site. The principal active faults of the region are the San Andreas Fault, 21 miles southwest of the site; the Hayward Fault, 3.2 miles to the southwest; and the Calaveras Fault, 9.6 miles to the east. Each of these faults has experienced large historical earthquakes. The Working Group on California Earthquake Probabilities (US Geological Survey, 2003) has estimated that there is a 62 percent chance of a large earthquake (magnitude approximately 6.7 or greater) occurring in the San Francisco Bay Region by the year 2032.

The Project site is not within one of the Alquist-Priolo Earthquake Fault Zones established by the State of California around known active faults. The Moraga fault, which terminates about one mile west of the site, is not considered active. A thrust fault mapped by Ron C. Crane through the Project site has not been confirmed by other published maps. The JVL Report states that if such a thrust fault does exist, it is most likely an ancient fault and no longer active. No active faults are known to cross or extend toward the Project site.

Slopes and Potential Slope Failure

The JVL Report describes several landslides or potential landslides on the Project site (see Figure 8.1).

- Slide A is a moderately large landslide located in the central portion of the Project site. Based on test trenching, borings, and test pits in the area, this slide is likely in the range of 25 feet in depth and extends into the adjacent golf course area.
- Slide B is a small, adjacent landslide of up to approximately 12 feet in depth, with indistinct margins.
- Slide C is a shallow landslide (10 to 12 feet in depth) that extends upslope into the adjacent golf course area. A keyway excavated into the slide in the adjacent golf course near the Project site boundary removed landslide debris and also included placement of subdrains.
- Slides D and E are shallow landslides (up to 10 feet at maximum depth) in areas of heavy tree cover, and they extend off-site into the adjacent residential area along Donna Maria Way.
- Slide F is a moderately deep possible landslide (the available data is not sufficient to determine whether or not this area is actually a landslide or a Pleistocene debris flow deposit), with debris flow deposits that may range up to 29 feet in depth) and that likely extend downslope into the adjacent residential area along Sager Court. There is no known evidence of movement of this possible slide/debris flow deposit.
- Slides G and H are shallow landslides (up to 10 feet at maximum depth) located in the creek banks in areas of heavy tree cover and are largely outside the proposed development area.
- Slide I is a small shallow slide above the existing Adobe Lane. This landslide probably does not exceed more than 5 feet in depth.

JVL’s investigation concluded that no deep-seated landslides exist on the site.

Soils Conditions

The site is underlain by moderate to highly expansive soils.  

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3 JVL Report, 2009, page 16
Figure 8-1
Areas of Potential Slope Failure
Regulatory Setting

State

Alquist-Priolo Earthquake Fault Zoning Act

The California Legislature passed the Alquist-Priolo Earthquake Fault Zoning Act in 1972 to mitigate the hazard of surface faulting to structures\(^\text{4}\) for human occupancy. The Act’s main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards. Local agencies must regulate most development in fault zones established by the State Geologist. Before a project can be permitted in a designated Alquist-Priolo Earthquake Fault Zone, the city or county with jurisdiction must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active or potentially active faults.

California Seismic Hazards Mapping Act

The California Seismic Hazards Mapping Act of 1990 (California Public Resources Code Sections 2690-2699.6) addresses seismic hazards other than surface rupture, such as liquefaction and seismically induced landslides. The Seismic Hazards Mapping Act specifies that the lead agency for a project may withhold development permits until geologic or soils investigations are conducted for specific sites and mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils.

California Building Code

Title 24 of the California Code of Regulations, also known as the California Building Code (CBC), sets minimum requirements for building design and construction. In the context of earthquake hazards, the CBC’s design standards have a primary objective of assuring public safety and a secondary goal of minimizing property damage and maintaining function during and following seismic events.\(^\text{5}\)

Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under state law, all building standards must be set forth in Title 24 to be enforceable. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety and general welfare through structural strength, means of egress facilities, and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures within its jurisdiction. The 2010 edition of the CBC is based on the 2009 International Building Code published by the International Code Conference. The 2010 CBC contains California amendments based on the American Society of Civil Engineers (ASCE) Minimum Design Standards 7-05. ASCE 7-05 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (such as wind loads) for inclusion into building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients which are used to determine a Seismic Design Category (SDC) for a project. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site and ranges from SDC A (very small seismic vulnerability) to SDC E/F (very high seismic vulnerability and near a major fault). Design specifications are then determined according to the SDC.

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\(^{4}\) California Division of Mines and Geology, 1997 revision, Fault-Rupture Hazard Zones in California, DMG Special Publication 42.

\(^{5}\) Bonneville, David, New Building Code Provisions and Their Implications for Design and Construction in California (abstract), 2007, obtained from [http://www.consrv.ca.gov/cgs/smip/docs/seminar/SMIP07/Pages/Paper12_Bonneville.aspx](http://www.consrv.ca.gov/cgs/smip/docs/seminar/SMIP07/Pages/Paper12_Bonneville.aspx)
Local

City of Orinda General Plan—Safety Element

- General Plan Implementation Policies 4.2.2.A and B require a geotechnical investigation and report, including assessments of seismic and landslide risks for all new development, including single family residences in Orinda. The JVL Report complies with these policies.
- Policies 4.2.2. C. and D. direct the City to develop regulations to ensure necessary geotechnical improvements for new development are implemented and maintained. The City has since adopted provisions in Orinda Municipal Code (OMC) section 16.20.030 in compliance with these policies.

City of Orinda General Plan—Conservation Element

The Guiding Policies for the City's Conservation Element call for the protection of creeks from siltation, pollution, and debris buildup, the development of an erosion control ordinance (see OMC Chapter 18.02 below), and the review of development proposals to ensure site design and construction methods that minimize soil erosion and volume and velocity of surface runoff, and that mitigate impacts on properties below the Project site (see OMC Chapter 15.36 below).

Orinda Grading Regulations

Chapter 15.36 of the OMC sets forth regulations for excavating, grading, and earthwork construction. Among other requirements, projects must provide detailed plans of all drainage systems and facilities, walls, cribbing, or other erosion protection devices to be constructed together with a map showing the drainage area and estimated runoff of the area served by any drainage systems or facilities (OMC section 15.36.420). The City Building Inspector or authorized designee may require a soil investigation and report which shall, among other issues, indicate the presence of critically expansive soils, which if not corrected would lead to defects in structures, buildings or other improvements and, if so, recommend corrective action (OMC section 15.36.450). The regulations also require applicants that cease work before completion to take all necessary steps to leave the premises in a condition that will be safe and will not cause damage to adjoining properties or to the public roads or to any natural or artificial drainage facilities through erosion of materials, landslides, or other instability of slopes and materials (OMC section 15.36.780). Similarly, the chapter requires temporary erosion control measures during construction to protect adjacent watercourses and public or private property from damage or erosion, flooding, and deposit of mud or debris originating from the site (OMC section 15.36.1100).

Stormwater Management and Discharge Control

Chapter 18.02 of the OMC protects and enhances the water quality in the City of Orinda's watercourses pursuant to, and consistent with, the Porter-Cologne Water Quality Control Act and the Federal Clean Water Act. The City mandates that all construction projects incorporate site-specific BMPs, which can be a combination of BMPs from the California Stormwater Quality Association’s Stormwater Best Management Practices Handbooks, Construction, January 2003, the San Francisco Bay Regional Water Quality Control Board Erosion and Sediment Control Field Manual, 2002, the City's grading and erosion control requirements and other generally accepted engineering practices for erosion control as required by the approving authority when undertaking construction activities. The City may establish controls on the rate, volume, and duration of stormwater runoff from new developments and redevelopment as may be appropriate to minimize the discharge and transport of pollutants.

Impacts and Mitigation Measures

Thresholds of Significance

Appendix G of the CEQA Guidelines (Environmental Checklist) contains a list of geological and soil impacts that may be considered significant. Implementation of the Project would have a significant effect on the environment if it were to:
1. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
   a) 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;
   b) Strong seismic ground shaking;
   c) Seismic-related ground failure, including liquefaction; or
   d) Landslides;
2. 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;
3. Result in substantial soil erosion or the loss of topsoil;
4. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property; or
5. 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.

Fault Rupture, Seismic Shaking, Seismic-Related Ground Failure, and Landslides

**Impact Geo-1:** Compliance with required State building codes and City policies, and implementation of Project elements will mitigate potential impacts so that the Project would not expose people or structures to potential substantial seismic-related adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, and landslides. (LTS)

The Hayward and Calaveras Faults are active faults capable of producing weak-to-strong ground shaking at the Project site. Slope stability in the Project area is generally considered to be poor, with high potential for landslides and rapid erosion.

**Applicable Policies and Standards**

Seismic design criteria of the CBC account for peak ground acceleration, soil profile, and other site conditions, and establish corresponding design standards intended primarily to protect public safety and secondly to minimize property damage. The City expressly adopted the CBC through OMC § 15.08.010.

City of Orinda General Plan Safety Element policies require that applications for tentative maps be accompanied by geologic and/or soil reconnaissance reports, prepared and signed by an engineering geologist, which are then peer reviewed by a Contra Costa County engineering geologist. (See OMC § 16.20.030.)

The City's Municipal Code also provides strict and comprehensive regulations for new subdivisions that address drainage (OMC Ch. 16.64) and grading (OMC Ch. 15.36). A parcel-wide detailed grading plan is required by the City before approval of a subdivision permit.

**Project Elements**

The Project design incorporates all of the recommendations of previous geotechnical reports, seismic design criteria of the CBC, and Orinda Municipal Code requirements as elements of the Project's design. These Project elements minimize impacts related to ground-shaking and unstable soils. These Project design elements include, but are not limited to:

- Removal and repair of Slide A along the southerly property boundary by removing the existing landslide material, keying into existing bedrock, and rebuilding the area with well compacted fill and
appropriate surface drainage. This slide repair would affect Lots 6 and 7, and portions of Lots 3, 4 and 8 (see Figure 8-2 for design details).  

- Depending on final home site location, over-excavating landslide materials and repairing soils in Slide B that may be located under the building footprint, only.

- Installing a row of large diameter, closely spaced, heavily reinforced stitch piers along the southerly edge of the property at Slide C. The piers would act as an underground retaining wall and would provide the same structural resistance to slide movement as would a buttress fill excavation, but would not require excavation within the riparian zone located on this slide area.

- Retaining the area underlying Slides D and E and the Pleistocene deposit/possible landslide F within the Project’s proposed open space easement. These slides are located in areas with heavy tree cover, and no corrective grading is recommended provided that these areas remain in open space.

- Maintaining a minimum of 25 foot setbacks from the top of Slides G and H.

- Retaining the area underlying the small Slide I as an unbuildable portion of the Adobe parcel, such that no corrective grading is recommended.

The slide repair and ground improvement plans for the Project site are limited to those areas as shown in Figure 8-3, and are generally inclusive of Slides A, at the property boundary of Slide C, and under the building footprints only at other locations within the site.

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7 Tentative Map for J&J Ranch, Schell and Martin, Inc., Sheet C2.0 Grading and Drainage Overview, latest revised date June 18, 2013
8 Jensen-Van Linden Associates, November 28, 2011
9 Darwin Meyers Associates, Geologic Peer Review, April 27, 2010. Table 3, summarizing and highlighting the recommendations of the JVL July 2009 report
Figure 8-2: Landslide A Repair Detail

Source: Jensen-Van Lienden Associates (June 2009)
Mitigation Measures

The Project applicant has also agreed to implement the following mitigation measures during Project construction activities, which are based on adherence to State and City regulations and the recommendations of the Project’s geotechnical engineer and geologist.

Mitigation Measure Geo-1: Geotechnical Report Recommendations. All grading and construction activity at the Project site shall comply with the recommendations of professionally prepared geotechnical reports, seismic design criteria of the CBC, and Orinda Municipal Code, including but not limited to the following:

1. All grading work conducted at the Project site shall demonstrate compliance with the Geotechnical Report’s specifications for engineering of cut and fill materials, specifications for sub-drainage on the site, and specifications for construction of retaining walls.

2. All new home construction shall demonstrate compliance with the Geotechnical Report’s specifications for structure foundations, and at such time as new homes are constructed, their construction methods shall demonstrate compliance with CBC requirements.

3. Any remedial slide repair work shall be done under the direct observation of both an engineering geologist and a geotechnical engineer to enable detailed examination of the subsurface conditions, and a refinement (either expansion or contraction) of the areas where soils repair work is currently proposed.

4. Any over-excavation and re-compaction operation associated with slide repair/ground improvement will involve reuse of the same on-site soils. No significant change in the permeability or infiltration rate of the soils in the areas to be graded shall result.

5. Extensive sub-drainage shall be installed as part of earthwork operations. The sub-drain outlet pipes shall be integrated into the project drainage system.

Conclusion

Applicable federal, state, and local regulations comprehensively address and provide for the mitigation of seismic shaking, seismic-related ground failure, and landslides. The Project incorporates design elements that have been carefully formulated for the Project site, based on expert opinion, that are consistent with this regulatory framework, and capable of mitigating potentially significant impacts at the Project site. The site-specific geologic/geotechnical investigations conclude that the Project as designed together with implementation of all geotechnical engineering recommendations identified in Mitigation Measure Geo-1 above, will reduce significant impacts related to seismicity and unstable soils to a level of less than significant.

Soil Instability

Impact Geo-2: Although the Project is located on areas of unstable soil, the Project as designed, which complies with State building code requirements and City policies, will mitigate potential impacts. The Project would stabilize the Project site and would not cause or result in on- or off-site landslides, lateral spreading, subsidence, liquefaction or collapse. (LTS with Mitigation)

Slope stability in the Project area is generally considered to be poor, with high potential for landslides and rapid erosion. Impact Geo-1 describes applicable policies and standards and Project elements which will ensure that no significant environmental effects related to seismic activity, ground failure and landslides would result. The Project and those same applicable policies and standards will enhance the stability of the Project site by repairing areas of historic landslides and preventing future soil instability.
Mitigation Measures

The potential for the Project to cause on- or off-site landslides or to exacerbate soils instability during grading will be rendered less than significant through implementation of the following mitigation measure, which the Project applicant has agreed to implement, and which is based on adherence to standard industry practices and City regulations.

Mitigation Measure Geo-2: Slope Stability. The Project applicant shall implement the following standard practices and regulatory requirements to minimize impacts related to instability during Project construction:

1. The method for grading to repair slides or to make excavations near property lines will reflect the topography and subsurface conditions at each location in order to incorporate the safest methodology. For example, some of the slides may be repaired in small sections rather than excavating the slide mass all at once.

2. Extensive subdrainage will be installed as part of the earthwork operation, reducing the volume of water that soils will be exposed to and increasing their stability;

3. Slide repair will take place during the site preparation stage, rather than during the individual lot development stage.

4. Excavation and slide repair work will be performed during the dry season.

5. Soil stockpile areas will be selected based on existing slope inclinations, proximity of adjoining improvements, and known subsurface conditions.

Conclusion

The well compacted fills and extensive subdrainage associated with the earthwork operation will significantly improve the overall stability of this site and adjoining sites. According to the JVL Report, implementation of the recommendations included in Mitigation Measure Geo-2 ensures that the Project will not result in potentially significant impacts related to unstable soils.

Soil Erosion

Impact Geo-3: The Project as proposed, along with implementation of required National Pollutant Discharge Elimination System (NPDES) permit requirements, and City policies that will mitigate potential impacts, the Project would not result in substantial soil erosion or the loss of topsoil. (LTS with Mitigation)

Surface drainage on the Project site flows downslope into Moraga Creek and the adjacent lots during periods of high runoff. During the construction process, soils will be exposed and could result in erosion during periods of rainfall.

Applicable Policies and Standards

Construction activities on the site must comply with uniformly applicable regulations that would substantially mitigate potential impacts related to soil erosion. The Project is subject to the development runoff requirements of the City's NPDES permit. Increases in runoff volume and flows shall be managed in accordance with the development runoff requirements, set forth in OMC chapter 18.02, designed to control erosion. OMC chapter 15.36 also requires erosion control measures during construction. Finally, the City requires that any premise that may contribute pollutants to the stormwater system undertake best management practices to reduce the potential for pollutants entering the system to the maximum extent practicable. Examples of best management practices include, but are not limited to, those described in publications by the United States Environmental Protection Agency, the California Water Boards, the California Stormwater Quality Association, the Bay Area Stormwater Management Agencies Association, the Contra Costa Clean Water Program, and the City of Orinda (OMC section 18.02.080).
Project Elements

Pursuant to applicable regulations, the Project applicant has prepared a preliminary Stormwater Control Plan (SWCP), for the Project (CDM Smith, Appendix 10A). The SWCP indicates how the Project’s storm drainage system has been designed to ensure that soil erosion and sedimentation of runoff water is minimized. The Project design separates runoff from undeveloped portions of the site and upstream lands (pervious surface flow) from runoff from the developed portions of the site. Pervious surface flow will percolate into the soil and when the soil becomes saturated, flow across the ground into natural drainage courses, as it currently does in the pre-development condition. Stormwater runoff from all newly constructed impervious surfaces will be diverted for water quality treatment, as required by State and Federal water quality standards, before being discharged into the natural drainage courses. An on-site stormwater detention basin will be utilized to control runoff at a rate that does not exceed the pre-Project flow rate. The SWCP addresses post-construction stormwater management and erosion control.

Mitigation Measures

The Project applicant has agreed to implement the following required mitigation measure to address water quality and erosion control during the construction phase of the Project (see also the discussion regarding water quality in the Hydrology chapter of this EIR under Impact Hydro-1).

Mitigation Measure Hydro-1A: Stormwater Pollution Prevention Plan (SWPPP). Prior to issuance of a grading or building permit, the Project applicant shall prepare and submit to the City for approval a Stormwater Pollution Prevention Plan that specifies pollution prevention measures to be implemented during the construction period. Specifically, the Project will be subject to the provisions in OMC sections 18.02.080 and 18.04.030, which require that all construction activities shall conform to:

1. the requirements of the California Stormwater Quality Association (CASQA) Stormwater Best Management Practices Handbooks, Construction, January 2003;
2. the San Francisco Bay Regional Water Quality Control Board Erosion and Sediment Control Field Manual, 2002;
3. the City’s grading and erosion control requirements, including but not limited to those indicated in OMC chapter 15.36; and
4. other generally accepted engineering practices for erosion control as required by the City. The City may establish controls on the rate, volume and duration of storm water runoff from new developments and redevelopment as may be appropriate to minimize the discharge and transport of pollutants.

Where guidelines or requirements for best management practices have been adopted by any federal, state, regional, city or county agency, for any activity, or operation of premises which may cause or contribute to non-storm water discharges, every person undertaking such activity or operation or owning and operating such premises shall comply with such guidelines or requirements. Implementation of the approved SWPPP, including established best management practices for erosion control during construction, will reduce construction-period erosion and sedimentation impacts to a less than significant level.

Conclusion

Applicable Federal, State, and local regulations comprehensively address and provide for the mitigation of soil erosion. The Project incorporates a SWCP that has been carefully formulated for the Project site, based on expert opinion, which is consistent with this regulatory framework and capable of mitigating potentially significant erosion impacts at the Project site. Additionally, implementation of Mitigation Measure Hydro-1A and its required best management practices for erosion control will mitigate potentially significant erosion impacts during construction activities. As a result, impacts related to soil erosion would be less than significant.
Expansive Soil

Impact Geo-4: Implementation of State building code requirements, City policies and Project-specific mitigation measures will mitigate potential impacts due to expansive soils to avoid substantial risks to life or property. (LTS with Mitigation)

The Project site is underlain by siltstone/claystone volcanic tuff bedrock which is moderately to highly expansive, and could create risks to life or property.

Applicable Policies and Standards

Orinda grading regulations address critically expansive soils, requiring a soil investigation and report to provide recommended corrective actions. The JVL Report provides this information for the Project.

Mitigation Measures

The Project applicant has agreed to implement the following mitigation measures, as recommended in the JVL Report.

Mitigation Measure Geo-4: Foundation and Slab Design. Building foundations and slabs on grade shall be designed based on the recommendations of the Project's geotechnical engineer (as included in the JVL Report) to ensure that buildings are not damaged by expansive soils. These design measures include:

1. Houses on the Project site shall be supported on drilled pier foundations at least 18 inches in diameter which will extend to at least 15 feet below the existing grade or the lowest finished grade, whichever is deeper.
2. The piers shall be designed for vertical loads, a "creep" load, and uplift pressure, as specified in the JVL Report.
3. Slabs on grade shall be constructed on a 2-foot mat of non-expansive engineered fill, as specified in the JVL Report.

Conclusion

The soil investigation and report prepared by JVL identifies the presence of expansive soils and provides site-specific recommendations to avoid significant impacts related to these soils. These design recommendations are incorporated into Mitigation Measure Geo-4, which the Project applicant has agreed to implement. With implementation, impacts related to expansive soils will be reduced to a less than significant level.

Septic Suitability

Impact Geo-5: The capability of Project site soils to support septic tanks or alternative waste water disposal systems does not apply, as the Project will use the public sewer system. (No Impact)

The Project does not propose use of septic tanks or alternative waste water disposal systems. Connections to the existing public sewer system will be made when residential units are constructed on individual lots.
The Project site is within the boundaries of the Central Contra Costa Sanitary District (CCCSD) and sewer service has been planned for this area.\textsuperscript{10} Thus, the Project would not result in any impacts associated with soils incapable of supporting the use of alternative waste water disposal systems.

**Cumulative Geologic and Soil Impacts**

**Impact Geo-6:** The implementation of site design recommendations and requirements in geotechnical reports, seismic design criteria of the CBC, and Orinda Municipal Code would not combine with other projects to result in cumulatively considerable off-site geologic and soil impacts. (LTS)

The JVL Report describes five landslides or Pleistocene debris deposits (slides A, C, D, E, and F) on the Project site that may extend onto areas adjacent to the site. The landslides are depicted in Figure 8-1. According to the JVL Report, implementation of the Project would not result in any significant impacts to off-site properties. The Project incorporates all recommendations from the JVL Reports addressing these slide areas.

Specifically, the downhill portions of landslide area A would be removed and rebuilt with engineered fill and appropriate subsurface drainage. The engineered fill of this slide provides an engineered buttress against the creep or slide of loose soils from off-site, uphill locations. Landslide C will be stabilized by installing a row of piers along the southerly edge of the property line, which will act as an underground retaining wall to provide structural resistance to slide movement. Landslide areas D and E, which are in an area of heavy tree cover, will be stabilized with the addition of subdrains to reduce the potential that these on-site areas may creep or slide onto adjacent, downhill locations. Further, the on-site portion of Landslide/Pleistocene debris deposit F will be removed and rebuilt as an engineered fill, providing a buttress against the potential slide of loose material onto off-site, downhill locations. Other Project elements include compliance with all recommendations related to engineering of subdrainage for the site and construction of foundations and retaining walls. With implementation of the aforementioned Project elements, the J&J Ranch Project would not result in significant off-site impacts.

Geologic, soil, and seismic impacts tend to be localized because the stability of soils on a project site is largely unaffected by the stability of soils that are not immediately adjacent. No destabilizing activities (such as grading or other construction activities) are anticipated on the developed areas in the immediate vicinity of the Project. The approved development on the adjacent Lavenida Lane Subdivision site is neither located uphill nor downhill from the J&J Ranch Project site, but laterally to the southeast. Thus, any unstable soils on the J&J Ranch site are not connected to soils on the Lavenida Lane Subdivision site. The proposed open space easement on the east property line between the J&J Ranch site and the Lavenida Lane Project site would also provide a substantial buffer between the two developments. Therefore, the Project would not result in any cumulatively considerable effects related to geology and soils.

\textsuperscript{10} Russell Leavitt, a representative from the CCCSD.
Hazards and Hazardous Materials

This chapter describes existing hazards on the site and the use of hazardous materials in the vicinity, and evaluates the extent to which hazards and hazardous materials may affect development of the Project site. The analysis and discussion in this section of the EIR is based on hazardous materials database queries as cited in the chapter and the following technical study:


Environmental Setting

Sensitive Receptors

The residents of this Project will be new receptors sensitive to hazards and hazardous materials. Other existing and proposed residential uses as well as the two schools in the vicinity are also considered sensitive receptors.

Known Contaminated Sites

The Project site does not appear on any list of known properties with hazardous waste or other contaminants, as compiled by state agencies pursuant to Government Code Section 65962.5. These lists include:

- hazardous waste and substance sites compiled by the Department of Toxic Substances Control (DTSC),
- leaking underground storage tank sites compiled by the State Water Resources Control Board (SWRCB),
- solid waste disposal sites compiled by SWRCB, and
- cease and desist orders and cleanup and abatement orders as compiled by SWRCB.

There are no known hazardous materials sites in the vicinity of the Project.\(^1\) The closest open cleanup site to the Project is a leaking underground storage tank site at 1405 Moraga Way at its intersection with Viader Road adjacent to the Moraga Shopping Center, over one mile away from the Project site.\(^2\)

According to a letter from Jensen-Van Lienden Associates, geotechnical engineering consultants, the Project site does not contain serpentinite bedrock or any other ultramafic rock, and it is thus highly unlikely that naturally occurring asbestos would be encountered on the site.\(^3\)

Project Site Soils Conditions

The Project site has previously been used for agriculture, which can result in certain residual contaminants. Organochlorine pesticides are the most commonly used pesticides since the 1940s, while

\(^1\) Search of DTSC EnviroStor database on July 11, 2014.  
\(^2\) Search of SWRCB GeoTracker database on July 11, 2014.  
\(^3\) JVL letter dated March 15, 2012 in Appendix 8D
arsenic compounds were in widespread use as a pesticide prior to the 1940s. Soil samples collected from each of the 13 lots proposed for development (see Figure 9-1) were tested for these contaminants. The investigation concluded that concentrations of these chemicals were below concentration levels considered to be potentially hazardous to construction workers or future residents of the Project site. Specifics of the investigation’s conclusions include the following:

- Low levels of organochlorine pesticides were detected on Lots 5, 6 and 7 at levels lower than those considered by the California Environmental Protection Agency (Cal-EPA) to be a threat to human health at residential sites.

- Levels of the organochlorine pesticide Dieldrin detected in samples from Lots 5 and 7 exceed the Regional Water Quality Control Board’s (RWQCB) Environmental Screening Level for groundwater protection. The geological/geotechnical investigations of the Project site (Appendices 8A and 8B) found groundwater seepage at depths between 17 and 30 feet below ground surface in the boreholes completed, with the groundwater table being found at a depth of 60 feet. At that depth, there is a very low likelihood that any measurable quantities of pesticides would be present in the groundwater.

- Arsenic was detected in each of the samples at levels that exceed both the Cal-EPA and RWQCB standards. However, the levels detected are consistent with background levels for arsenic typically present throughout Holocene soils in the San Francisco Bay Region. The senior engineering geologist for Questa Engineering interpreted these findings as background concentrations of arsenic.

- The detected concentrations of organochlorine pesticides and arsenic do not exceed any statutory levels for hazardous waste or hazardous materials as established by the State of California Code of Regulations and the Code of Federal Regulations.

Because of background arsenic levels and low levels of residual organochlorine pesticides discussed above, any soil exported from the site would require additional testing to determine its suitability for off-site re-use.

Wildfire Hazards

The State prepared an updated Fire Hazard Severity Zone Map for Contra Costa County in 2009. The Project site, as well as properties to the east (Lavenida Lane) and west are included within a Very High Fire Hazard Severity Zone on this map.⁴

Regulatory Setting

The following section provides the federal, State, and local regulatory framework for hazardous materials and waste, building materials (e.g., lead, asbestos), and worker health and safety.

The use, storage and disposal of hazardous materials, including management of contaminated soils and groundwater, is regulated by numerous local, State, and federal laws and regulations. The U.S. Environmental Protection Agency (U.S. EPA) is the federal agency that administers hazardous materials and hazardous waste regulations. State agencies include Cal-EPA, which includes the California Department of Toxic Substances Control (DTSC), the State Water Resources Control Board (State Water Board), the California Air Resources Board (CARB) and other agencies. The San Francisco Bay Regional Water Quality Control Board (RWQCB), the Bay Area Air Quality Management District (BAAQMD), Contra Costa County Health Services Department, and Orinda Fire Department each has jurisdiction on a regional or local level.

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Figure 9-1
Soil Sampling Location Map

Source: Questa Engineering Corp.
A description of each agency’s jurisdiction and involvement in the management of hazardous materials and wastes is provided below.

**Federal Regulations**

**Occupational Safety and Health Administration (OSHA)**

Worker health and safety is regulated at the federal level by the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA). The Federal Occupational Safety and Health Act of 1970 authorizes states (including California) to establish their own safety and health programs with OSHA approval; implementation of worker health and safety in California is regulated by the California Department of Industrial Relations (DIR). The DIR includes the Division of Occupational Safety and Health (DOSH), which acts to protect workers from safety hazards through its California OSHA (Cal/OSHA) program and provides consultative assistance to employers. California standards for workers dealing with hazardous materials are contained in CCR Title 8 and include practices for all industries (General Industrial Safety Orders), specific practices for construction, and other industries.

**Environmental Protection Agency (EPA)**

The U.S. EPA is the federal agency responsible for enforcement and implementation of federal laws and regulations pertaining to hazardous materials and hazardous waste. The federal regulations are primarily codified in Title 40 of the Code of Federal Regulations (40 CFR). The legislation includes the Resource Conservation and Recovery Act of 1976 (RCRA), the Superfund Amendments and Reauthorization Acts of 1986 (SARA), and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). The U.S. EPA provides oversight for site investigation and remediation projects, and has developed land disposal restrictions and treatment standards for the disposal of certain hazardous wastes.

**State Agencies**

Three State agencies, described below, regulate hazardous materials and waste applicable to the Project.

**Department of Toxic Substances Control**

In California, DTSC is authorized by U.S. EPA to enforce and implement federal hazardous materials laws and regulations. California regulations pertaining to hazardous materials are equal to or exceed the federal regulation requirements. Most State hazardous materials regulations are contained in Title 22 of the California Code of Regulations. DTSC generally acts as the lead agency for soil and groundwater cleanup projects that affect public health, and establishes cleanup levels for subsurface contamination that are equal to, or more restrictive than, federal levels. DTSC has also developed land disposal restrictions and treatment standards for hazardous waste disposal in California.

**State Water Resources Control Board**

The State Water Board enforces regulations on how to implement underground storage tank (UST) programs. It also allocates monies to eligible parties who request reimbursement of funds to clean up soil and groundwater pollution from UST leaks. The State Water Board also enforces the Porter-Cologne Water Quality Act through its nine regional boards, including the San Francisco Bay Regional Water Quality Control Board, described below.

**California Air Resources Board**

This agency is responsible for coordinating and oversight of State and local air pollution control programs in California, including implementation of the California Clean Air Act of 1988. CARB has developed State air quality standards, and is responsible for monitoring air quality in conjunction with the local air districts.
State Fire Marshal - California Government Code sections 51182 through 51189
These sections of the State Government Code address the responsibilities for properties located within a designated Very High Fire Hazard Severity Zone, which include:

- Maintenance of defensible space 100 feet from structures or to the property line if less than 100 feet from structures.
- Disclosure of the property’s location in this Zone to prospective buyers.
- Compliance with building standards that meet or exceed the State Fire Marshal’s building standards for fire risk reduction.

Regional Agencies
The following regional and local agencies have regulatory authority over any hazardous materials and waste on the site.

San Francisco Bay Regional Water Quality Control Board
The Project site is located within the jurisdiction of the San Francisco Bay Regional Water Quality Control Board. The RWQCB protects State waters in accordance with the Porter-Cologne Water Quality Act of 1969. The RWQCB can act as lead agency to provide oversight for sites where the quality of groundwater or surface waters is threatened, and has authority to require investigations and remedial actions.

Bay Area Air Quality Management District
The BAAQMD has primary responsibility for control of air pollution from sources other than motor vehicles and consumer products (which is the responsibility of U.S. EPA and CARB). BAAQMD prepares attainment plans for non-attainment criteria pollutants, control of stationary sources, and issues permits for activities including asbestos demolition/renovation activities (District Regulation 11, Rule 2).

Contra Costa County Health Services Department
Contra Costa County’s Health Services Department, Hazardous Materials Division, is the Certified Unified Program Agency (CUPA) for all areas of the county. It is the primary agency responsible for local enforcement of State and federal laws pertaining to hazardous materials management and oversight of hazardous materials investigations and remediation in Contra Costa County, and responds to emergencies related to hazardous materials. The County’s Hazardous Waste Management Plan (HWMP) is designed to protect human health and the environment through hazardous materials emergency planning and community programs. The HWMP provides for notification, evacuation, and clean up in the event of any incidents.

Local Regulations

City of Orinda Annex to 2010 ABAG Local Hazard Mitigation Plan
The City of Orinda Annex document supplements the multi-jurisdictional regional hazard mitigation plan prepared by the Association of Bay Area Governments (ABAG). It outlines hazards and risks present in the City of Orinda and mitigating actions.

Stormwater Management and Discharge Control
Chapter 18.02 of the OMC protects and enhances the water quality in the City of Orinda’s watercourses pursuant to, and consistent with, the Porter-Cologne Water Quality Control Act. The City mandates that all construction conform to the requirements of the California Stormwater Quality Association Stormwater Best Management Practices Handbooks for Construction Activities and New Development and Redevelopment.
City Fire Code

The City adopted a fire safety ordinance and the California Fire Code (OMC Ch. 8.20), which addresses, among other things, landscaping and access. The City has also set forth fire safety provisions in its building and subdivision ordinances (OMC, Titles 15 and 16) that require the review of subdivision plans by the fire district, the provision of fire hydrants, and that anyone selling or offering for sale a new residential dwelling prior to its completion offer buyers an option to install a sprinkler system in the home. In addition, the City has adopted the California Building Code, which sets forth rigorous fire and smoke protection standards.

Impacts and Mitigation Measures

Thresholds of Significance

Appendix G of the CEQA Guidelines (Environmental Checklist) contains a list of hazards and hazardous materials impacts that may be considered significant. Based on this list, implementation of the Project would have a significant effect related to hazards and hazardous materials if it were to:

1. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
2. 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.
3. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
4. 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.
5. 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 for people residing or working in the project area.
6. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area.
7. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
8. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Note that runoff and the potential impact on water quality are discussed in the hydrology chapter.

Routine Transport, Use, or Disposal of Hazardous Materials

Impact Haz-1: Construction activities routinely utilize construction materials and fuels considered hazardous. Residential operations generally utilize only incidental amounts of household hazardous chemicals. Compliance with applicable regulations will ensure the Project will not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. (LTS with Mitigation)

Project construction activities may involve the use, transport and disposal of hazardous materials such as gasoline, diesel fuel, lubricating oil, hydraulic oil, lubricating grease, automatic transmission fluid, paints, solvents, glues, and other substances used during construction. Construction of the Project would also require the use of gasoline and diesel-powered heavy equipment, such as bulldozers, backhoes, water
pumps and air compressors. If not appropriately managed, accidental spills of these hazardous materials could result in potentially significant impacts.

Project operation would not result in the use, transport and disposal of hazardous materials except for incidental use of household chemicals and vehicle fuels by residents on the site.

As discussed in the setting, there are residual agricultural chemicals in the soil common to sites with a history of agriculture in the area. A soil investigation determined that concentrations of hazardous contaminants in the soil are below levels considered to be potentially hazardous and would not pose a risk to people during construction or operations.\(^5\)

**Applicable Policies and Standards**

All construction activities would be required to conform to Title 49 of the Code of Federal Regulations, US Department of Transportation (DOT), State of California, and local laws, ordinances and procedures including Contra Costa County’s Hazardous Waste Management Plan.

The Project is subject to the development runoff requirements of the City's National Pollutant Discharge Elimination System (NPDES) permit, which requires best management practices for reduction of erosion, sediment and pollutants in runoff waters.

**Mitigation Measures**

**Mitigation Measure Hydro-1A: Stormwater Pollution Prevention Plan (SWPPP).** Prior to issuance of grading or building permit, the Project applicant shall prepare and submit to the City for approval a Stormwater Pollution Prevention Plan that specifies pollution prevention measures to be implemented during the construction period. Specifically, the Project will be subject to the provisions in OMC sections 18.02.080 and 18.04.030, which require that all construction activities shall conform to:

1. the requirements of the California Stormwater Quality Association (CASQA) Stormwater Best Management Practices Handbooks, Construction, January 2003;
2. the San Francisco Bay Regional Water Quality Control Board Erosion and Sediment Control Field Manual, 2002;
3. the City's grading and erosion control requirements, including but not limited to those indicated in OMC chapter 15.36; and
4. other generally accepted engineering practices for erosion control as required by the City. The City may establish controls on the rate, volume and duration of storm water runoff from new developments and redevelopment as may be appropriate to minimize the discharge and transport of pollutants.

**Conclusion**

Implementation of the approved Stormwater Pollution Prevention Plan (SWPPP), which is required to include Best Management Practices to prevent construction pollutants from contaminating stormwater, will provide for the protection of water quality in downstream waters such as Moraga Creek and will ensure that the Project will not result in significant impacts resulting from accidental spills or releases of hazardous chemicals.

Routine use of materials considered hazardous during the construction period and incidental operational use of household hazardous chemicals would be required to comply with applicable regulations regarding the handling of these materials. Required compliance with applicable regulatory requirements would minimize hazards to workers, the public, and the environment from use of hazardous products.

\(^5\) Questa Engineering Corporation, Draft Evaluation of Soils for Organochlorine Pesticides and Arsenic at the J&J Ranch Property, October 21, 2013
impact of the Project related to routine transport, use and disposal of hazardous materials would be less than significant.

Upset or Accidental Release

Impact Haz-2: The Project will 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. (LTS with Mitigation)

See the discussion under Impact Haz-1 related to routine use of hazardous materials during the construction period. Hazardous materials utilized during the construction period would comply with applicable regulations also intended to minimize the potential for upset or accidental release. The residual agricultural chemicals in the soil were determined not to pose a risk to people.6

Operationally, residential uses do not generally involve substantial amounts of hazardous materials such that there would be a significant hazard to the public or environment through upset or accident.

Lead-Based Paint or Asbestos

There are no records indicating the use or presence of asbestos or lead-based paint at the Moraga Adobe, or at the pool or other structures that would be removed as part of the Project.

Should such materials be present (as verified pursuant to the recommended mitigation measure, below), removal and or stabilization of these materials during demolition, removal and/or restoration efforts would be required to comply with existing regulations and standards such that hazards associated with their disturbance would be minimized.

Mitigation Measures

Mitigation Measure Haz-2: Asbestos and Lead-Based Paint Assessment. Prior to issuance of demolition, grading or building permits, the Project applicant shall submit a comprehensive assessment report to the City, signed by a qualified environmental professional, documenting the presence or lack thereof of asbestos-containing materials, lead-based paint, and any other building materials or stored materials classified as hazardous waste by State or federal law.

Applicable Policies and Standards

If any asbestos-containing materials (ACM) are found to be present in the pool or other structures to be removed, or within the Moraga Adobe, the Project applicant would be required to submit specifications to the City signed by a certified asbestos consultant for removal, encapsulation or enclosure of any identified ACM in accordance with all applicable laws and regulations, including but not necessarily limited to California Code of Regulations (CCR) Title 8; Business and Professions Code; Division 3; California Health & Safety Code 25915-25919.7; and Bay Area Air Quality Management District Regulation 11, Rule 2.

If lead-based paint is present, the Project applicant would be required to submit specifications to the City for the stabilization and/or removal of the identified lead paint in accordance with all applicable laws and regulations, including but not necessarily limited to Cal/OSHA’s Construction Lead Standard, 8 CCR 1532.1, and Department of Health and Safety Regulation 17 CCR sections 35001 through 36100.

Conclusions

The Project would have a less than significant impact related to upset or accidental release of hazardous materials. With implementation of Mitigation Measure Haz-7, any potential health risks associated with the

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6 Ibid
possible presence of asbestos and/or lead-based paint would be identified, and reduced to levels of less than significant through compliance with existing regulations and standards.

**Hazardous Materials Near a School**

**Impact Haz-3:** The Project will not produce hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste that could impact an existing or proposed school within one-quarter mile. *(LTS)*

The Project site is within one quarter mile of both the Del Rey Elementary School and Miramonte High School. The Project will involve the routine use, transport and disposal of hazardous materials, mostly during the construction period. Required compliance with applicable regulations as discussed above will ensure that hazardous materials transported to, used on, or stored on the Project site will be handled in accordance with federal and State law. The residual agricultural contaminants on the site do not pose a risk to on or off-site people, and runoff and erosion/runoff will be subject to best management practices to minimize pollutants.

Chapter 5, Air Quality, discusses the health risk from construction emissions on the Project site and determines that there are no significant off-site impacts, including at the nearby schools, from those emissions.

The Project’s impact with respect to hazardous materials within one quarter mile of a school is less than significant.

**Located on a Hazardous Materials Site**

**Impact Haz-4:** The Project site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. *(No Impact)*

The Project site is not located on a known hazardous materials site, including the DTSC’s EnviroStor database and the SWRCB’s GeoTracker database.

**Airport Safety Hazards**

**Impact Haz-5:** The Project site is not located within an airport land use, within two miles of a public airport or public use airport, or within the vicinity of a private airstrip, and therefore will not result in an airport-related safety hazard. *(No Impact)*

The Project site is not located within an airport land use plan nor is it located within two miles of an airport or private airstrip. Therefore, the Project would not result in an impact.

**Emergency Plans**

**Impact Haz-6:** The Project will not interfere with an adopted emergency response plan or emergency evacuation plan. *(LTS)*

Future residents of the Project will be able to evacuate the site via Donna Maria Way to El Camino Moraga and Moraga Way, which is a major arterial. The addition of 13 households to this route would not physically interfere with the ability of other properties in the vicinity to evacuate. Given the Project site’s location at the edge of the City, bordering on a golf course and at the terminus of a roadway, the Project would not physically interfere with any emergency response plan or emergency evacuation plan. The impact is therefore less than significant.
Wildland Fires

Impact Haz-7: The Project is located within a Very High Fire Hazard Severity Zone but would incorporate recommended Project elements to minimize the risk from fires, including defensible space, sprinklers in structures, adequate provision of fire hydrants and for fire apparatus access. The Project will not expose people or structures to a significant risk of loss, injury or death involving wildland fires. \textit{(LTS with Mitigation)}

The Project site is located within a Very High Fire Hazard Severity Zone (VHFHSZ) and is located near the open space of the East Bay Hills. Until the Lavenida Lane project is developed, the property east of the Project site is also unmaintained open space which could host a wildland fire. Exposure of people or structures to a wildland fire would result in potentially significant impacts.

Applicable Policies and Standards

Properties within a VHFHSZ are subject to the provisions in the California Government Code sections 51182 through 51189, which require the maintenance of defensible space and adherence to applicable State building standards. The Project is also subject to all City building standards and California Fire Code and California Building Code requirements, all of which incorporate standards to reduce risks from fires to structures and occupants.

Project Elements

The Project will transform large sections of the Project site in ways that will reduce the risk from wildland fire. Among other actions the Project will remove non-native plants and dead trees and shrubs; provide new landscape with drought-resistant native species; extend Adobe Lane, which will create a fire break in part of the Project site; and result in site occupation and maintenance which will reduce the likelihood of fuel buildup. Project development will also expand site access for fire department apparatus and will improve access to water supplies.

Mitigation Measures

The Moraga-Orinda Fire District has reviewed the Project and the applicant has agreed to incorporate all Fire District recommendations, as identified in the following mitigation measure.

Mitigation Measure Haz-7: Fire Safety. The Project shall comply with the City’s fire safety ordinance, the California Fire Code, fire safety provisions of the City’s building and subdivision ordinances and the California Building Code. Specifically, the Project shall incorporate the following elements:

1. Fire apparatus roadways (public, private streets, roads and in some instances driveways used for vehicle access) shall extend to within 150 feet of any portion of an exterior wall of the first story of any building.
2. Fire apparatus roadways in excess of 150 feet in length shall provide approved fire apparatus turnarounds.
3. Fire apparatus roadways shall have a minimum unobstructed width of 20 feet and an unobstructed vertical clearance of not less than 13 feet 6 inches.
4. Adjacent to fire hydrants, fire apparatus roadways shall be a minimum of 28 feet in width for at least 20 feet in both directions from the fire hydrant.
5. Fire apparatus roadways less than 36 feet in width, but more than 28 feet shall be marked as a fire lane on one side only. Fire apparatus roadways less than 28 feet in width shall be marked as fire lanes on both sides of the street.
6. Fire apparatus roadways with restricted parking designated as fire lanes shall be marked with red curbs and fire lane signs or red curbs and face of curb stenciling stating: “NO STOPPING FIRE LANE – CVC 22500.1”

7. Fire apparatus roadways shall be capable of supporting the imposed weight of fire apparatus (40,000 pounds) and shall be provided with a paved or concrete surface.

8. Fire apparatus roadways shall be installed and fire hydrants in service prior to commencement of framing. Compliance with this requirement shall be verified by inspection by the Fire District.

9. The Project shall include wet barrel, standard steamer type (1-4 ½” and 1-2 ½”) outlet fire hydrants.

10. Fire flow shall be per California Fire Code and shall be between 1,500 gallons per minute (gpm) and 2,000 gpm.

11. Residential fire sprinkler systems shall be required in all structures.

Conclusions
The Project is designed in accordance with Fire Department recommendations and, with implementation of Mitigation Measure Haz-7, will meet City and State requirements for development in a high risk fire zone. Development of the site will also result in site maintenance and greater access for fire response equipment, further reducing the risks of a wildland fire occurring on the Project site. As a result, the impact is less than significant.

Cumulative Hazards Impact

Impact Haz-8: The Project will not result in any cumulatively considerable significant impacts from hazards or hazardous materials. (LTS)

The Project elements and applicable policies and regulations described above will mitigate the risk and impacts, if any, from hazardous materials transport, use, disposal, or accidental release to a less than significant level both on the Project site and in its vicinity. The discussions under Impact Haz-1 (transport), Haz-3 (nearby schools), and Haz-6 (emergency response and evacuation) address potential impacts to off-site locations, and find that the impact will be less than significant. Development of the Project will reduce the risk of wildland fire on the Project site, thereby reducing cumulative risk to nearby properties and residents as well.

Concurrent development of the nearby Lavenida Lane and Camino Ricardo projects could result in an increase in the amount of hazardous materials being transported and used in the area during their construction periods. All three developments are subject to the same federal, State, and County regulations and policies related to hazardous materials. Conformance with the applicable regulations and policies would reduce cumulative impacts to a less than significant level through the application of best practices in the transport, handling, storage, and of hazardous materials and through conformance with established accident response protocol.

All three projects eventually lead to Moraga Way, which is likely to serve as an area evacuation route. The size of these projects, even combined, is relatively minor compared to the amount of other development in the area. While these projects will add additional traffic to this potential evacuation route in the case of an emergency, it would not be to the point of physically interfering with evacuation and not cumulatively considerable.

As with the Project, development and occupation of these other sites will reduce the likelihood of wildland fires occurring in the vicinity.

Overall, the cumulative impact of the Project along with the other projects would be less than significant.
Hydrology and Water Quality

This section evaluates the Project's potential impacts related to hydrology and water quality. It describes the existing hydrology and water quality conditions in the vicinity of the Project site and evaluates the extent to which development of the Project may affect hydrology and water quality. The analysis and discussion in this chapter is based primarily on the following:

- CDM Smith, Stormwater Control Plan (SWCP) for Subdivision 9271, May 15, 2012; and
- CDM Smith’s letter to the City on September 17, 2012, the accuracy of which was confirmed by the City Engineer.

The SWCP and the CDM Smith letter are included as Appendix 10 to this Draft EIR.

Environmental Setting

Drainages

The Project site is situated on a hillside. There are four existing drainages on the site, including Moraga Creek (a perennial drainage), and three ephemeral drainages that traverse the site and flow generally in a northeasterly direction into Lower Moraga Creek. These drainages are shown on Figure 10-1 and described below.

Lower Moraga Creek.

Lower Moraga Creek is a perennial drainage tributary to San Leandro Creek that borders the Project site on the north for a distance of approximately 800 feet, and runs between the Project site and the Del Rey Elementary School property. The normal elevation of Moraga Creek ranges from 544 to 535 feet within the Project site. According to FEMA, a 10-year storm will raise the 540 foot water surface to approximately 549 feet, and a 100-year storm will raise it to approximately 551 feet.

Tributary 1

Tributary 1 is the westernmost and smallest of the three drainage channels. Flows into Tributary 1 are derived from runoff from a 4.4-acre watershed in the western portion of the Project site, also including some land in the adjacent golf course to the south. Runoff within this watershed flows from this tributary into a storm drain on the northern edge of the Project site, enters a 24-inch pipe to pass under several residential properties (at addresses 62, 64 and 66 Donna Maria Way), before entering an 18-inch pipe to pass under Donna Maria Way and under a residential property (at address 45 El Camino Moraga), before its outflow into Moraga Creek.

Rate of flow from the 4.4 acre western watershed due to a 10-year storm is estimated at 7.7 cubic feet per second (cfs) with a time of concentration (i.e., the time needed for water to flow from the most remote point in the watershed to the watershed outlet) of 8 minutes. The existing 18-inch pipe under Donna Maria Way can convey 18 cfs, adequate to convey the 10-year flow.
Figure 10-1
Existing Drainages

Source: Schell and Martin, 2012
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**Tributary 2**

Tributary 2 is generally in the central part of the property, and drains an 8.7-acre watershed, including some land in the adjacent golf course to the south. Above this watershed is another 35-acre watershed uphill from the Moraga Country Club. That watershed flows into a detention basin on the golf course, which outflows through a 30-inch pipe and into Tributary 2. Runoff from the central watershed flows across an adjacent residential property (at address 90 Donna Maria Way) before entering a 20-inch steel pipe to pass under Donna Maria Way, and then proceeds into a channel which outflows into Moraga Creek.

The rate of flow from the 8.7 acre central watershed under 10-year storm conditions is estimated at 13.6 cubic feet per second (cfs), with a time of concentration of 10 minutes. The 10-year inflow to the Moraga Country Club detention basin is 55 cfs, and an outflow pipe into the Project site reduces the rate to 40 cfs. Total 10-year flow at the entry point of the culvert under Donna Maria Way is a combination of these two runoffs, estimated at 53.6 cfs. The existing 20-inch pipe under Donna Maria Way can convey 22 cfs, which is less than half of the capacity needed to convey the existing 10-year outfall into Moraga Creek.

**Tributary 3**

Tributary 3 runs along the Project site’s eastern boundary for a distance of about 900 feet, between the site and the now vacant, but approved Lavenida Lane subdivision site. This third drainage is a wetland. All runoff on the eastern third of the Project site flows to the wetland or directly into Moraga Creek.

**Soil and Permeability**

Soil types and hydrologic soil groups on the Project site are Dibble silty clay loam (60% of site, hydrological soil group C), Diablo clay (25%, group D), and Copley clay (15%, group D). The clay soil and steep slope of the Project site produce overland runoff rather than ground infiltration.

**Regulatory Setting**

Federal, State, and local agencies regulate activities that could affect hydrological and water quality features in the Project area. This section describes the regulatory framework that applies to the Project.

**Federal**

**Clean Water Act (CWA)**

The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the U.S. and gives the USEPA the authority to implement pollution control programs such as setting wastewater standards for industry. The CWA sets water quality standards for all contaminants in surface waters. The statute employs a variety of regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. The Corps has jurisdiction over all waters of the U.S. including, but not limited to, perennial and intermittent streams, lakes, and ponds, as well as wetlands in marshes, wet meadows, and side hill seeps. Under Section 401 of the CWA every applicant for a federal permit or license for any activity that may result in a discharge to a water body must obtain State Water Quality Certification that the proposed activity will comply with state water quality standards.

The National Pollutant Discharge Elimination System (NPDES) permit program under the CWA controls water pollution by regulating point and non-point sources that discharge pollutants into “waters of the U.S.” California has an approved state NPDES program. The USEPA has delegated authority for NPDES permitting to the California State Water Resources Control Board (SWRCB), which has nine regional boards. The San Francisco Bay Regional Water Quality Control Board (RWQCB) regulates water quality in the Project area.

Section 303(d) of the CWA requires that each state identify water bodies or segments of water bodies that are “impaired” (i.e., not meeting one or more of the water quality standards established by the state).
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These waters are identified in the Section 303(d) list as waters that are polluted and need further attention to support their beneficial uses. Once the water body or segment is listed, the state is required to establish Total Maximum Daily Load (TMDL) for the pollutant causing the conditions of impairment. TMDL is the maximum amount of a pollutant that a water body can receive and still meet water quality standards. Generally, TMDL is the sum of the allowable loads of a single pollutant from all contributing point and non-point sources. The intent of the Section 303(d) list is to identify water bodies that require future development of a TMDL to maintain water quality.

In accordance with Section 303(d), the San Francisco Bay RWQCB has identified impaired water bodies within its jurisdiction, along with the pollutant or stressor responsible for impairing the water quality. Moraga Creek is not identified as impaired.¹

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, Division 7 of the California Water Code, allows the SWRCB to adopt statewide water quality control plans. The purpose of the plans is to establish water quality objectives for specific water bodies. The act also authorizes the NPDES program under the CWA, which establishes water quality requirements for discharges to waters of the state. Most of the implementation of SWRCB’s responsibilities is delegated to nine regional boards. The San Francisco Bay RWQCB has established permit requirements for stormwater runoff for the Project area (see Regional Regulatory Setting below).

State Water Resources Control Board

Stormwater discharges from construction activities on one acre or more are regulated by the State Water Resources Control Board (SWRCB) and are subject to the permitting requirements of the NPDES General Permit for Discharges of Stormwater Runoff Associated with Construction Activity (General Construction Permit). The General Construction Permit requires the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) for construction activities. The SWPPP must be prepared before the construction begins, and in certain cases before demolition begins. The SWPPP must include specifications for best management practices (BMPs) that would be implemented during construction to control degradation of surface water by preventing soil erosion or the discharge of pollutants from the construction area. The SWPPP must also describe measures to prevent or control runoff after construction is complete, and identify procedures for inspecting and maintaining facilities or other elements. Required elements of a SWPPP include:

- Site description addressing the elements and characteristics specific to the site
- Descriptions of BMPs for erosion and sediment controls;
- BMPs for construction waste handling and disposal;
- Implementation of approved local plans;
- Proposed post-construction controls; and
- Non-stormwater management.

Examples of typical construction BMPs include scheduling or limiting activities to certain times of year, installing sediment barriers such as silt fence and fiber rolls, maintaining equipment and vehicles used for construction, tracking controls such as stabilizing entrances to the construction site, and developing and implementing a spill prevention and cleanup plan. Non-stormwater management measures include installing specific discharge controls during certain activities such as paving operations, vehicle and equipment washing and fueling.²

¹ Statewide 2010 Integrated Section 303(d) List available online at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml
Regional

Regional Water Quality Control Board
The San Francisco Bay RWQCB is responsible for the protection of beneficial uses and the water quality of water resources within the San Francisco Bay region. The San Francisco Bay RWQCB prepared the San Francisco Bay Basin Water Quality Control Plan (Basin Plan) for San Francisco Bay. The Basin Plan contains descriptions of the legal, technical, and programmatic bases of water quality regulation in the region and describes beneficial uses of major surface waters and their tributaries. The San Francisco Bay RWQCB also administers the NPDES stormwater permitting program and regulates stormwater in the San Francisco Bay region.

Stormwater discharges from construction activities on one acre or more are regulated by the RWQCB and are subject to the permitting requirements of the Construction General Permit. Given its size, the Project will be required to comply with the current NPDES permit requirements to control stormwater discharges from the construction site.

Local

City of Orinda General Plan – Conservation Element
Guiding policies in the Conservation Element include Policy 4.1.1(E): Protect creeks from siltation, pollution, and debris buildup. Implementing policies in the Conservation Element include:

- Policy 4.1.2(F): Develop a creek maintenance ordinance. (See OMC Chapter 18.03 below.)
- Policy 4.1.2(G): Develop an erosion control ordinance. (See OMC Chapter 18.02 below.)
- Policy 4.1.2(H): Review development proposals to ensure site design and construction methods that minimize soil erosion and volume and velocity of surface runoff, and that mitigate impacts on properties below the Project site. (See OMC Chapter 15.36 below.)

Zoning
Zoning provisions related to hydrology and water quality include:

- OMC section 17.4.6 details side slope ratios and setback distances for water channels, including perennial tributaries and ephemeral channels.
- OMC section 17.15.2.E Water Pollution prohibits discharge of liquids of any kind into a watercourse or the ground, except in compliance with applicable law and regulations including NPDES permits and the requirements of the RWQCB.
- OMC Chapter 17.7 sets development standards for hillside development in order to minimize the water runoff and soil erosion problems incurred in adjustment of hillside terrain, among other objectives.

Subdivision - Drainage
OMC Chapter 16.64 addresses drainage requirements for subdivisions. Requirements include:

- Surface waters flowing from the subdivision must be conveyed to a natural watercourse or an existing adequate storm drainage facility.
- Minor drainage facilities, channels and conduits shall have sufficient capacity to contain a ten-year frequency of average recurrence interval runoff.
- Structure setbacks from unimproved water channels shall be shown on the final map. These setbacks are required to protect structures from flood hazards and other surface waters.
Orinda Grading Regulations

Chapter 15.36 of the OMC sets forth regulations for excavating, grading, and earthwork construction. Among other requirements, projects must provide detailed plans of all drainage systems and facilities, walls, cribbing, or other erosion protection devices to be constructed together with a map showing the drainage area and estimated runoff of the area served by any drainage systems or facilities (OMC section 15.36.420). The regulations also require applicants that cease work before completion to take all necessary steps to leave the premises in a condition that will be safe and will not cause damage to adjoining properties or to the public roads or to any natural or artificial drainage facilities through erosion of materials, landslides, or other instability of slopes and materials (OMC section 15.36.780). Similarly, the chapter requires temporary erosion control measures during construction to protect adjacent watercourses and public or private property from damage or erosion, flooding, and deposit of mud or debris originating from the site (OMC section 15.36.1100).

Sections 15.36.960 through 15.36.1020 address drainage. Requirements include:

- Storm drainage structures, systems and facilities shall be provided as required by the City Building Official and in accordance with standard specifications on file in the Building Inspection Department. Design shall be in accordance with recognized principles of hydraulics.
- All drainage facilities shall be designed to carry surface waters to the nearest practical street, storm drain, or natural watercourse, approved by the City Building Official as a safe place to discharge such waters. If the drainage device discharges onto natural ground, rip-rap or a similar energy dissipater may be required.
- Berms, swales or other devices shall be provided at the top of cut or fill slopes to prevent surface waters from flowing over or onto and damaging the face of the slope. Special drainage provisions shall be made where a building or structure exists within five feet of the top of a slope.

Stormwater Management and Discharge Control

OMC Chapter 18.02 protects and enhances the water quality in the City of Orinda's watercourses pursuant to, and consistent with, the Porter-Cologne Water Quality Control Act and the Federal Clean Water Act. The City mandates that all construction projects incorporate site-specific BMPs, which can be a combination of BMPs from the California Stormwater Quality Association Stormwater Best Management Practices Handbook, Construction, January 2003, the San Francisco Bay Regional Water Quality Control Board Erosion and Sediment Control Field Manual, 2002, the City's grading and erosion control requirements and other generally accepted engineering practices for erosion control as required by the approving authority when undertaking construction activities. The City may establish controls on the rate, volume, and duration of stormwater runoff from new developments and redevelopment as may be appropriate to minimize the discharge and transport of pollutants.

Clean Water, Drainage, and Related Riparian Habitat Regulations

OMC Title 18 addresses stormwater management and control; watercourse maintenance, alteration, and protection; design standards for watercourses; and floodplain management.

Chapter 18.02 carries out the conditions in the City's NPDES permit, requiring development applications to be accompanied by a stormwater control plan that meets the criteria in the most recent version of the Contra Costa Clean Water Program Stormwater C.3 Guidebook and to develop and implement a stormwater pollution prevention plan. It also requires any person owning or operating premises that may contribute pollutants to the City's storm water system, as well as all construction projects, to incorporate all practicable best management practices to reduce the potential for pollutants entering the system.3

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3 OMC section 18.02.080.A lists examples of BMPs for property operations to include those described in publications by the United States Environmental Protection Agency, the California Water Boards, the California Stormwater Quality Association, the Bay Area Stormwater Management Agencies Association, the Contra Costa Clean Water Program, and the City of Orinda. OMC section 18.02.080.F lists BMPs for construction which are a combination of BMPs from the California BMP Handbook, Construction, January 2003, the Caltrans Stormwater Quality Handbooks, Construction Site Best Management Practices
Since the Project site is bordered by a watercourse, a riparian landscape plan is required for the Project. OMC Chapter 18.04 establishes standards for this plan, including, but not limited to:

- Grading shall be minimized and shall replicate the site's natural drainage patterns;
- The grading/drainage plan shall be designed to the satisfaction of the City using best management practices to minimize the concentration of stormwater runoff and to maximize pervious surface infiltration on site in order to minimize the impact to creek hydrology and habitat;
- Drainage pipes may not discharge to a watercourse. Where practicable, drainage should be routed to landscaped areas;
- Landscaping shall not require irrigation after establishment;
- Construction should be carried out during the dry season;
- Fill shall not be placed within the watercourse setback unless specifically authorized by the City Engineer, the responsible resource agencies and the approved plans;
- The Planning Director shall be contacted prior to construction to ensure compliance with stormwater discharge prevention requirements.

Impacts and Mitigation Measures

Thresholds of Significance

Appendix G of the CEQA Guidelines (Environmental Checklist) contains a list of hydrology and water quality impacts that may be considered significant. Based on this list, implementation of the Project would result in a significant impact related to hydrology or water quality if it would:

1. Violate any water quality standards or waste discharge requirements;
2. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;
4. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
5. 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;
6. Otherwise substantially degrade water quality;
7. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
8. Place structures that would impede or redirect flood flows within a 100-year flood hazard area; or

Manual, March 2003, the San Francisco Bay Regional Water Quality Control Board Erosion and Sediment Control Field Manual, 2002, the City's grading and erosion control ordinance and other generally accepted engineering practices for erosion control as required by the approving authority. The City may establish controls on the rate, volume, and duration of stormwater runoff from new developments as may be appropriate to minimize the discharge and transport of pollutants.
Chapter 10: Hydrology and Water Quality

9. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam, or inundation by seiche, tsunami, or mudflow.

Water Quality and Discharge

Impact Hydro-1: Implementation of Project elements designed to comply with required Federal, State, and City regulations regarding stormwater runoff and water discharge for the Project site will mitigate potential impacts, such that the Project would not violate water quality standards or waste discharge requirements. (LTS with Mitigation)

Construction

Site preparation and construction activity associated with the Project could result in soil erosion, which could have adverse effects on water quality. If potential pollutants associated with construction activities (including minor quantities of paint, solvents, oil and grease, and petroleum hydrocarbons) were allowed to enter into storm water runoff from the site, they could contribute to potential degradation of downstream receiving waters.

Mitigation Measures

The Project applicant has agreed to implement the following required mitigation measure to address water quality and erosion during the construction phase of the Project.

Mitigation Measure Hydro-1A: Stormwater Pollution Prevention Plan (SWPPP). Prior to issuance of grading or building permits, the Project applicant shall prepare and submit to the City for approval a Stormwater Pollution Prevention Plan that specifies pollution prevention measures to be implemented during the construction period. Specifically, the Project will be subject to the provisions in OMC sections 18.02.080 and 18.04.030, which require that all construction activities shall conform to:

1. the requirements of the California Stormwater Quality Association (CASQA) Stormwater Best Management Practices Handbooks, Construction, January 2003;
2. the San Francisco Bay Regional Water Quality Control Board Erosion and Sediment Control Field Manual, 2002;
3. the City’s grading and erosion control requirements, including but not limited to those indicated in OMC chapter 15.36; and
4. other generally accepted engineering practices for erosion control as required by the City. The City may establish controls on the rate, volume and duration of storm water runoff from new developments and redevelopment as may be appropriate to minimize the discharge and transport of pollutants.

Where guidelines or requirements for best management practices have been adopted by any federal, state, regional, city or county agency, for any activity, or operation of premises which may cause or contribute to non-storm water discharges, every person undertaking such activity or operation or owning and operating such premises shall comply with such guidelines or requirements.

Implementation of the approved SWPPP, including established best management practices will reduce construction-period water quality effects to a less than significant level.

Operations

Operational activities at the Project site that may generate and/or result in the pollution of stormwater runoff include motor oil and other automotive fluids from spills and leaks; metals from brake pad dust; pesticides, fertilizers and herbicides used in on-site landscaping; air pollutants deposited on roof tops; decomposition of roofing and roof gutter materials and other building materials; trash; and excess
irrigation water. If allowed to be captured in runoff during storm events, these pollutants would enter the storm drainage system and eventually contribute to surface water quality degradation.

Applicable Policies and Standards
City regulations in the OMC regarding grading, drainage, stormwater management, discharge control, site design, and clean water require implementation of all applicable Federal, State, and regional regulations related to water quality and waste discharge. These regulations require that the Project be designed to minimize and treat stormwater runoff into surface waters and protect the quality of surface waters through setbacks, landscape standards, and other measures.

The City requires measures to reduce or eliminate operational and construction pollutants in runoff through the application of best management practices (BMPs). The Project is required to comply with NPDES permit requirements and the Project applicant must prepare a Storm Water Control Plan (SWCP) for City review and approval.

Project Elements - Storm Water Control Plan (SWCP)
A Preliminary Storm Water Control Plan (SWCP) has been prepared for the Project (see Figure 10-2). The SWCP is designed to minimize potential adverse impacts to water quality and to ensure that soil erosion is minimized and hazardous construction materials are adequately contained. Generally, the SWCP design incorporates facilities to separate runoff from undeveloped portions of the site and upstream lands (pervious surface flow), from runoff from the developed portions of the site (impervious flow).

Low Impact Design Strategies
The SWCP includes low impact development design strategies to help manage runoff. The Project layout is designed to limit the area of development and minimize impervious surfaces. Natural channels on the Project site are preserved via the open space easement, and used to convey pervious runoff. Structure setback lines are established from these channels as well as from Moraga Creek.

Management of Pervious Runoff
Pervious surface flow from the undeveloped portions of the site will percolate into the soil and when the soil becomes saturated, flow across the ground into natural drainage courses as it does in the pre-development state.

The Project will enhance and improve the existing 20-inch storm drain pipe under Donna Maria Way by way of a debris rack, replacement of the pipe or another measure, depending on final grading and improvement plans.

Management of Impervious Runoff
Stormwater runoff from all impervious surfaces associated with existing and developed portions of the site will be diverted for treatment, as required by State and Federal water quality standards, before being discharged into the natural drainage courses. Discharge will be controlled at a rate that does not exceed the pre-Project rate.

At the time subdivision improvements are constructed, a stormwater drainage system will be installed to convey stormwater runoff from the roadways to the treatment facilities. Stormwater junction boxes will also be installed with the subdivision improvements and will serve as connection points for individual drainage systems installed on home sites as the homes in the subdivision are constructed. Impervious surface drainage from the home sites will either connect to the stormwater system installed with the subdivision improvements, or will be treated on the home sites prior to discharge in a natural drainage course. In this manner, all stormwater runoff from impervious surfaces will be collected and conveyed to a treatment facility before being discharged into a natural drainage.
Impervious surface flows from the Project roadway, cul-de-sacs, sidewalks, driveways, houses and from the existing Moraga Adobe site will be collected in the stormwater drainage system and conveyed to a bio-retention facility located on Lots 1 and 2. The bio-retention facility will remove pollutants primarily by filtering runoff slowly through an active layer of soil. It will require routine inspection and maintenance, as described in the SWCP, to be undertaken by a Homeowners Association. The Project’s bio-retention facility is located on the northerly lower, more flat portion of the site near Moraga Creek.

After treatment in the bio-retention facility, runoff will be released into Moraga Creek at a controlled rate that does not exceed the pre-Project rate. The bio-retention facility is designed consistent with the 6th Edition (February 15, 2012) of the Contra Costa Clean Water Program Stormwater C.3 Guidebook (see Appendix 10A, Appendix A). Given the soil types present on the Project site and the site’s steep slopes, placement of interim stormwater control and treatment devices would be difficult, and a bio-retention facility is the best available management practice and integrated management practice (IMP) applicable to the site for both treatment and flow control (see Table 4.9 of the C.3 Guidebook).

This stormwater control system has been designed to comply with municipal standards, and consistent with the 6th Edition (February 15, 2012) Contra Costa Clean Water Program Stormwater C.3 Guidebook. Its implementation would ensure that any increase in runoff into Lower Moraga Creek would be de minimis.4

**Mitigation Measures**

In addition to the SWCP design elements, the Project applicant has agreed to implement the following mitigation measure to address water quality and erosion during on-going operation of the Project.

**Mitigation Measure Hydro-1B: Source Controls.** To further limit potential pollutants from entering stormwater runoff, the following source control measures will be implemented:

1. All on-site drain inlets will be marked as “No Dumping, Drains to Bay” or equivalent.
2. New owners will receive information on stormwater pollution prevention and on integrative pest management to aid in maintaining landscaping using minimal or no pesticides.
3. Existing native trees, shrubs, and ground cover will be preserved to the extent possible.
4. Because of the clay soil and steep slope of the Project site (which tend to result in over-land runoff rather than ground infiltration), permeable pavement for the Project roadway is not recommended, although gravel paving should be considered at parking bays where slopes are not steep.

**Mitigation Measure Hydro-1C: Compliance with C.3 Provisions.** Final design elements of the SWCP shall conform to all applicable regulatory measures, including the Contra Costa Clean Water Program Stormwater C.3 Guidebook, including but not limited to the following:

1. Individual lot development will be subject to the review and approval of the City engineer to ensure consistency with all applicable regulatory requirements.
2. As part of the Final Grading and Improvement Plans, the City shall confirm that post development runoff to lower Moraga Creek does not exceed one percent of pre-project runoff flow.
3. The Final Stormwater Control Plans shall show the existing drainage pipes and direction of overland/surface flows.
4. The Final Grading and Improvement Plans shall include, if the soils report so indicates, facilities for controlling any surface and sub-surface seepage along the downslope of lots 9 through 11. These waters shall not be conveyed to the bio-retention basin.

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4 CDM Memorandum, August 5, 2012, Appendix D
5. The repair/stabilization of soils with large diameter piers shall comply with the City’s Soil Report Standards, if determined necessary to comply with applicable regulatory requirements.

6. The City engineer shall confirm that the overflow pour wall and erosion control measures for the slope below the pour wall conform to applicable regulatory requirements. In addition, the dimensions of the bioretention basin shall be subject to the final review and approval of the City engineer to confirm their compliance with all applicable regulatory requirements.

7. The Final Grading and Improvement Plans shall show the path that connects Dolores Way to Adobe Lane.

8. Subdrains shall be installed as part of the slide repair and subdivision development to ensure subdrainage water is not conveyed to the bioretention basin.

9. Drainage facilities for cross-lot drainage and associated drainage easements shall be included in the Final Grading and Improvement Plans; these drainage facilities shall not convey pervious runoff to the bioretention basin.

10. Final review and approval of the Stormwater Control Plan and its component facilities shall be undertaken by the City engineer to ensure its consistency with the applicable C.3 Guidebook requirements.

11. The City engineer shall confirm that the sizing of the bioretention basin satisfies all applicable regulatory requirements.

12. Prior to submittal of the Final Grading and Improvement Plan, the applicant shall submit draft agreements identified in the Stormwater Control Plan that pertain to the transfer of ownership and/or long-term maintenance of stormwater treatment or flow control facilities (including but not limited to Operation and Maintenance Agreements and CC&Rs).

13. In accordance with the treatment calculations in the Stormwater Control Plan, development of each lot shall be limited to an average of 10,000 square feet of impervious surface for all of the lots.

14. Lot development shall be such that runoff from impervious surfaces (roofs, driveways, patios, etc.) gravity flows to the street or to the impervious storm drain system stubs to ensure all impervious runoff is conveyed to the bioretention basin.

15. Runoff from pervious areas, and subsurface/sub-drain water from individual lots shall not be conveyed to the bioretention basin (with the exception of pervious runoff from a portion of Lot 6).

16. Development on any lot may include permanent drainage facilities to treat and convey impervious runoff away from the street and to the tributaries on the site, subject to review and approval by the City engineer.

Conclusion

The Project incorporates elements that have been carefully developed for the Project site, based on expert opinion. These Project elements are consistent with the regulatory framework, and capable of mitigating potentially significant impacts at the Project site. The site-specific hydrology analysis concludes that with the Project’s design elements and implementation of the mitigation measures recommended above (Hydro-1A, -1B and -1C), the Project will not result in significant impacts related to hydrology and water quality. Compliance with Federal, State, and City policies, regulations, and standards, including the site-specific SWCP and SWPPP, would prevent violations of water quality standards and waste discharge requirements. This stormwater control system for the Project complies with municipal standards and is consistent with the Contra Costa Clean Water Program Stormwater C.3 Guidebook. As a result the impact is less than significant.
Groundwater

**Impact Hydro-2:** The Project will not rely on groundwater and therefore will not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. *(LTS)*

The 13 proposed residences will be served by domestic water service. No groundwater will be pumped by the Project. The geotechnical report prepared for the Project (Appendix 6A) found groundwater at a depth of 60 feet. Subdrains will be installed in areas of landslide repair to prevent groundwater buildup, otherwise the Project will not interact with groundwater. As a result, impacts of the Project on groundwater resources are less than significant.

Alteration of the Existing Drainage Pattern

**Impact Hydro-3:** The Project will not substantially alter the existing drainage pattern of the Project site in a manner that results in substantial erosion or siltation on- or off-site, or that would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. *(LTS with Mitigation)*

New development at the Project site would be in close proximity to four watercourse segments and would alter the local hydrograph by increasing impervious surfaces. Several of the existing drainages already have significant down-cutting. An altered hydrograph would exacerbate this condition, threatening some large, mature coast live oaks. Altered drainage could also affect wetland resources in at least two locations by diverting subsurface drainage away from these areas.

Project Elements

The Project will not modify the existing natural drainage channels or existing ephemeral streams of the Project site. Structural setback lines established pursuant to the standards prescribed in OMC section 16.64.220 have been established along all on-site open channels (see Figure 10-3). Other than one proposed road crossing of an on-site ephemeral stream near the southerly portion of the site, no permanent structures or development of any kind (other than drainage structures) are proposed on the creek-side of these setback lines. At the one creek crossing, the Project proposes placing this short section of the ephemeral stream within a culvert under the road crossing. All of the land included within the required structural setback lines from on-site creeks is contained within the Project’s proposed open space easement.

Runoff from undeveloped portions of the site (pervious surfaces) will flow as it does in the present pre-Project state. The Project will not develop land in the western 4.4 acre portion of the Project site or alter its drainage pattern, resulting in the same runoff route and volume as under existing conditions in Tributary 1.

In the watershed that is tributary to the central channel on the Project site (Tributary 2), there is an upstream detention pond on the golf course. Storm water from the detention pond is conveyed down slope in a 30-inch pipe. There is an energy dissipater at the outlet structure that is located approximately 10 feet from the western boundary of the Project site. The Project will not make any changes to the 30-inch pipe or the outlet structure, and drainage form the golf course detention pond through the Project site’s central drainage channel will not be altered.

The existing drainage pattern of the Project site will be altered within the developed portions of the site, but not in a manner that results in increased erosion or in a manner that increases potential downstream flooding. Runoff from areas of impervious surface installed on the Project site will be conveyed via an underground storm drainage system to the bio-retention facility. The storm drainage system design, as described above, will comply with federal, State, regional, and City regulations regarding water quality and discharge, including issues of erosion and siltation.
Figure 10-3
Creek Setbacks (per OMC section 16.64.220)
This storm drain system will result in a smaller watershed area and thus a reduced amount of flow from the 8.7-acre central watershed (Tributary 2) which drains through the central natural channel. Portions of this existing central channel are steep in the direction of flow, and some of the banks are undercut. Although the existing channel will not be modified, the reduced flow into this channel will serve to minimize further undercutting of the banks. Additionally, the reduced flow in the central channel will improve existing downstream conditions. Currently, flows from the central channel exit the Project site, flow through an adjacent property, and enter an off-site 20-inch pipe under Donna Maria Way. The current pipe size is not adequate to convey 10-year storm flows. When the Project's storm drain system diverts flows from the central channel, the 10-year storm flow is estimated to be reduced from current flows of 53.6 cubic feet per second (cfs), to 50.8 cfs. Although the existing off-site 20-inch pipe will still be too small to convey flows from a 10-year storm, the current backup conditions at this location will improve from existing conditions. The Project will also improve conditions at the existing 20-inch storm drain pipe under Donna Maria Way by installing a debris rack, replacing the pipe, or other measures depending on final grading and improvement plans. As a result, the Project will actually reduce the rate of surface runoff at this off-site location.

Mitigation Measures

The Project applicant has also agreed to the following mitigation measure, which will be required of all subsequent individual home site designs:

Mitigation Measure Hydro-3: Individual Lot Drainage. As each lot on the Project site is developed, the lot owner will be required to convey runoff from all impervious surfaces to the storm drain system that flows to the bioretention facility, and to provide appropriate structural set-backs from existing channels. A Storm Water Pollution Prevention Plan (SWPPP) will be prepared for each new home site development, and each lot owner must provide erosion control protection for drainage swales and steep ground surfaces.

Conclusion

The Project incorporates elements that have been carefully formulated for the Project site, based on expert opinion, that are consistent with this regulatory framework, and capable of mitigating potentially significant impacts at the Project site. The site-specific hydrology analysis concludes that with the Project's design elements identified above, the Project will not result in significant impacts related to erosion and siltation. The storm drainage system for the Project site will comply with federal, State, regional, and City regulations regarding water quality and discharge rates, including the requirement to not increase rates of flow as compared to existing conditions. The Project will not alter the existing drainage channels on the Project site. Compliance with federal, State, and City policies, regulations, and standards, including the site-specific SWCP and SWPPP, would prevent violations of water quality standards and waste discharge requirements. This stormwater control system for the Project complies with municipal standards and is consistent with the Contra Costa Clean Water Program Stormwater C.3 Guidebook. As a result, Project impacts pertaining to alteration of existing drainage patterns in a manner that results in substantial erosion or siltation, or that would substantially increase the rate or amount of surface runoff, would be less than significant.

Flood Hazard Area

Impact Hydro-4: The Project will not place housing or structures which would impede or redirect flood flows within a 100-year flood hazard area. (LTS)

FEMA has designated the 100-year flood hazard area (Zone AE) within the Project site as being along the banks of Moraga Creek. The Project's open space easement entirely encompasses this flood hazard area. No housing or other structures will be placed within the flood area, and future home sites on lots 1 and 2 near Moraga Creek include appropriate setbacks from the 100-year flood zone.

Similarly, the bio-retention facility that is part of the Project's SWCP will be located with appropriate setbacks from the Moraga Creek Channel and out of the 100-year flood zone. A drainage pipe will extend
from the bio-retention facility toward Moraga Creek, outflowing into a rock dissipater before flowing into the creek. The pipe is located outside of the flood area, although the dissipater is within the 100-year flood area. The dissipater will be constructed with natural materials and will be of a low profile. Its purpose is to reduce the flow rate of runoff from the basin. This device will not impede or redirect flood flows. Project impacts regarding flood hazards will be less than significant.

**Risk from Other Flooding or Inundation**

**Impact Hydro-5:** The Project will not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam, or inundation by seiche, tsunami, or mudflow. *(LTS)*

The Project area is located within the southwestern hills of the City. The elevation and surrounding topography of the Project site, coupled with its distance from any large body of water, eliminates the potential for damage from a seiche or tsunami. The Project site is not downstream of a levee or dam. Mudflows are associated with mountainous, erosion-prone terrain and are unlikely to occur on the Project site. The analysis in Chapter 6 Geology and Soils concludes that compliance with State and City regulations and implementation of Project elements to prevent ground failure events on- and off-site will fully reduce this impact to a level of less than significant.

**Cumulative Hydrology and Water Quality Impacts**

**Impact Hydro-6:** Compliance with Federal, State, regional, and City regulations, and implementation of Project elements, will ensure the Project would not combine with other projects to result in cumulatively considerable hydrology or water quality impacts. *(LTS)*

The regulations, policies and standards discussed above are uniformly applicable to both the Lavenida Lane Subdivision and the Project, as well as to any other development proposed in Orinda. Compliance with these requirements will ensure that the Project, along with other anticipated development in the area, would not result in significant cumulative hydrology and water quality impacts. In addition, those Project elements including the SWCP, preparation of a SWPPP and implementation of BMPs would minimize any potential impacts such that the Project would not make a considerable contribution to any significant, cumulative impact related to water quality or hydrology.
Noise and Vibration

This chapter evaluates potential noise impacts that would result from the construction and operation of the Project. This analysis is based on the noise element of the city’s General Plan and recognized noise standards, as cited throughout this chapter.

Environmental Setting

Fundamentals of Environmental Noise

Noise is defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (dB) with 0 dB corresponding roughly to the threshold of hearing. Decibels and other technical terms are defined in Table 11-1.

Most of the sounds that we hear in the environment do not consist of a single frequency, but rather a broad band of frequencies, with each frequency differing in sound level. The intensities of each frequency add together to generate a sound. The method commonly used to quantify environmental sounds consists of evaluating all of the frequencies of a sound in accordance with a weighting that reflects the fact that human hearing is less sensitive at low frequencies and extreme high frequencies than in the frequency mid-range. This is called "A" weighting, and the decibel level so measured is called the A-weighted sound level (dBA). In practice, the level of a sound source is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighting curve. Typical A-weighted levels measured in the environment and in industry are shown in Table 11-2 for different types of noise.

Although the A-weighted noise level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of noise from distant sources which create a relatively steady background noise in which no particular source is identifiable. To describe the time-varying character of environmental noise, the statistical noise descriptors, \( L_{01}, L_{10}, L_{50}, \) and \( L_{90} \), are commonly used. They are the A-weighted noise levels equaled or exceeded during 1%, 10%, 50%, and 90% of a stated time period. A single number descriptor called the \( L_{eq} \) is also widely used. The \( L_{eq} \) is the average A-weighted noise level during a stated period of time.

In determining the daily level of environmental noise, it is important to account for the difference in an individual’s response to daytime and nighttime noises. During the nighttime, exterior background noises are generally lower than the daytime levels. However, most household noise also decreases at night and exterior noise becomes very noticeable. Further, most people sleep at night and are very sensitive to noise intrusion. To account for human sensitivity to nighttime noise levels, a descriptor, \( L_{dn} \) (day/night average sound level), was developed. The \( L_{dn} \) divides the 24-hour day into the daytime of 7:00 AM to 10:00 PM and the nighttime of 10:00 PM to 7:00 AM. The nighttime noise level is weighted 10 dB higher than the daytime noise level. The Community Noise Equivalent Level (CNEL) is another 24-hour average that includes both an evening and nighttime weighting.
Table 11-1: Definitions of Acoustical Terms Used in this Report

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<th>Term</th>
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<tr>
<td>Decibel, dB</td>
<td>A unit describing, the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.</td>
</tr>
<tr>
<td>Sound Pressure Level</td>
<td>Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.</td>
</tr>
<tr>
<td>Frequency, Hz</td>
<td>The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sounds are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.</td>
</tr>
<tr>
<td>A-Weighted Sound Level, dBA</td>
<td>The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.</td>
</tr>
<tr>
<td>Equivalent Noise Level, Leq</td>
<td>The average A-weighted noise level during the measurement period. The hourly Leq used for this report is denoted as dBA Leq (h).</td>
</tr>
<tr>
<td>Lmax, Lmin</td>
<td>The maximum and minimum A-weighted noise level during the measurement period.</td>
</tr>
<tr>
<td>L01, L10, L50, L90</td>
<td>The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.</td>
</tr>
<tr>
<td>Day/Night Noise Level, Ldn or DNL</td>
<td>The equivalent noise level for a continuous 24-hour period with a 10-decibel penalty imposed during nighttime and morning hours. (10:00 pm to 7:00 am).</td>
</tr>
<tr>
<td>Community Noise Equivalent Level, CNEL</td>
<td>CNEL is the equivalent noise level for a continuous 24-hour period with a 5-decibel penalty imposed in the evening (7:00 pm to 10:00 pm) and a 10-decibel penalty imposed during nighttime and morning hours (10:00 pm to 7:00 am).</td>
</tr>
<tr>
<td>Ambient Noise Level</td>
<td>The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.</td>
</tr>
<tr>
<td>Intrusive</td>
<td>That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.</td>
</tr>
</tbody>
</table>

### Table 11-2: Typical Noise Levels in the Environment

<table>
<thead>
<tr>
<th>Common Outdoor Noise Source</th>
<th>Noise Level (dBA)</th>
<th>Common Indoor Noise Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jet fly-over at 1,000 feet</td>
<td>110 dBA</td>
<td></td>
</tr>
<tr>
<td>Gas lawn mower at 3 feet</td>
<td>100 dBA</td>
<td></td>
</tr>
<tr>
<td>Diesel truck at 50 feet at 50 mph</td>
<td>90 dBA</td>
<td></td>
</tr>
<tr>
<td>Noisy urban area, daytime</td>
<td>90 dBA</td>
<td></td>
</tr>
<tr>
<td>Garbage disposal at 3 feet</td>
<td>80 dBA</td>
<td></td>
</tr>
<tr>
<td>Commercial area</td>
<td>80 dBA</td>
<td></td>
</tr>
<tr>
<td>Heavy traffic at 300 feet</td>
<td>70 dBA</td>
<td></td>
</tr>
<tr>
<td>Gas lawn mower, 100 feet</td>
<td>70 dBA</td>
<td></td>
</tr>
<tr>
<td>Vacuum cleaner</td>
<td>60 dBA</td>
<td></td>
</tr>
<tr>
<td>Commercial area</td>
<td>60 dBA</td>
<td></td>
</tr>
<tr>
<td>Quiet urban daytime</td>
<td>60 dBA</td>
<td></td>
</tr>
<tr>
<td>Normal speech at 3 feet</td>
<td>50 dBA</td>
<td></td>
</tr>
<tr>
<td>Quiet urban nighttime</td>
<td>50 dBA</td>
<td></td>
</tr>
<tr>
<td>Dishwasher in next room</td>
<td>40 dBA</td>
<td></td>
</tr>
<tr>
<td>Suburban daytime</td>
<td>40 dBA</td>
<td></td>
</tr>
<tr>
<td>Active office environment</td>
<td>30 dBA</td>
<td></td>
</tr>
<tr>
<td>Quiet urban nighttime</td>
<td>30 dBA</td>
<td></td>
</tr>
<tr>
<td>Theater, large conference room</td>
<td>30 dBA</td>
<td>Library</td>
</tr>
<tr>
<td>Quiet suburban nighttime</td>
<td>30 dBA</td>
<td></td>
</tr>
<tr>
<td>Library</td>
<td>30 dBA</td>
<td></td>
</tr>
<tr>
<td>Wildness area</td>
<td>20 dBA</td>
<td></td>
</tr>
<tr>
<td>Bedroom at night, concert hall (background)</td>
<td>20 dBA</td>
<td></td>
</tr>
<tr>
<td>Quiet rural nighttime</td>
<td>20 dBA</td>
<td></td>
</tr>
<tr>
<td>Broadcast/recording studio</td>
<td>0 dBA</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Technical Noise Supplement (TeNS), Caltrans, November 2009.*
**Existing Noise Environment**

The Project site is located approximately 900 feet away from the nearest major noise source, which is traffic noise along Moraga Way. According to the General Plan Noise Contour Map, the Project site is located in an area with day/night average noise levels (Ldn) quieter than 60 dB. There are no major sources of noise in the Project area.

**Existing Sensitive Receptors**

Existing sensitive noise receptors located in the vicinity of the Project site include residential uses to the north and west and two schools, one to the north and one to the southeast of the site.

The closest residences are immediately adjacent to the site along the westerly segment of Donna Maria Way. Most existing residential buildings abutting the Project site are more than 60 feet from the shared property line. Two homes on Sager Court and the last two homes on the south side of Donna Maria Way are between 30 and 60 feet from the Project’s property line, and the last house on the north side of Donna Maria Way is approximately 10 feet from the shared property line. Residences on the eastern segment of Donna Maria Way are generally more than 100 feet from the shared property line.

The Del Rey Elementary School abuts portions of the north side of the Project site and Miramonte High School is located approximately 675 feet to the southeast of the Project site.

No other sensitive receptors (e.g., nursing homes, retirement communities, or hospitals) are located within ½ mile of the Project site.

**Regulatory Setting**

Development standards established under OMC section 17.15.2 set noise standards for land uses. For all zoning districts, the maximum decibel noise level allowed is 60 dB (Ldn). The noise standards are further modified in residential districts to be five dB lower (i.e., 55 dB Ldn) between ten p.m. and seven a.m. Noise that is produced for no more than a cumulative period of five minutes in any hour may exceed this standard by five dB. Noise that is produced for no more than a cumulative period of one minute in any hour may exceed the standards by ten dB.

**Noise Control Ordinance**

The City of Orinda’s Noise Ordinance is found in Chapter 17.39 of the Zoning Code. The purpose of the Noise Ordinance is to, “promote and preserve the peace and tranquility characteristic of a semi-rural environment while accommodating reasonable activities which tend to produce noise by regulating the days, hours and sources of such activities.”

OMC section 17.39.2 provides that; “No person shall cause or permit noise on property owned, leased, occupied or otherwise in the control of that person which exceeds sixty (60) decibels as measured at a listening point on any other property,” subject to certain exceptions. Construction, yard maintenance and golf course maintenance activities which occur during proscribed time periods are exempt from the sixty (60) decibel limit.

OMC section 17.39.3 regulates the hours of exempt construction activity to, “balance the desire of Orinda residents for a reasonably quiet home environment with the desire of their neighbors, also Orinda residents, to improve their properties efficiently and economically”. Pursuant to OMC section 17.39.3.B, it is unlawful to conduct or maintain construction activities in the City of Orinda during times other than those set forth below:

1. “Weekdays. Monday through Friday, construction activities may occur between the hours of eight a.m. and six p.m.
2. Saturdays. On Saturdays, construction activities may occur between the hours of ten a.m. and five p.m.
Chapter 11: Noise and Vibration

3. Sundays. On Sundays, construction activities are prohibited except for minor maintenance and improvement projects conducted by no more than two persons, one of whom resides on the property full-time, between the hours of ten a.m. and five p.m. and not involving the use of heavy construction equipment.

4. Holidays. On the following holidays, construction activities are prohibited: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. This rule supersedes the restrictions in subsections (B)(1), (B)(2) and (B)(3) of this section. No exceptions from this holiday prohibition may be granted.

Per OMC section 17.39.3.C, an applicant for a building permit or grading permit shall post a sign describing the permitted hours of construction and permitted hours for use of heavy equipment in a conspicuous location near the property entrance legible from the edge of the roadway. The exact wording of the sign shall be prescribed by the Planning Department. In addition, an applicant for a building permit or grading permit shall provide written notice to each residence within three hundred (300) feet of any portion of the subject property in the form and manner prescribed by the Planning Department.

Per OMC section 17.39.3.D, it is unlawful to use heavy construction equipment for residential construction on Saturdays and Sundays except as otherwise provided in this chapter. The Zoning Administrator shall have the discretion to determine if a particular machine is considered "heavy construction equipment" for purposes of Section 17.39.2.

Per OMC section 17.39.3.E, the Zoning Administrator may grant an exception from the limitations on the use of heavy construction equipment for a residential construction project on a single parcel and may impose conditions on the exception permit as necessary to minimize the public detriment, as follows:

1. One-Time Exception for Use of Heavy Construction Equipment. The Zoning Administrator shall issue a permit for the use of heavy construction equipment on Saturdays and Sundays for no more than two days in a twelve- (12) month period measured from the date of the last exception for heavy construction equipment use granted for the property, at the request of the property owner, if all other permit requirements have been met.

2. Exception for Cause. The Zoning Administrator may issue a permit for the use of heavy construction equipment on Saturdays and Sundays in addition to the one-time exception where the Zoning Administrator finds that, due to the nature of the project: (1) it is more efficient and cost-effective to operate heavy construction equipment during such times, and (2) as conditioned, the burden of the permitted activity on surrounding residents is reasonable.

Impacts and Mitigation Measures

Thresholds of Significance

Appendix G of the CEQA Guidelines (Environmental Checklist) contains a list of noise impacts that may be considered significant. Based on this list, implementation of the Project would result in a significant impact related to noise if it would result in:

1. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

2. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;

3. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

4. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project; or
5. 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, the project would expose people residing or working in the project area to excessive noise levels.

Project Site Noise Level Relative to Standards

Impact Noise-1: Permanent residents will be added to a site located in an area that experiences noise levels within City standards for residential uses. (LTS)

The Project site is located approximately 900 feet away from the nearest major noise source (i.e., traffic noise on Moraga Way) and, according to the City of Orinda General Plan noise contour map, the Project site is outside the area potentially affected by noise in excess of the 60 dB Ldn standard. There are no other major sources of noise in the Project area. Thus, new residents would not be exposed to noise levels in excess of standards established by the City’s noise ordinance.

Temporary Construction Period Noise

Impact Noise-2: Construction of the Project will temporarily generate noise from construction equipment, vehicles and activities. However, construction activities will comply with applicable standards established in the OMC. (LTS with Mitigation)

Construction-related noise levels are normally highest during the site preparation phase (site clearing and grading) because these construction activities require heavy equipment that normally generates the highest noise levels over extended periods of time. Typical hourly average noise levels generated by commercial earth moving equipment are about 77 to 88 dBA Leq measured at a distance of 50 feet from the center of the activity during busy construction periods. Construction-related noise levels are normally less during building framing, finishing, and landscaping phases, when less heavy equipment is present on site. These less intense construction periods generally yield hourly average noise levels ranging from about 71 to 83 dBA Leq at a distance of 50 feet. Noise generated by interior work would be much lower outdoors and would generally not affect community noise levels. Table 11-3 presents the typical range of hourly average noise levels generated by different phases of construction measured at a distance of 50 feet.

<table>
<thead>
<tr>
<th></th>
<th>Housing I</th>
<th>Housing II</th>
<th>Roads &amp; Utility Trenches I</th>
<th>Roads &amp; Utility Trenches II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground Clearing</td>
<td>83</td>
<td>83</td>
<td>84</td>
<td>84</td>
</tr>
<tr>
<td>Excavation</td>
<td>88</td>
<td>75</td>
<td>88</td>
<td>78</td>
</tr>
<tr>
<td>Foundations</td>
<td>81</td>
<td>81</td>
<td>88</td>
<td>88</td>
</tr>
<tr>
<td>Erection</td>
<td>81</td>
<td>65</td>
<td>79</td>
<td>78</td>
</tr>
<tr>
<td>Finishing</td>
<td>88</td>
<td>72</td>
<td>84</td>
<td>84</td>
</tr>
</tbody>
</table>

I - All pertinent equipment present at site.
II - Minimum required equipment present at site.

As a general rule, noise levels attenuate over distance (i.e., not accounting for intervening obstructions) at a rate of about 6 to 7.5 dBA per doubling of distance between the noise source and receptor. Thus, at the conservative scale of 6 dBA reduction per doubling of distance, a sensitive noise receiver would be subject to maximum noise levels of about 88 dBA $L_{eq}$ at 50 feet from the construction site, noise levels of about 82 dBA $L_{eq}$ at 100 feet from the construction site, noise levels of about 76 dBA $L_{eq}$ at 200 feet from the construction site, etc. There would be variations in construction noise levels on a day-to-day basis depending on the actual activities occurring at the site and the presence of intervening attenuation such as topography or structures. Noise emission levels and potential annoyance also depends upon the condition of the equipment, the type of operation, its duration and the time of day.

During construction, temporary noise levels from equipment operating under maximum load could be up to 88 dBA at the nearest adjacent home. Noise levels will be lessened the further that construction activity occurs from the property line.

The Del Rey Elementary School's outdoor school yard is located over 100 feet from the closest construction activity, and the closest structure on the Del Rey Elementary School site is approximately 275 feet away. Attenuated by distance alone, noise levels from construction equipment operating under maximum load could be up to 88 dBA at the property line, 82 dBA at the school yard, and 76 dBA at the school buildings. Construction noise levels at Miramonte High School, attenuated by the farther distance, would be less than 70 dBA.

Site preparation (mass grading, finish grading, and installation of utilities, street paving, and trail construction) is expected to take approximately ten and a half months. Building construction is estimated to occur over an additional two year period.

Applicable Policies and Standards

OMC section 17.39 Noise Control exempts construction activities from the City's noise standards, so long as construction activities occur within the permitted time periods or receive an exception from the Zoning Administrator.

Pursuant to OMC section 17.39, construction activities are allowed between 8:00 a.m. and 6:00 p.m. on weekdays, and 10:00 a.m. to 5:00 p.m. on Saturdays. Construction activities are prohibited on Sunday except for minor maintenance, and on holidays. (Note that the applicant has agreed to modified construction hours, as detailed below.)

Mitigation Measure

Furthermore, the Project applicant has agreed to the following additional mitigation measure:

Mitigation Measure Noise-2: Limited Construction Hours. The Project's construction schedule shall limit active hours to between 9:00 AM and 6:00 PM on weekdays. (This is a modification to construction hours allowable under the OMC, which would begin at 8:00 AM on weekdays and included limited hours on Saturday.)

The purpose of this mitigation measure is primarily to reduce construction-period traffic conflicts with the morning drop-off at Del Rey Elementary School, but it will also serve to reduce the duration of construction noise in early mornings and on the weekends.

The proposed open space easement will also create a buffer between construction activities on the Project site and adjacent uses. This buffer would reduce the exposure of nearby residents to noise during these permitted construction periods.

Conclusion

Construction noise will be heard at nearby residences and schools. However, construction noise is exempt from OMC standards provided that construction activity is limited to the hours and times stipulated in the OMC. As indicated, construction activity at the Project site will only occur during permitted hours, and further limited to a 9:00 a.m. weekday start time and no activity on Saturdays. Therefore, the Project will not generate construction-period noise levels in excess of standards established in the OMC. Project impacts related to construction-period temporary noise increases would be less than significant.
Operational Noise

**Impact Noise 3:** The Project will generate noise levels typical of residential neighborhoods such as those existing in the vicinity. The Project would not result in a substantial permanent increase in ambient noise levels. (LTS)

The Project will result in a single-family residential neighborhood with typical noise generation as presently occurs in the vicinity. There is nothing peculiar to the Project residences that would result in noise levels substantially higher than ambient noise levels in the Project vicinity. Future residents of the Project site will be subject to the City’s regulations regarding noise generation, and it can be reasonably assumed the residents will comply with those regulations.

The Project would generate some vehicular traffic on vicinity roadways. However, Project traffic makes up a small percentage of the total traffic along area roadways that vehicular traffic noise levels would not increase measurably above existing levels as a result of the Project.

**Applicable Policies and Standards**

OMC section 17.39 Noise Control establishes regulations for allowable noise levels at 60 dB Ldn during the daytime. Future residences will be required to comply with these OMC standards. Additionally, the Project’s open space easement will provide additional distance and noise filters between on-site uses and neighbors that will attenuate any typical residential noise generation on the site.

**Conclusions**

Uses on the site will comply with applicable noise regulations and would be typical of generally quiet residential uses such as those existing in the vicinity. The Project will not result in noise levels in excess of standards established by the OMC or otherwise substantially above existing levels. The impact with respect to permanent increases in ambient noise levels would be less than significant.

Groundborne Vibration or Noise

**Impact Noise-4:** Construction activities on the site would result in low levels of groundborne vibration that would be well below levels that could result in damage to structures. The Project will not expose people to, or generate, excessive groundborne vibration or groundborne noise levels. (LTS)

Groundborne vibration levels rarely affect human health. Instead, most people consider groundborne vibration to be an annoyance that may affect concentration or disturb sleep. High levels of groundborne vibration can also damage fragile buildings.

Neither the CEQA Guidelines nor the City’s regulations provide a threshold for groundborne vibration. The Federal Transit Administration (FTA) has established ground-borne vibration levels of 0.2 inches per second (94 VdB) as the construction vibration damage criterion for non-engineered timber and masonry buildings. The operation of typical heavy-duty construction equipment generates vibration levels of 0.089 inches per second (87 VdB) at a distance of 25 feet. Construction activity involving heavy-duty, earthmoving and construction equipment would occur at distances of greater than 25 feet from adjacent structures. In addition, the Project does not include any pile driving. All piles will be drilled.

Therefore, operation of the Project would not result in any significant sources of groundborne vibration or noise.

**Conclusion**

During construction, vibration exposure levels at nearby structures would be less than 0.2 inches per second (94 VdB), the FTA limit for non-engineered timber and masonry buildings, and thus vibration impacts would be less than significant.
Noise from Airplanes

**Impact Noise-5:** The Project site is not located in an area subjected to substantial airplane noise. The Project would not expose people to excessive noise levels from airport-related use. **(No Impact)**

The Project site is not located within an area subject to an airport land use plan, nor is it located within two miles of a public airport or in the vicinity of a private airstrip.

**Cumulative Noise Impacts**

**Impact Noise-6:** The Project would not result in a significant cumulative violation of City noise standards. **(LTS)**

The Lavenida Lane Project and this Project are in close proximity, and construction periods for both projects could occur concurrently. However, both projects will be required to comply with OMC requirements regarding the timing of construction activities. The Camino Ricardo project is located more than a mile from the Project site, and is not expected to cumulatively contribute to noise levels in the vicinity of the Project.

Both the Project and the Lavenida Lane project are residential developments that would generate similarly low levels of permanent ambient noise. Residents of both projects will be subject to OMC standards regarding operational noise, and it can be reasonably assumed the new residents at both project sites will comply with those regulations. The combined increase in operational noise and traffic noise from the two projects would not combine to create a significant increase in ambient noise levels.
Transportation and Traffic

This chapter evaluates the Project’s potential impacts related to transportation and traffic. It describes the existing roadway and circulation conditions in the vicinity of the Project site, and evaluates the potential for traffic impacts associated with implementation of the proposed Project. The analysis and discussion in this section of the EIR is based on:

- TJKM Transportation Consultants, Traffic Impact Study for 24 Adobe Lane (TJKM Study), dated May 21, 2010, attached as Appendix 12A;
- TJKM letter to City of Orinda, dated September 17, 2012, attached as Appendix 12B; and
- TJKM memo of July 11, 2014, attached as Appendix 12C.

Environmental Setting

Existing Roadway Network

Regional access to the site is provided by Moraga Way, which connects with State Route 24 (SR 24) and Moraga’s town center. Direct access to the Project site is provided from Donna Maria Way, which connects to Moraga Way via El Camino Moraga (see Figure 12.1). The segment of Donna Maria Way between El Camino Moraga and the Project site is a private road with access easements for property owners. Del Rey Elementary School is located on El Camino Moraga at its intersection with Don Gabriel Way. Don Gabriel Way provides alternative access to Moraga Way, although it is a less direct route than El Camino Moraga.

Other Travel Networks

County Connection runs bus service (Route 6) on Moraga Way, connecting the Orinda BART station to Moraga town center, Saint Mary’s College, and the Lafayette BART station. Route 6 runs every 40 minutes during weekday mornings and evenings, every 2 hours on weekdays at midday, and roughly every 90 minutes during weekends. No transit serves the Project site directly.

One side of El Camino Moraga has a sidewalk, but otherwise there are few sidewalks in the area. An informal pedestrian trail passes through the Project site, connecting the two segments of Donna Maria Way, and leading to Miramonte High School to the east.

Bike lanes are present in both directions on Moraga Way, allowing access between Orinda BART, downtown Orinda, Orinda Oaks Park and Moraga town center.
Figure 12.1
Project Area and Roadway Network

Source: TJKM (May 2009)
Study Intersections

TJKM evaluated traffic conditions at four study intersections during AM and PM peak hours for a typical weekday (Wednesday and Thursday April 15 and 16, 2009). Based on the traffic volume on Moraga Way, the peak periods observed were between 7:00 AM to 9:00 AM, and between 4:00 PM and 6:00 PM. The study intersections and their associated traffic controls are as follows:

1. Donna Maria Way / El Camino Moraga (One-Way Stop)
2. Don Gabriel Way / El Camino Moraga (One-Way Stop)
3. El Camino Moraga / Moraga Way (Signal)
4. Lavenida Drive / Moraga Way (One-Way Stop)

Existing Traffic Conditions

Existing traffic conditions at the study intersections were quantified through the determination of level of service (LOS), a qualitative measure describing operational conditions within a traffic stream. There are six levels of service defined for each type of facility (i.e., roadway or intersection) that is analyzed. LOS has letter designations ranging from A to F, with LOS A representing free flow traffic with little or no delay and LOS F representing congested conditions with excessive delays and long back-ups. LOS for a signalized intersection is based on the average delay for all cars entering the intersection, whereas LOS for an unsignalized intersection is based on each unique movement then reported for the movement most delayed by a stop sign (this is referred to as the “critical minor approach”). (Additional detail related to raw data and methodology can be found the full Traffic Impact Study, included as Appendix 12A.)

Figure 12-2 shows the existing turning movements at the study intersections. Table 12-1 summarizes peak hour levels of service at the study intersections under Existing Conditions.1

<table>
<thead>
<tr>
<th>#</th>
<th>Intersection</th>
<th>Control</th>
<th>AM Peak</th>
<th>PM Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Delay</td>
<td>LOS</td>
</tr>
<tr>
<td>1</td>
<td>Donna Maria Way/El Camino Moraga</td>
<td>One-Way Stop</td>
<td>8.5</td>
<td>A</td>
</tr>
<tr>
<td>2</td>
<td>Don Gabriel Way/El Camino Moraga</td>
<td>One-Way Stop</td>
<td>9.9</td>
<td>A</td>
</tr>
<tr>
<td>3</td>
<td>El Camino Moraga/Moraga Way</td>
<td>Signal</td>
<td>16.4</td>
<td>B</td>
</tr>
<tr>
<td>4</td>
<td>Lavenida Drive/Moraga Way</td>
<td>One-Way Stop</td>
<td>26.2</td>
<td>D</td>
</tr>
</tbody>
</table>

Notes:
- Delay - Average control delay in seconds per vehicle.
- LOS = Level of Service

Under Existing Conditions, three of the four study intersections operate at an acceptable LOS of C or better. The intersection of Lavenida Drive and Moraga Way operates at LOS D during the AM peak hour, which is below the City’s standard.

1 Although vehicle counts were made in 2009, conditions on the site and in the vicinity have not changed since the data was collected and conditions are substantively similar.
Figure 12.2
Study Intersections

Source: TJKM (May 2009)
Collisions

TJKM obtained a five-year collision history (2003 to 2007) for the study intersections from the California Statewide Integrated Traffic Records System (SWITRS) database to determine any trends related to vehicle, bicycle, and pedestrian safety. One collision was reported within the five-year period at each of the study intersections except the intersection of Don Gabriel Way and El Camino Moraga, where no collisions were reported. None of the reported collisions involved either a pedestrian or a bicycle. These results suggest that there are no existing safety concerns at any of the study intersections.

Del Rey Elementary School

TJKM conducted a supplemental field observation of existing traffic operations during the Del Rey School drop off (AM peak) and pick up (PM peak) period at the intersection of Don Gabriel Way and El Camino Moraga in April 2009. The Del Rey School includes three driveways accessing El Camino Moraga. There are two driveways providing inbound and outbound access for cars entering the school parking lot and the drop off area. The inbound driveway is located approximately 100 feet north of the intersection of Don Gabriel Way and El Camino Moraga. The outbound driveway is located 200 feet north of the inbound driveway, thereby providing sufficient space for drop off activities within the school area. Once vehicles enter the driveway, there is a lane dedicated to AM / PM drop-off and pick-up and one lane dedicated to PM pick up only. The third driveway is designated only for staff use, although it was observed that parents use this driveway to drop off and pick up their children.

Between 7:45 and 7:55 AM, queues form on southbound El Camino Moraga for vehicles wanting to enter the school parking lot for student drop off. TJKM observed average queues five vehicles in length. These queues block all southbound traffic on El Camino Moraga. The AM queue is from parents outside the study area dropping off their children. In addition, though the observations did not include detailed route information, TJKM noted that a considerable amount of the cars entering the inbound driveway appeared to be originating from eastbound Don Gabriel Way.

Between 2:50 and 3:00 PM, queues form on southbound El Camino Moraga for vehicles wanting to enter the school parking lot for student pick up. TJKM observed average queues six vehicles in length. These queues block all southbound traffic on El Camino Moraga. In addition, though the observations did not include detailed route information, TJKM noted that a considerable amount of the cars entering the inbound driveway appeared to be originating from northbound El Camino Moraga.

In terms of pedestrian activity, a crossing guard is present to help students cross El Camino Moraga from approximately 7:30 to 8:00 AM and 2:45 to 3:25 PM. Few children were observed walking to school, however, and those that did walked with their parents. Most pedestrians came from Don Gabriel Way. There are sidewalks on the north side of Don Gabriel Way, with a crosswalk leading from this sidewalk across El Camino Moraga towards the school. Sidewalks are also available for children to use along the east side of El Camino Moraga in the vicinity of the school.

Regulatory Setting

Regional

Contra Costa Transportation Agency (CCTA)

CCTA is the congestion management agency for the county and also manages the growth management program approved by voters via Measure C in 1988 and extended by Measure J in 2004. CCTA is supported by Regional Transportation Planning Committees (RTPCs), made up of elected and appointed representatives from each jurisdiction within the region and transit agencies. RTPCs set performance objectives for a designated network of freeways, major arterials and other facilities known as Routes of Regional Significance. Development that impacts a Route of Regional Significance must contribute toward mitigation of these impacts.
The Lamorinda RTPC includes the City of Orinda, as well as Moraga, Lafayette, and the County. The 2009 Action Plan for the Lamorinda RTPC identifies SR 24, Pleasant Hill Road, and San Pablo Dam Road/Camino Pablo as Routes of Regional Significance.

City of Orinda

General Plan – Circulation Element

The Circulation Element includes policies intended to manage traffic and address alternative modes of transportation. Relevant policies include the following:

- Guiding Policy 2.3.1.A directs the City to permit new development only when adequate transportation systems and parking are provided.
- Guiding Policy 2.3.1.B requires that roadways are designed to complement the City’s semi-rural character.
- Guiding Policy 2.3.1.C directs the City to strive to retain the existing peak hour level of service (LOS) of “C” or better at those intersections where it now prevails and improve the LOS at all other intersections.
- Guiding Policy 2.3.1.E directs the City to expand pedestrian and bicycle paths to provide a safe alternative to auto use, particularly to provide safe paths near schools and in other locations where they are heavily used for circulation.
- Guiding Policy 2.3.1.G establishes the City’s goal of preserving and retaining, in the most natural condition possible, scenic vehicular entryways, routes and corridors in the community.
- Implementing Policies 2.3.2.H and K direct the City to adopt standards for pavement width and other design features of roads in residential areas and to develop parking standards for single-family zoning districts. The City has adopted provisions in OMC Chapter 12.12 Article 4 Road Standards and section 17.16.2 Off-street Parking and Loading Basic Requirements for Single Family Residence in compliance with these policies.
- Implementing Policy 2.3.2.M directs the City to not make roadway improvements at the expense of established bicycle and pedestrian paths, except where it is in the interest of public safety.

General Plan – Growth Management Element

Policy 5.3.2 sets traffic standards for all signalized intersections not designated as Routes of Regional Significance. The minimum LOS established for the El Camino Moraga/Moraga Way intersection is LOS D, with a vehicle to capacity ratio of 80 to 84.

Implementing Policy 5.3.3.A establishes a local development mitigation program, requiring developers to mitigate the impacts of their development projects on the local and regional transportation system.

Implementing Policy 5.3.4.A requires a traffic impact study for projects that generate over 50 peak-hour trips and Policy 5.3.4.B requires findings of consistency with City standards for projects that generate over 100 peak-hour trips.

General Plan – Open Space, Parks, Schools, and Utilities Element

Implementing Policy 2.2.2.F directs the City to acquire and develop trails, paths, and bicycle facilities for safety and recreational purposes through the use of public and private funds. The General Plan map of existing and proposed trail routes includes a path through the Project site, which appears to connect the two segments of Donna Maria Way.

The Element defines a path as, “a paved strip, designed for pedestrian use, and, if feasible, bicycle use. Preferably, paths should be separated from the traveled way of a roadway, but may by adjacent to the roadway if protected by a berm or other device from vehicular traffic.”
Building Permit Conditions Ordinance

OMC section 15.32 provides regulations for construction related to the issuance of building permits. OMC section 15.32.230 addresses paths and sidewalks in residential areas, requiring dedication and construction of a path or sidewalk in a single family land use district when a path or sidewalk is consistent with the city master list of trails, pedestrian and bicycle paths in the General Plan. Also as a condition to issuance of a building permit for new development in the vicinity of a school serving grades kindergarten through 12, the City shall require dedication and construction of a path or sidewalk along at least once side of the street or road abutting the property.

Impacts and Mitigation Measures

Thresholds of Significance

Appendix G of the CEQA Guidelines (Environmental Checklist) contains a list of traffic and transportation impacts that may be considered significant. Based on this list, implementation of the Project would have a significant effect on transportation and circulation if it would:

1. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.

2. Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways

3. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

4. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

5. Result in inadequate emergency access.

6. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Standards and Guidelines

The following criteria, based on City of Orinda standards and Contra Costa Transportation Authority guidelines and requirements, have been used to determine whether the Project would have a significant impact on the study intersections. Based on these standards and guidelines, the Project would have a significant traffic impact if it would:

- Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on the road, or congestion at an intersection);

- Exceed, either individually or cumulatively, the LOS C standard established by the City of Orinda for designated roads (or LOS D for El Camino Moraga/Moraga Way); or

- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., recreational facilities).
Methodology

Existing Conditions

TJKM staff collected vehicle counts at each of the study intersections in April 2009. All counts were collected on typical weekdays during non-holiday weeks. Field verification of existing intersection lane configurations, types of traffic control, and signal phasing was also conducted in April 2009 and provided the basis for the level of service analysis for existing conditions as presented in the above Figure 12-2 and Table 12-1.

Project Trip Generation and Distribution

The Institute of Transportation Engineers (ITE) has compiled the results of trip generation research from over 4,250 individual land use studies throughout the United States and Canada. ITE's Trip Generation, 8th Edition, contains trip generation rates for over 140 different land use codes. Trip generation rates for the Project are based on data published in this manual. ITE Land Use Code 210 (Single-Family Detached Residential) was used for the trip generation calculation.

The Project’s estimated trips are shown in Table 12-2. Based on ITE trip generation rates, it is expected that the Project will generate approximately 124 daily trips on a typical weekday, including 9 trips during the AM peak hour and 13 trips during the PM peak hour.

<table>
<thead>
<tr>
<th>Land Use (ITE Code)</th>
<th>Size</th>
<th>Daily</th>
<th>AM Peak</th>
<th>PM Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rate</td>
<td>Rate</td>
<td>In</td>
</tr>
<tr>
<td>Single-Family Detached Residential (210)</td>
<td>13 units</td>
<td>9.57</td>
<td>124</td>
<td>0.75</td>
</tr>
</tbody>
</table>


Trip distribution assumptions for the Project were developed based on existing travel patterns and knowledge of the study area, as coordinated between TJKM and City engineers. These distribution assumptions are as follows:

- 60 percent of trips to/from north via Moraga Way
- 40 percent of trips to/from south via Moraga Way

The trip distribution assumptions for the study intersections are illustrated in Figure 12-3.

Resulting Level of Service

Project trips were assigned to study area intersections based on the above trip distribution assumptions. The resulting projected volumes for existing plus Project traffic at each leg of each study intersection were then analyzed for intersection level of service and delay. Procedures for analyzing each intersection are based on the Highway Capacity Manual 2000 (HCM 2000). The LOS methodology is described in detail in Appendix 12A. The City of Orinda General Plan establishes a standard of at least LOS C during peak hours at most intersections; but LOS D at El Camino Moraga/Moraga Way (see Regulatory Setting section).
Figure 12-3
Project Trip Distribution

Source: TJKM (May 2009)
Chapter 12: Transportation and Traffic

Conflict with Performance Standards

Impact Trans-1: The Project generates too few peak hour trips to have a traffic impact that would conflict with City of Orinda and Contra Costa Transportation Authority standards. (LTS)

General Plan Implementing Policy 5.3.4.A requires a traffic impact study for projects that generate over 50 peak-hour trips, and Policy 5.3.4.B requires findings of consistency with City standards for projects that generate over 100 peak-hour trips.

As indicated above, the TJKM study found that the Project would result in 9 trips during the AM peak hour and 13 trips during the PM peak hour. Therefore, the Project will not generate the number of peak hour trips that would require preparation of a traffic impact study. Project-generated traffic impacts are considered to be less than significant, and no further analysis is required. However, the following discussion is provided for informational purposes.

Intersection Level of Service Analysis

Figure 12-3 shows turning movement volumes at study intersections under existing conditions with the addition of traffic generated by the Project. Table 12-3 summarizes the results of the intersection LOS and delay analysis. Compared to existing conditions, the Project would not change the LOS during the AM or PM peak at these four intersections and would result in very small increases in average delays, as summarized in Table 12-4. The table shows that the largest change over existing conditions would be to the El Camino Moraga / Moraga Way intersection during PM peak hour.

<table>
<thead>
<tr>
<th>Table 12-3: Existing Plus Project Peak Hour Intersection Levels of Service</th>
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Notes:
- Delay - Average control delay in seconds per vehicle.
- LOS = Level of Service.

<table>
<thead>
<tr>
<th>Table 12-4: Existing Plus Project compared to Existing Conditions</th>
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</tbody>
</table>

Notes:
- Delay - Average control delay in seconds per vehicle.
- LOS = Level of Service.
- "-" indicates no change between the Existing condition and the Existing plus Project condition.
With addition of the Project trips, three of the study intersections are expected to continue operating at acceptable levels of service. The intersection of Lavenida Drive and Moraga Way would continue to operate at LOS D during the AM peak hour. The Project would increase the volume to capacity (v/c) ratio at the Lavenida Drive / Moraga Way intersection by only 0.01 seconds.

Based on past experience in communities similar to Orinda, TJKM has found that at unsignalized intersections with low-volume side streets (such as the intersection at Lavenida Drive and Moraga Way), it is not unusual for the side street to operate at below-standard LOS. In many cases, it is often physically and operationally infeasible to provide mitigation that would achieve acceptable LOS (for Orinda, LOS C or better) on the side street without impeding traffic flow on the major street. The most typical mitigation measure used for improving below-standard side street operations is a traffic signal. The intersection of Lavenida Drive and Moraga Way does not meet the signal warrant requirements for installation of a traffic signal, and adding a signal would increase the delay on Moraga Way at this intersection.

**Traffic Conflicts at Del Rey Elementary School**

During the school year, the Del Rey Elementary School drop off period coincides with the AM peak traffic hour. Traffic queues at the school block southbound traffic on El Camino Moraga during the AM peak period. All new traffic generated by the Project will access the Project site via a single access route that includes Adobe Lane, Donna Maria Way and El Camino Moraga. During the AM peak, trips generated by the Project would be in the opposite direction as the drop-off queues at the school and thus would not affect the drop-off queues. Peak PM traffic generation for the Project is expected to occur between 4:00 and 6:00 PM when the elementary school is closed, and therefore will not conflict with school traffic.

In order to calculate the number of new elementary school students generated by the Project, actual elementary school student enrollment data for 2010 available from the Orinda Union School District (OUSD)\(^2\) was compared to 2010 Census Data. According to 2010 census, there were 6,553 households in Orinda in 2010. Elementary school enrollment within the OUSD during 2010 was 1,886 students, resulting in an elementary school student/household rate of 0.287 students per household. Applying this student/household rate to the 13 units of the Project indicates that the Project would result in between three and four new elementary school students. It is expected that most of the new students will walk to school because of their proximity to the school grounds. However, even if children from the Project are dropped off by cars, they would access the school from the less congested direction and not contribute to the existing queues, and would represent only a very small fraction of the student enrollment at the school.\(^3\) Therefore, it is not expected that there will be a discernible impact at the school caused by the proposed development.

**Donna Maria Way Capacity**

Currently Donna Maria Way carries an estimated 19 vehicles during the AM peak hour and 21 vehicles during the PM peak hour. The Project is expected to add 9 vehicles during the AM peak hour and 13 vehicles during the PM peak hour. Therefore, once the Project is completed, Donna Maria Way is expected to carry 28 vehicles during the AM peak hour and 34 vehicles during the PM peak hour.

The capacity of Donna Maria Way is considerably higher than 34 vehicles per hour. Therefore, the Project is not expected to have any impact with regards to the roadway capacity. The additional cars generated by the Project can be easily accommodated on Donna Maria Way.

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\(^2\) Orinda Union School District Facility master Plan Update, June 2013

\(^3\) During the 2012-2013 school year, there were 414 students enrolled at Del Rey Elementary School. Assuming 4 new students from the Project, Project-generated school students would comprise less than 1% of the student population.
Conclusions

Per the City’s standards, the Project would generate too few peak hour vehicle trips to be considered to have a significant impact on traffic. The Lavenida Drive/Moraga Way intersection already operates below City standards for level of service during the AM peak hour, but the Project will not significantly worsen this condition.

The Project is not expected to negatively impact or exacerbate the existing traffic congestion at Del Rey Elementary School, due to the direction and timing of peak hour trips, the small number of elementary students expected to be generated from the Project, and the likelihood of these new students walking to school.

Donna Maria Way has adequate capacity for existing and Project traffic even during peak times. The addition of construction-related vehicle trips to the roadways serving the Project site would not be substantial relative to the existing traffic volumes, would not be during peak traffic times, and would not disrupt traffic flows on these roadways.

Project-related traffic would not result in conflicts with established performance standards, and resulting impacts would be less than significant.

Congestion Management Program

Impact Trans-2: The Project would not conflict with CCTA standards. (LTS)

The Project site is not located along or near roadways identified as Routes of Regional Significance by the Lamorinda RTPC Action Plan (i.e., SR 24, Pleasant Hill Road and San Pablo Dam Road/Camino Pablo), but it is near Moraga Way, an Inter-jurisdictional Route. The intersection analysis above shows that the Project would not have a significant impact on Moraga Way and therefore would not adversely affect Routes of Regional Significance. The number of peak hour vehicle trips generated by the Project is below the City’s standard for traffic impact analysis, and would not have any measurable impact on the Congestion Management Plan network. This impact would be less than significant.

Air Traffic Patterns

Impact Trans-3: The Project would not result in a change in air traffic patterns. (No Impact)

The Project would not involve changes in air traffic patterns, and would not affect air traffic. No impacts would occur as a result of the Project.

Transportation Hazards and Construction-Period Traffic

Impact Trans-4: The Project’s design for the residential subdivision would not substantially increase hazards due to a design feature or incompatible uses, but large vehicles associated with public access to the historic Moraga Adobe and construction-related traffic could introduce temporary and/or intermittent transportation hazards. (LTS with Mitigation)

The Project includes construction of Adobe Lane, a private roadway extending from Donna Maria Way to lots in the proposed subdivision. Most traffic to and from the Project site will be residential in nature, using passenger cars similar to the surrounding uses, with the exception of construction traffic and potentially school groups visiting the Moraga Adobe.

Project Elements

Roadway Design

The Project’s roadways have been designed to meet all applicable City standards including those found in OMC section 17.7. The Project’s design consistency with City roadway standards ensures that
roadways would not substantially increase hazards due to a design feature. As a result, this impact would be less than significant.

Public Access to the Moraga Adobe

The City is not a party to the 2013 MOA between J&J Ranch and the Friends. The MOA provides that if the Friends purchase the Moraga Adobe, the Friends shall be able to access the Moraga Adobe thirty (30) days annually, between the hours of 9:00 a.m. and 4:00 p.m. on weekdays and between the hours of 10:00 a.m. and 5:00 p.m. on weekends. Access is limited to 60 persons with the exception of one annual fund-raising event limited to 150 persons. Consistent with the access provisions of the MOA, it is anticipated that school groups and similar groups would visit the site to tour the historic Moraga Adobe on most of the permitted access days. These visits could potentially introduce large vehicles and add or large volumes of traffic through the surrounding residential neighborhood, which could conflict with local traffic and pedestrian movement and could cause damage to the roadway surface along Donna Maria Way resulting in a traffic hazard. This impact is potentially significant.

Mitigation Measures

The following mitigation measures are recommended to reduce and avoid these potential impacts:

Mitigation Measure Trans-4A: Limitations on Public Access to the Moraga Adobe. Consistent with the 2013 MOA, access for non-residents to the Moraga Adobe shall be limited to the following:

1. The size of vehicles used by groups to access the Moraga Adobe shall be restricted. Full sized school buses and other vehicles that accommodate 45 passengers or more shall not be used to transport visitors to the Moraga Adobe site. The number of parking spaces at the Moraga Adobe parcel shall be limited to an area where one shuttle bus may load and unload passengers, plus one handicapped parking space.
2. The number of days that the Moraga Adobe may be toured shall be no more than 30 days per year.
3. The maximum size of a school group visiting the Moraga Adobe site shall be 60 persons.

Mitigation Measure Trans-4B: Donna Maria Way Pavement Inspection and Repair. The Project applicant shall conduct a visual inspection of pavement conditions on Donna Maria Way prior to commencement of construction to establish a baseline of pavement conditions, followed by an inspections after construction has been complete, to determine any pavement condition changes and potential need for repair. A visual inspection by an engineer shall determine whether the roadway conditions include surface cracking, structural deficiencies and other distress signs that may indicate a need for roadway rehabilitation. Should such conditions occur, rehabilitation of the roadway surface shall be conducted by the Project applicant.

Implementation of these mitigation measures will prevent large vehicles and large volumes of traffic from passing through the surrounding residential neighborhood, and would ensure that roadway hazards from excessive roadway wear during construction would be reduced to a level of less than significant.

Construction-Period Traffic

During the construction period, an increase in roadway traffic along El Camino Moraga and Donna Maria Way will occur due to construction-related traffic. Construction traffic could introduce potential conflicts between pedestrians, bicycles and neighborhood traffic, and could conflict with Del Rey Elementary School drop-off and pick-ups. Should construction-related vehicles park along El Camino Moraga or Donna Maria Way, access to these roadways could be obstructed. Each of these issues are potential transportation safety hazards.
Applicable Policies and Standards

OMC section 15.32.150 allows the City Engineer to designate a truck route for ingress and egress from a property during the term of the building permit upon findings that:

A. The designation of the truck route will minimize the impact of the construction such as noise, dust, traffic safety hazards and potential damage to pavement on a residential street;

B. Designation of the truck route will not unreasonably impair the contractor's access to the site or cause undue economic hardship.

Given the limited options for access to the Project site, the designation of a truck route alone will not likely address local construction-period impacts.

Mitigation Measures

The following mitigation measures are recommended to reduce and avoid potential construction-period impacts:

Mitigation Measure Trans-4C: Construction Management Plan. The Project applicant shall submit to the City for its review and approval a Construction Management Plan (CMP), addressing construction vehicle circulation and contractor rules, neighborhood traffic safety during construction, and construction hours. The CMP shall include, but not be limited to, the following limitations and restrictions:

1. All construction activities, including staging, materials storage, and equipment parking shall be restricted to occur on the Project site.

2. To avoid construction traffic interfering with the pedestrian and vehicular school commute to Del Rey Elementary School and Miramonte High School, the construction hours set forth in the CMP shall be limited to weekdays between 9:00 AM and 6:00 PM. Classes at both nearby schools start at 8:00 AM and 8:45 AM respectively, and end in the afternoon.

3. Traffic controls and/or construction equipment and material delivery escorts shall be provided on Donna Marina Way and El Camino Moraga as needed to minimize conflicts during school drop-off and pick-up times.

4. Construction-related vehicles shall be prohibited from parking along El Camino Moraga and Donna Maria Way, and access to these roadways shall be maintained free and clear to the extent practicable.

5. Provide an alternative walking path linking the adjacent neighborhood to Miramonte High School during the construction period, when access to the existing informal pedestrian trail will be temporarily closed.

With implementation of the required CMP, the addition of construction-related vehicle trips to the roadways serving the Project site would not disrupt traffic flows on nearby roadways, and would minimize potential conflicts between pedestrians, bicycles, neighborhood traffic and school traffic during the construction period. These impacts would be reduced to a level of less than significant.

Emergency Access

Impact Trans-5: The Project will not result in inadequate emergency access. (LTS with Mitigation)

Project Elements

The Moraga Orinda Fire District has reviewed the Project, and has concluded that the Project roadways have been designed to meet all Fire District criteria and meet minimum standards for fire apparatus access and water supply.
Mitigation Measures

Additionally, the Project applicant has agreed to incorporate all of the following recommendations proposed by the District:

Mitigation Measure Trans-5: Fire District Recommendations. Final designs for the Project shall include the following recommendations of the Moraga Orinda Fire District:

1. The Project shall meet minimum standards for fire apparatus access and water supply. Roads and fire hydrants will be in service prior to the start of combustible construction.
2. Structures constructed on the site will comply with the construction provisions of Chapter 7A of the California Building Code and meet minimum State and Moraga-Orinda Fire District standards for vegetation management.
3. Residential fire sprinkler systems will be installed in all residences regardless of size.
4. The Project applicant will contact the Fire District for street addressing.

With the Project’s compliance with Fire District requirements, this impact is less than significant.

Conflict with Policies/Plans/Programs

Impact Trans-6: The Project would not conflict with any adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. (LTS)

The City has not adopted any alternative transportation plans that apply to the Project site, with the exception of the General Plan Open Space, Parks, Schools, and Utilities Element. As noted in the Environmental Setting, no existing transit, bicycle, or formal pedestrian facilities directly serve the Project site. An informal pedestrian path crosses through the Project site to connect the two ends of Donna Maria Way. The City’s General Plan shows a path along the southern edge of the Project site and possibly a path connecting the two segments of Donna Maria Way. The Project plans are consistent with this General Plan provision as discussed under the Project Elements sub-header.

The Project would not have a significant impact on traffic operations, including at intersections on Moraga Way, and therefore would not affect bus performance along that route. There is no evidence that the Project would conflict with the bicycle lanes on Moraga Way or the sidewalk on Camino Moraga. Further, the recent collision history for the study intersections found few collisions, none of which involved either a pedestrian or a bicycle. These results suggest that there are no existing safety concerns at any of the study intersections.

Applicable Policies and Standards

OMC section 15.32.230 requires dedication and construction of a path or sidewalk consistent with the General Plan.

Project Elements

The Project includes construction of a system of pedestrian paths, including an enhanced pathway that connects the two segments of Donna Maria Way. The Project also includes a pathway that connects Dolores Way along the southern edge of the Project site, and then follows alongside Adobe Lane. The General Plan shows the path continuing along the city border into the adjacent Lavenida Lane parcel. The approved project for that site, however, does not feature a path along its southern edge, so the Project’s path does not continue into that adjacent parcel.

The Project would not decrease the performance of existing travel modes and would be consistent with the pedestrian routes identified in the General Plan. As a result, the impact is less than significant.
Cumulative Transportation and Traffic Impacts

Impact Trans-7: The Project would not combine with other projects to result in cumulatively considerable transportation and traffic impacts. (LTS)

As previously indicated, the Project would result in 9 trips during the AM peak hour and 13 trips during the PM peak hour.

Cumulative Conditions – Without the Project ("No Project")

TJKM conducted an analysis of traffic operations under cumulative conditions (Appendix 12C), focusing on Lavenida Drive at Moraga Way and El Camino Moraga at Moraga Way. These two intersections would most likely experience future traffic growth given their location on the Moraga Way corridor. TJKM developed Year 2030 cumulative condition traffic volumes at these intersections by applying a growth factor to existing traffic volumes. This growth factor was derived from the recent Camino Ricardo Residential Subdivision Draft EIR’s Traffic Study prepared for the Town of Moraga (Fehr & Peers, 2012). The following cumulative analysis uses the cumulative traffic volumes from the Camino Ricardo DEIR for the Moraga Way/Camino Ricardo intersection, the closest study intersection to the Project site. TJKM also included the additional traffic from the anticipated Lavenida Lane project, based on the supplemental November 2010 traffic evaluation that TJKM conducted for that project.

Based on the projected Year 2030 cumulative conditions (without the Project), Moraga Way is anticipated to have annual traffic growth of approximately one percent annually. Table 12-5 shows the results of a LOS evaluation of the two study intersections under these cumulative conditions. The minor northbound approach of the Lavenida Drive/Moraga Way intersection is projected to operate at LOS E during the AM peak hour and LOS D during the PM peak hour. Both service levels would exceed the City of Orinda General Plan threshold of LOS C. This exceedance is due to projected traffic growth on Moraga Way only. This scenario does not include the Project.

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<tr>
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<th>Intersection</th>
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<th>AM Peak</th>
<th>PM Peak</th>
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<td>Delay</td>
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<td>Lavenida Drive/Moraga Way</td>
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<td>37.8</td>
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Notes:
- Delay - Average control delay in seconds per vehicle.
- LOS = Level of Service.

Cumulative Conditions – With the Project ("Plus Project")

As with the No Project cumulative conditions scenario, the intersections of Lavenida Drive/Moraga Way and El Camino Moraga/Moraga Way would most likely experience future traffic growth, including traffic generated by the Project via El Camino Moraga, given their location on the Moraga Way corridor. Table 12-6 shows LOS levels for these intersections under cumulative plus Project conditions. The minor northbound approach of the Lavenida Drive/Moraga Way intersection is expected to continue operating at LOS E during the AM peak hour and LOS D during the PM peak hour, with the addition of Project traffic. Both of these service levels exceed the City of Orinda General Plan threshold of LOS C. However, these service levels are unchanged from cumulative conditions without the Project, and average vehicle delay increases for the northbound approach are expected to be minimal (fewer than two seconds per vehicle, which is imperceptible to the typical motorist). Therefore, no cumulatively significant impacts on traffic operations would occur due to the Project.
Table 12-6: Levels of Service – Year 2030 Cumulative Conditions Plus Project

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<th>Intersection</th>
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Notes:
- Delay - Average control delay in seconds per vehicle.
- LOS = Level of Service.

Conclusions

The Project, together with the Lavenida Lane Project, would result in approximately 200 daily trips (124 trips from the Project and 77 trips from the Lavenida Lane project), and approximately 21 trips during the PM peak hours (13 trips from the Project and 8 trips from the Lavenida Lane Project). According to the TJKM study, the Project together with the Lavenida Lane Project would add a less than one second delay to the Lavenida Drive/Moraga Drive intersection during peak hours and would thus not cause an increase in traffic that would be significant. The Project would not significantly contribute to a cumulatively considerable impact on intersection levels of service.

Like the Project, the Lavenida Lane Project conforms to all applicable policies and standards that would ensure the development would not result in significant impacts related to traffic and transportation. Therefore, the Project along with other anticipated development in the area would not result in significant cumulative transportation impacts.

None of the other thresholds of significance for transportation-related impacts would be affected by the cumulative addition of traffic from the Lavenida Lane and Camino Ricardo projects. Therefore, the Project would not result in any cumulatively considerable effects related to transportation and traffic.
Other Less than Significant Impacts

Section 15128 of the CEQA Guidelines requires that the EIR “contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR.” This chapter identifies those project effects requiring only limited analysis and discussion to determine their significance.

Agriculture and Forest Resources

Special Status Farmland

Impact Ag-1: Development of the Project would not 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)

According to the Contra Costa County 2008 Important Farmland Map, the site is located within an “Urban and Built-up Land” area, and there is no Prime Farmland, Unique Farmland or Farmland of Statewide Importance directly adjacent to the Project. Therefore, the Project would have no impact on Prime Farmland, Unique Farmland, or Farmland of Statewide Importance.

Development of the Project would not involve any changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use.

Williamson Act Land

Impact Ag-2: Development of the Project would not conflict with existing zoning for agricultural use, or with a Williamson Act contract. (No Impact)

The Project area is urbanized and not zoned for agricultural use. There are no Williamson Act contracts within the Project area or in the vicinity. According to the Contra Costa County 2007 Agricultural Preserves Map, which identifies properties under Williamson Act contracts, the Project site is not under such a contract. The Project would not conflict with existing zoning for agricultural use or with any Williamson Act contracts.

Forest and Timberland

**Impact Ag-3:** Development of the Project would not conflict with existing zoning for, or cause rezoning of, forest land or timberland zoned Timberland Production. **(No Impact)**

The Project site is zoned for residential development and does not result in rezoning of forest land, timberland, or timberland zoned Timberland Production. The Project site is located in a developed area and is not considered to be forest land.

Development of the Project would not involve any changes in the existing environment which, due to their location or nature, could result in conversion of forest land to non-forest use.

Cumulative Agriculture and Forest Resource Impacts

**Impact Ag-4:** Development of the Project would not combine with other projects to result in cumulatively considerable agriculture or forest resource impacts. **(No Impact)**

The Project would have no impact on agricultural or forest resources and therefore will not combine with other nearby development to contribute to a cumulative impact.

Greenhouse Gas Emissions

**GHG Emissions**

**Impact GHG-1:** The Project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. **(LTS)**

As discussed in Chapter 5 Air Quality, the City applies the thresholds of significance from the updated BAAQMD CEQA Guidelines. These Guidelines include screening criteria to provide lead agencies and project applicants with a conservative indication of whether a project could result in potentially significant greenhouse gas (GHG) impacts. If all of the screening criteria are met by a project, then the lead agency or applicant need not perform a detailed assessment of the project’s GHG emissions, and impacts are deemed less-than-significant. ²

Under the screening criteria for single family developments, those projects that include more than 56 dwelling units are deemed to have the potential to result in significant operational impacts related to greenhouse gas emissions. The Project, which proposes to construct 13 residential units, does not meet the BAAQMD screening criteria, and thus, impacts related to greenhouse gas emissions would be less than significant.

BAAQMD does not specify screening criteria for construction-related greenhouse gas emissions. Because operational impacts would be less than significant, construction emissions, which would take place over a relatively short duration compared to operational emissions, would also be considered less than significant.

The City-applied thresholds characterize GHG emissions as necessarily cumulative in nature; the screening criteria and applicable methodologies in fact measure whether a project’s contribution to a cumulative impact is considerable. Even under a scenario whereby the Project (13 homes) is combined with the Lavenida Lane (8 homes) and Camino Ricardo (26 homes) projects, these cumulative projects would construct a total of 47 units, still below the BAAQMD screening criteria of 56 units for potential

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cumulative greenhouse gas emission impacts. Therefore, the Project along with these nearby approved developments would not result in cumulatively significant greenhouse gas emission impacts.

**Conflict with GHG Emissions Reduction Plan**

**Impact GHG-2:** The Project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. *(No Impact)*

The City has not yet adopted a qualified GHG Reduction Strategy or Climate Action Plan, so this DEIR does not analyze consistency with such a plan. As noted above, the small size of the Project places it below the threshold of significance for BAAQMD CEQA Guidelines. State policies adopted for the purpose of reducing GHG emissions include AB 32 and SB 375, which are enacted through targets imposed on energy generators and vehicle manufacturers, and remain unaffected by the Project. Plan Bay Area, the regional transportation plan and sustainable communities strategy designed to reduce GHG emissions from cars and light trucker per SB 375, sets forth a blueprint for land development and transportation investments to achieve such reductions. By developing new housing within an otherwise urbanized area, the Project is consistent with the strategy of Plan Bay Area.³

**Land Use and Planning**

**Community Division**

**Impact LU-1:** Development of the Project would not physically divide an established community. *(LTS)*

The physical division of an established community would typically involve construction of large features (such as arterial roadways or freeways) that function as a barrier between communities. The Project would not construct a barrier that would physically divide an established community. As described in Chapter 3 Project Description, the Project would improve connections through the existing site by:

- maintaining and enhancing the existing pedestrian connection between the west end of Donna Maria Way at the entrance to the site and the east end of Donna Maria Way accessed from Lavenida Lane. This path would be four feet wide with a crushed granite surface until it reaches the wetlands area; then the path would change to become a five-foot-wide raised wooden boardwalk.

- providing a new pedestrian connection from Dolores Way to Donna Maria Way though the site, with a four-foot wide path alongside the extended Adobe Way.

Because the Project would not construct barriers and would enhance pedestrian access in the Project area, it would not physically divide the existing residential communities adjacent to the site. Access through the Project site during construction may be restricted, but that would be a temporary impact. As a result, the impact would be less than significant.

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Plan Conflict

Impact LU-2: Development of the Project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect. (No Impact)

There is no specific or community plan that applies to the Project site and no agencies other than the City of Orinda have land use jurisdiction over the Project. The City’s General Plan and Zoning Code apply to the Project site.

City of Orinda General Plan

The Project site is designated as “Low Density Residential” in the City of Orinda General Plan. This land use designation provides for residential uses at one to two housing units per acre. The density of the proposed Project, at 13 units over 20.3 acres, is consistent with the permitted density.

The General Plan requires future subdivisions located within this land use designation to meet a low-density standard, with development on steeper sites to be at lower densities as determined by slope-density regulations. These requirements are detailed in OMC Chapter 17.7 Residential Minimum Lot Size and Hillside Development.

The Project includes a General Plan Amendment for the Moraga Adobe parcel to be consistent with its future use and public access provisions. See Chapter 3 Project Description for further details.

Below is a discussion of the Project’s consistency with applicable General Plan policies.

<table>
<thead>
<tr>
<th>Table 13-1: General Plan Policy Consistency Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2.1.1 – Land Use: Guiding Policies</strong></td>
</tr>
<tr>
<td>A. Maintain the semi-rural character of Orinda.</td>
</tr>
<tr>
<td>Consistent: The Project conforms to the density</td>
</tr>
<tr>
<td>requirements of the General Plan and Zoning</td>
</tr>
<tr>
<td>Ordinance. It also incorporates an open space</td>
</tr>
<tr>
<td>easement that provides protection for more than</td>
</tr>
<tr>
<td>39 percent of the Project site (7.96 acres), and</td>
</tr>
<tr>
<td>includes landscaping as part of the Project design</td>
</tr>
<tr>
<td>that shields the roadway from public view. The Project</td>
</tr>
<tr>
<td>is therefore consistent with this General Plan policy.</td>
</tr>
<tr>
<td>B. Maintain the dominance of wooded and open</td>
</tr>
<tr>
<td>ridges and hillsides.</td>
</tr>
<tr>
<td>Consistent: See above. The Project footprint does</td>
</tr>
<tr>
<td>not extend onto or near a ridgeline, and does not</td>
</tr>
<tr>
<td>intrude upon undisturbed hillsides to the south of</td>
</tr>
<tr>
<td>the south of the Project site. The Project is</td>
</tr>
<tr>
<td>therefore consistent with this General Plan policy.</td>
</tr>
<tr>
<td><strong>2.1.2 – Land Use: Implementing Policies</strong></td>
</tr>
<tr>
<td>C. Low-Density: Maintain regulations that permit one</td>
</tr>
<tr>
<td>to two single-family dwelling units per net acre on</td>
</tr>
<tr>
<td>flat land and require progressively lower density as</td>
</tr>
<tr>
<td>slope increases consistent with the previously</td>
</tr>
</tbody>
</table>
| existing slope density formula. Exceptions Consistent:
| The Project area is designated low density, and would |
| site 13 units on more than 20 acres. The Project      |
| therefore maintains a density of between one and      |
| two single-family dwellings per net acre.             |
Table 13-1: General Plan Policy Consistency Assessment

<table>
<thead>
<tr>
<th>Guiding Policies</th>
<th>Consistent:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Support preservation of EBMUD watershed lands.</td>
<td>There are no EBMUD watershed lands on which the Project would encroach, and thus the Project is consistent with this policy.</td>
</tr>
<tr>
<td>C. Retain steep or unstable slopes as open space.</td>
<td>Steep open space areas on the Project site are primarily located along the riparian corridors and are preserved through an open space easement. Unstable slopes will be repaired in locations that are affected by development.</td>
</tr>
<tr>
<td>D. Retain creeks and wildlife access corridors as open space for preservation of natural resources, consistent with flood control.</td>
<td>The Project includes an open space easement that coincides with required creek setbacks, wetlands, and sensitive riparian habitat, establishing developed areas outside these resources.</td>
</tr>
<tr>
<td>E. Retain existing private and public recreational open space, and acquire additional land for public park development to meet the needs of all sectors of Orinda and all age groups in the community. A minimum of five acres of land for each 1,000 city residents should be devoted to public park and recreational purposes but more may be needed.</td>
<td>The Project would benefit the community by repairing and adding pedestrian paths throughout the site, repairing the dilapidated Moraga Adobe building and by paying Park Dedication fees per the City’s adopted fee schedule.</td>
</tr>
</tbody>
</table>

2.2.2 – Open Space and Parks: Implementing Policies

<table>
<thead>
<tr>
<th>Implementing Policies</th>
<th>Consistent:</th>
</tr>
</thead>
<tbody>
<tr>
<td>D. Set dedication and in-lieu fees required as a condition of tentative subdivision map approval by ordinance to enable acquisition of needed parkland.</td>
<td>The payment of all applicable in-lieu fees will be a condition of approval of the Project.</td>
</tr>
<tr>
<td>G. Where paths are shown along various roadways, they should provide for bicycle use if feasible. Until full development of these paths is accomplished, bicycle lanes should be implemented. Until the designation of bicycle lanes becomes feasible, these routes may be designated by routes.</td>
<td>The Project site does not contain any roadways designated as bicycle lanes.</td>
</tr>
</tbody>
</table>

2.3.1 – Circulation: Guiding Policies

<table>
<thead>
<tr>
<th>Guiding Policies</th>
<th>Consistent:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Permit new development only when adequate transportation systems and</td>
<td>A traffic study was prepared for the Project showing development of the Project would not have any perceptible impacts on the</td>
</tr>
</tbody>
</table>
Table 13-1: General Plan Policy Consistency Assessment

<table>
<thead>
<tr>
<th>Policy</th>
<th>Consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>parking are provided.</td>
<td>transportation system. See Chapter 12 for further details.</td>
</tr>
<tr>
<td>B. Design roadways to compliment semi-rural character following natural contours, and maintaining natural topography and vegetation close to road edges, where such can be done without compromising safety.</td>
<td><strong>Consistent:</strong> The Project includes minimal roadways that would follow the topography of the Project site and would not include any street lighting. The Project includes a Street Tree Plan that proposes to plant trees adjacent to the roadway.</td>
</tr>
<tr>
<td>C. Strive to retain the existing peak hour level of service (LOS) of &quot;C&quot; or better at those intersections where it now prevails and improve the LOS at all other intersections.</td>
<td><strong>Consistent:</strong> The traffic study prepared for the Project shows that development of the Project would not cause any studied intersections to degrade below a LOS &quot;C&quot; and, where a substandard intersection was evaluated, it was determined the Project would not have any perceptible impacts on this intersection.</td>
</tr>
<tr>
<td>E. Expand pedestrian and bicycle paths to provide a safe alternative to auto use, particularly to provide safe paths near schools and in other locations where they are heavily used for circulation.</td>
<td><strong>Consistent:</strong> The Project includes a system of pedestrian paths. One pedestrian path will maintain the existing connection on the northeast side of the site between the northwesterly segment of Donna Maria Way and the southeasterly segment of Donna Maria Way. This heavily-used existing path will be enhanced with an elevated boardwalk over the existing wetlands. A second path will create a new pedestrian connection between the end of Dolores Way and the western most cul-de-sac on the newly created Adobe Lane. This path will then continue along the new roadway to either end of Donna Maria Way.</td>
</tr>
<tr>
<td>F. Make traffic control decisions to benefit local and discourage through traffic.</td>
<td><strong>Consistent:</strong> The Project would not create any routes that encourage through-traffic through any residential neighborhoods.</td>
</tr>
<tr>
<td>G. It is the goal of the City of Orinda to preserve and retain, in the most natural condition possible, scenic vehicular entryways, routes and corridors in the community.</td>
<td><strong>Consistent:</strong> As discussed in greater detail in the aesthetic analysis (Chapter 4), the Project includes elements that ensure that impacts on views of the Project site would be less than significant. The Project roadway would be designed to be of limited visibility from off-site vantage points through development and implementation of a Street Tree Plan. Landscaping will be planted in clusters along the roadways in the subdivision consistent with the City’s Hillside and Ridgeline Design Guidelines. Visual simulations of the Project demonstrate the limited visibility of the Project. In light of the above, the Project would be consistent with the City’s goal to preserve the scenic quality of the Project site and its surroundings.</td>
</tr>
</tbody>
</table>
Table 13-1: General Plan Policy Consistency Assessment

<table>
<thead>
<tr>
<th>2.3.2 – Circulation: Implementing Policies</th>
<th>Consistent: The Project is subject to the City’s Transportation Improvement Program Fee Ordinance (OMC section 3.20.060).</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Consider requiring transportation management system measures that may include carpooling, vanpooling, shuttle buses or staggered work hours to reduce traffic impacts where appropriate.</td>
<td>Consistent: The Project consists of 13 residential home sites and thus would not warrant carpooling, shuttle buses, or staggered work hours. Moreover, a traffic study prepared for the Project (see Chapter 12) demonstrates that the Project would not have any perceptible impact on the traffic network. The Project would include new paths that will facilitate pedestrian access within the neighborhood to area schools.</td>
</tr>
<tr>
<td>B. Establish a transportation system improvement fee to be paid as a condition of approval of all development projects based on travel and parking demand generated by the project and its location.</td>
<td>Consistent: The Project is subject to the City’s Transportation Improvement Program Fee Ordinance (OMC section 3.20.060).</td>
</tr>
<tr>
<td>C. Discourage new intersections and driveways on arterial roads where access can be provided from another street or be combining driveways.</td>
<td>Consistent: The Project would not create any new intersections or driveways on an arterial street.</td>
</tr>
<tr>
<td>H. Adopt standards for pavement width and other design features of roads in residential areas that are consistent with the semi-rural character of Orinda, utilizing progressively higher standards consistent with intensity of use and public safety. Street lighting should not normally be required except where necessary for safety purposes.</td>
<td>Consistent: The Project is consistent with the City’s adopted road width standards and with the Hillside and Ridgeline Design Guidelines as they pertain to roadway design. The roadway will be designed with rolled curbs and a crushed gravel pedestrian path, where applicable, and crushed gravel pull off parking spaces to maintain the semi-rural character of Orinda. No street lights are proposed.</td>
</tr>
<tr>
<td>K. Develop on-site parking standards for single-family zoning districts which require 1) a minimum of 4 on-site parking spaces, and 2) a percentage of covered parking. Also consider standards providing for shared parking in the multi-tenant commercial developments.</td>
<td>Consistent: Parking standards adopted by the City are contained in Chapter 17.16 of the OMC. As designed, the home sites will not preclude development of single family homes in a manner that is consistent with the City’s adopted parking standards. When houses are proposed on these sites, the designs will be required to comply with all on-site parking standards or an exception to those standards will be required.</td>
</tr>
<tr>
<td>M. Do not make roadway improvements at the expense of established bicycle and pedestrian paths, except where in the interest of public safety.</td>
<td>Consistent: The existing pedestrian path through the property connecting the northwesterly segment of Donna Maria Way to the southeasterly segment of Donna Maria Way will be enhanced by the Project with a raised boardwalk over the wetland on the Project site. Furthermore, the Project also would provide a new pedestrian connection from the northwest corner of the site at the terminus of Dolores Way.</td>
</tr>
</tbody>
</table>
Table 13-1: General Plan Policy Consistency Assessment

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<thead>
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<tbody>
<tr>
<td>N.</td>
<td>Support bus transit, vanpools and carpool service to reduce peak-hour traffic volumes.</td>
</tr>
<tr>
<td></td>
<td><strong>Consistent:</strong> A traffic study (see Chapter 12) was prepared for the Project showing development of the Project would not have any perceptible impacts on the transportation system.</td>
</tr>
<tr>
<td>R.</td>
<td>Any proposed development or subdivision along a Scenic Corridor or Scenic Highway shall be designed to blend with and permit the natural environment to be maintained as the dominant visual element. It shall not lessen the scenic value of existing visual elements.</td>
</tr>
<tr>
<td></td>
<td><strong>Consistent:</strong> The Project site is not located directly along or visible from any Scenic Corridor or Highway. As discussed in greater detail in the aesthetic analysis (Chapter 4), the Project includes elements that minimize aesthetic impacts on views of the Project site to less than significant levels. The Project roadway would be designed to be of limited visibility from off-site vantage points through implementation of a Street Tree Plan. Landscaping will be planted in clusters along the private roadway in the subdivision and shall be consistent with the City’s Hillside and Ridgeline Design Guidelines. Visual simulations of the Project demonstrate the limited visibility of the Project. Thus, the Project would be consistent with the City’s goal to preserve the scenic quality of the Project site and its surroundings.</td>
</tr>
<tr>
<td>S.</td>
<td>Where structures are permitted, they shall be designed to blend with and permit the natural environment to be maintained as the dominant visual element.</td>
</tr>
<tr>
<td></td>
<td><strong>Consistent:</strong> See above.</td>
</tr>
</tbody>
</table>

### 4.1.1 – Conservation Element: Guiding Policies

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Preserve Orinda’s historic structures and sites, unique trees and landforms.</td>
</tr>
<tr>
<td></td>
<td><strong>Consistent:</strong> The Project will restore the Moraga Adobe building and rehabilitate its appearance to circa 1848, with all restoration work conducted in accordance with the Secretary of Interior’s Standards for the Treatment of Historic Properties. These proposed improvements comply with the recommendations of a historical study prepared for the City of Orinda. (See Appendix 7A and Appendix 7D). The design also includes measures such as setback distances, roadway alignments and preservation of the characteristics of the Moraga Adobe’s rural setting atop a knoll.</td>
</tr>
<tr>
<td></td>
<td>The Project proposes the removal of 38 trees that are subject to section 17.21 of the OMC. Removal of these trees will require a tree removal permit, including replacement tree requirements. There are no unique trees on the Project site. To the extent protected trees are on</td>
</tr>
</tbody>
</table>


Table 13-1: General Plan Policy Consistency Assessment

<table>
<thead>
<tr>
<th>Item</th>
<th>Consistency</th>
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</thead>
<tbody>
<tr>
<td>B. Preserve rare and endangered species.</td>
<td>Consistent: As further detailed in the analysis of biological resources (Chapter 6), the Project includes multiple elements that ensure that there would not be potentially significant impacts to special status plant and wildlife species.</td>
</tr>
<tr>
<td>C. Preserve valuable wildlife habitats, particularly riparian habitats.</td>
<td>Consistent: See above. The Project includes an open space easement that coincides with required creek setbacks, wetlands, and sensitive riparian habitat, establishing developed areas outside of these habitat areas.</td>
</tr>
<tr>
<td>D. Preserve oak woodlands and other native trees, and encourage planting and reforestation of oaks and other natives in hillside areas.</td>
<td>Consistent: The open space easement will preserve 39 percent of the Project site including the ephemeral creeks and the oak woodlands within the site. The Project will fully comply with the City’s tree ordinance, and the Project applicant has prepared a Street Tree Plan as a part of the subdivision improvement approvals. Future landscaping on residential lots will be required to remove non-native plants and to plant native species that are drought-tolerant and appropriate for the site.</td>
</tr>
<tr>
<td>E. Protect creeks from siltation, pollution, and debris buildup to minimize the danger of flooding in storms to retain the aesthetic and habitat values of the creeks in their natural state, and enhance and restore them where possible. Prohibit major channelization.</td>
<td>Consistent: The Project applicant has submitted a Storm Water Control Plan and will submit a Storm Water Prevention Pollution Plan (including a list of Best Management Practices) as a condition of approval. In compliance with NPDES permit requirements, the Project BMPs are designed to reduce discharge of pollutants to the maximum extent practicable. In addition, the open space easement establishes developed areas away from the creeks and associated riparian areas.</td>
</tr>
<tr>
<td>F. Achieve aesthetically sensitive grading that conforms to the natural contours, ensures safety and preserves trees and other vegetation to the greatest practical extent.</td>
<td>Consistent: Grading on the Project site would employ best engineering practices and conform to requirements set forth in OMC section 17.7.7 to avoid environmental impacts. The Project’s open space easement encompasses required creek setbacks, wetlands, and sensitive riparian habitat, and comprises more than 39 percent of the Project site. The Project roadway has been designed to conform to the natural contours of the Project site and the historical setting of the Moraga Adobe. In addition, the Project...</td>
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Table 13-1: General Plan Policy Consistency Assessment

<table>
<thead>
<tr>
<th>Policy Item</th>
<th>Consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>G. Protect visually prominent ridgelines and hillsides from development.</td>
<td>Consistent: The Project site is not located on a visually prominent ridgeline or hillside.</td>
</tr>
<tr>
<td>K. Limit septic tanks to very low-density areas.</td>
<td>Consistent: The Project will not utilize septic tanks.</td>
</tr>
<tr>
<td>N. Encourage undergrounding of power lines and replacement of utility towers with single poles.</td>
<td>Consistent: The Project will underground all power lines.</td>
</tr>
</tbody>
</table>

4.1.2 – Conservation Element: Implementing Policies

A. Conduct an archival study of resources, map the general locations of resources, and review development proposals to determine the potential impacts on archaeological and historic resources and the need for more detailed study. Require additional study of development proposals on sites with moderate probability that such resources exist.

Consistent: An Historical/Cultural Resources study (see Chapter 7) was completed for the Project, identifying to the extent feasible all archaeological, historic, and paleontological resources. The Project incorporates the Study’s recommendations as elements of the Project design.

C. Require environmental habitat assessment for any major development determined to be in an environmentally sensitive area. This assessment will include an on-site inspection, and a written description of any habitats, plant and animal species observed, species likely to be present, likely impacts of the proposed project, and mitigation measures which will preserve the habitats.

Consistent: A biological resources assessment was prepared for the Project in accordance with the applicable policy (see Chapter 6). The findings and recommendations in the assessment were incorporated into elements of the Project design, as further detailed in the biological analysis, above.

D. Where possible, maintain connecting open-space areas so that wildlife can have free movement through the area, bypass urban areas, and have access to adjacent regional parks and open space.

Consistent: The Project includes multiple elements that ensure that there will be no potentially significant impacts to plant and wildlife species. In addition, the Project complies with the existing regulatory structure, ensuring the preservation of rare and endangered species. The Project's open space easement encompasses required creek setbacks, wetlands, and sensitive riparian habitat, and comprises more than 39 percent of the Project site. This easement maintains the ephemeral creeks/ravines, wetland, and Moraga Creek corridors on and through the Project site. Where Project circulation elements cross a watercourse, the Project will include culverts or...
Table 13-1: General Plan Policy Consistency Assessment

| E. | Preserve drainage easements along creeks in order to protect adjacent buildings from flooding, and to preserve valuable riparian vegetation. Where riparian vegetation has to be disturbed for construction, re-vegetation with local riparian species is required. The City shall develop design policies for development near creeks. |
| Consistent: | The Project’s open space easement encompasses required creek setbacks, wetlands, and sensitive riparian habitat as well as the ephemeral creeks on the Project site. |

| H. | Review development proposals to ensure site design and construction methods that minimize soil erosion and volume and velocity of surface runoff, and mitigate impacts on properties below. |
| Consistent: | The Project applicant has submitted a Storm Water Control Plan and will submit a Storm Water Prevention Pollution Plan (including a list of Best Management Practices) as a condition of approval. In compliance with NPDES permit requirements, the Project BMPs are designed to reduce discharge of pollutants to the maximum extent practicable. Moreover, to avoid the siltation of creeks and erosion, and as further detailed in the Project description, the Project includes an open space easement that encompasses required creek setbacks, wetlands, and sensitive riparian habitat. The Project also includes extensive drainage and subdrainage facilities designed to ensure erosion is minimized. See Chapter 8 Geology and Soils and Chapter 10 Hydrology and Water Quality for further analysis. |

| L. | Control septic tank use by ordinance. Septic tanks will be permitted only where they conform to City and County standards. |
| Consistent: | The Project will not utilize septic tanks. |

4.2.1 – Safety Element: Guiding Policies

| A. | Geologic and seismic hazards shall be mitigated or development shall be located away from geologic and seismic hazards in order to preserve life and protect property. |
| Consistent: | A geotechnical report was prepared for the Project, which was peer-reviewed by the City’s consultant (see Chapter 8 Geology and Soils). This report determined the Project site is not within an Alquist-Priolo Earthquake Fault Zone established by the State of California around known active faults. The Project design incorporates recommendations of the report as elements of the Project design. Design and construction of homes and retaining walls will incorporate engineering specifications and construction practices that minimize seismic risks and geologic hazards. |

| B. | Encourage a high level of fire protection and fire-prevention education. |
| Consistent: | The Moraga Orinda Fire District has reviewed the Project, and the Project |
Table 13-1: General Plan Policy Consistency Assessment

<table>
<thead>
<tr>
<th>Consistency</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>applicant has incorporated all recommendations proposed by the District as elements of Project design (see Chapter 9 Hazards and Hazardous Materials). The Project complies with the City's fire safety ordinance, the California Fire Code, fire safety provisions of the City's building and subdivision ordinances and the California Building Code.</td>
<td></td>
</tr>
<tr>
<td>C. Development shall be located away from flood-prone areas unless flood risks can be mitigated.</td>
<td>Consistent: The Project is not located in a flood prone area or an area of Special Flood Hazards, and will comply with all applicable flood control and subdivision ordinances as a condition of Project and map approval. An open space easement encompasses the creek setback providing a buffer between development and the creek.</td>
</tr>
<tr>
<td>D. Provide public protection from hazards associated with the use, storage and transportation of hazardous materials.</td>
<td>Consistent: Operation of the Project will not involve the transport, use, or disposal of hazardous materials. Project construction activities may involve the use, transport and disposal of hazardous materials. These materials may include chemicals such as gasoline, diesel fuel, lubricating oil, hydraulic oil, lubricating grease, automatic transmission fluid, paints, solvents, glues, and other substances used during construction. Construction of the Project would also require the use of gasoline and diesel-powered heavy equipment, such as bulldozers, backhoes, water pumps and air compressors. The transportation, storage, use, and disposal of hazardous materials during construction activities would be required to comply with a host of uniformly applicable federal, state, and local statutes and regulations that would substantially mitigate any impacts.</td>
</tr>
</tbody>
</table>

4.2.2 – Safety Element: Implementing Policies

A. A geotechnical investigation and report, including assessments of seismic and landslide risks shall be required for new development in Orinda, including single-family residences unless exempted by the City of Orinda. Any other facility that could create a geologic hazard, such as a road on hillside terrain, must also have such an investigation. | Consistent: A geotechnical report was prepared for the Project, which was peer-reviewed by the City’s consultant (see Chapter 8 Geology and Soils). This report determined the Project site is not within one of the Alquist-Priolo Earthquake Fault Zones established by the State of California around known active faults. The Project design incorporates recommendations of the report as elements of Project design. Construction of Project homes and retaining walls will incorporate engineering specifications and construction practices that minimize seismic risks and geologic hazards. |
Table 13-1: General Plan Policy Consistency Assessment

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Evidence of probable geologic hazard will require a geotechnical study by a registered soil engineer or registered geologist to be reviewed by geotechnical consultants selected by the City.</td>
<td><strong>Consistent:</strong> See above.</td>
</tr>
<tr>
<td>E</td>
<td>Land development shall be consistent with the natural carrying capacity of nearby creeks, streams and other waterways.</td>
<td><strong>Consistent:</strong> The Project includes an open space easement that establishes developed areas away from the creeks and associated riparian areas and other sensitive areas. In addition, subdrainage facilities are designed to ensure there is sufficient capacity consistent with natural carrying capacity. See Chapter 10 Hydrology and Water Quality for more analysis.</td>
</tr>
<tr>
<td>F</td>
<td>Encourage a high level of fire protection to residential and commercial development.</td>
<td><strong>Consistent:</strong> The Moraga Orinda Fire District has reviewed the Project, and the Project has incorporated all recommendations proposed by the District as elements of Project design (see Chapter 9 Hazards and Hazardous Materials). The Project complies with the City’s fire safety ordinance, the California Fire Code, fire safety provisions of the City’s building and subdivision ordinances and the California Building Code.</td>
</tr>
<tr>
<td>G</td>
<td>Ordinances shall be developed requiring fire protection features, such as: fire-retardant roof material for new and replacement roofs, sprinklers for new construction, adequate provisions for emergency access, and other fire protection features.</td>
<td><strong>Consistent:</strong> See above.</td>
</tr>
<tr>
<td>H</td>
<td>Minimize damage from grass fires through the development of firebreaks in dedicated open space and fire-access easements. Firebreaks and fire-access easements should be made a condition of project approval.</td>
<td><strong>Consistent:</strong> See above.</td>
</tr>
<tr>
<td>I</td>
<td>Reduce the level of risk from toxic and hazardous materials in Orinda by regulating the transportation and storage of these materials into, though, and out of Orinda, and through an educational program on the proper disposal methods for hazardous, toxic and polluting materials.</td>
<td><strong>Consistent:</strong> Residential use post Project development will not involve the transport, use, or disposal of hazardous materials. Project construction activities may involve the use, transport and disposal of hazardous materials. These materials may include chemicals such as gasoline, diesel fuel, lubricating oil, hydraulic oil, lubricating grease, automatic transmission fluid, paints, solvents, glues, and other substances used during construction. Construction of the Project would also require the use of gasoline and diesel-powered heavy equipment, such as bulldozers, backhoes, water pumps and air compressors. The transportation, storage, use,</td>
</tr>
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</table>
### Table 13-1: General Plan Policy Consistency Assessment

| J. | Prepare and adopt fire-resistant landscaping requirements for new subdivisions. The Orinda Fire Protection District currently uses guidelines developed by the State Department of Forestry. A committee will be appointed to review these guidelines and develop an ordinance for Orinda. |
| Consistent: | The Moraga Orinda Fire District has reviewed the Project, and the Project has incorporated all recommendations proposed by the district as elements of Project design. |

| K. | Establish standards for public and private roads that ensure adequate access for fire-protection equipment. |
| Consistent: | See above. |

#### 4.3.1 – Noise Element: Guiding Policies

| A. | Where practical, mitigate traffic noise to acceptable levels. |
| Consistent: | A traffic study (see Chapter 12) was prepared for the Project showing development of the Project would contribute de minimis vehicle trips to the transportation system. |

| B. | Prevent unnecessary noise from all sources. |
| Consistent: | Project operation and construction would comply with applicable City noise ordinances, which would prevent unnecessary noise. |

#### 4.3.2 – Noise Element: Implementing Policies

| A. | Require an acoustical study and any necessary noise level mitigation where new residential or commercial development is proposed along the Highway 24 corridor and adjacent to major arterials where projected noise contours are 60 Ldn or more. |
| Consistent: | The Project site does not lie within a 60 Ldn noise contour. (General Plan, Noise Element, Figure 9.) |

#### 5.3.3 – Implementing Policies and Programs: General (Required)

| A. | Local Development Mitigation Program. The City has adopted and will continue to implement the Transportation Improvement Program Fee Ordinance requiring developers to mitigate impacts of their development projects on the local and regional transportation system. Impacts may be mitigated on Regional Routes, Basic Routes or transit systems. |
| Consistent: | The Project applicant will pay all requisite development fees as a condition of Project approval. |
Table 13-1: General Plan Policy Consistency Assessment

5.3.4 – Implementing Policies and Programs: Review of Development Applications

A. **Traffic Impact Study Requirements.** As part of the application review process for development projects estimated to generate over 50 peak-hour vehicle trips, the City will conduct a traffic impact study consistent with the Technical Guidelines published by the CCTA. **Consistent:** The Project was determined to generate less than 50 peak-hour vehicle trips (see Chapter 12). Nevertheless, for information purposes only, an impact study was undertaken, which demonstrated the Project would not cause the degradation of area intersections to levels of service below adopted standards, and otherwise would generate *de minimis* trips having an imperceptible effect on the traffic.

<table>
<thead>
<tr>
<th>5.4.2 – Performance Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. <strong>Parks</strong> - Dedication of parkland or payment of an in-lieu parkland dedication fee equivalent to five acres of parkland per 1,000 residents for new residential development. This standard is referenced in Orinda’s Park Dedication &amp; In Lieu Fee Ordinance and General Plan- Policy 2.2.I.E. <strong>Consistent:</strong> The Project applicant will pay all requisite development fees as a condition of Project approval.</td>
</tr>
<tr>
<td>B. <strong>Fire</strong> - Respond to all structural fires with three engine companies. <strong>Consistent:</strong> The Moraga Orinda Fire District has reviewed the Project to determine if fire service may adequately be provided, and the Project has incorporated all recommendations proposed by the district as elements of Project design.</td>
</tr>
<tr>
<td>C. <strong>Police</strong> - Provide capital facilities sufficient to maintain an average two-beat minimum patrol configuration. <strong>Consistent:</strong> The Orinda police chief has reviewed the Project and determined that police service may adequately be provided.</td>
</tr>
<tr>
<td>D. <strong>Sanitary Sewer</strong> - Capacity to carry and treat 100 gallons per capita per day for residential uses and 1,500 gallons per acre per day for commercial uses. Sewer mains should be designed to be 2/3 full and trunk lines should be designed to be 100% full. <strong>Consistent:</strong> Central Contra Costa Sanitary District has confirmed there is sufficient capacity to accommodate Project users (see Chapter 10 Hydrology and Water Quality).</td>
</tr>
<tr>
<td>E. <strong>Water</strong> - Provide a secure, reliable, high quality water supply to customers. <strong>Consistent:</strong> EBMUD has confirmed there is sufficient capacity to accommodate Project users (see Chapter 10 Hydrology and Water Quality).</td>
</tr>
<tr>
<td>F. <strong>Flood Control</strong> - Enforce provisions of existing Ordinance regulating development in areas of Special Flood Hazards (Ordinance 87-13) and provisions of existing Flood Control Ordinance and Subdivision Ordinance for new development (Title 9 and 10 of the Ordinance Code of Contra Costa) <strong>Consistent:</strong> The Project does not lie in a flood prone area or an area of Special Flood Hazards, and will comply with all applicable flood control and subdivision ordinances as a condition of Project and map approval.</td>
</tr>
</tbody>
</table>
5.4.3 – Implementation Policies and Programs for Capital Projects

A. Development Mitigation Program. The City will adopt and implement a development mitigation program to ensure that new growth is paying its share of the costs associated with the provision of facilities for services provided by the City including parks, police and flood control. Working with other agencies, the City will assist and facilitate in the adoption and implementation of a development mitigation program to ensure that new growth is paying its share of the costs associated with the provision of facilities for services not provided by the City including fire, sanitary-facilities and water.

**Consistent:** The Project applicant will pay all requisite development fees as a condition of Project approval.

B. Findings on Performance Standards. The City will approve development projects only after making findings that one or more of the following conditions are met:

1. Assuming participation in adopted mitigation programs, an approved project will be required to contribute its share toward maintenance of performance standards identified in Section 5.4.3; or

2. Because of the characteristics of the development project, project-specific mitigation measures are needed in order to contribute toward maintenance of standards, and such measures will be required of the project sponsor; or

3. Capital projects planned by the City or special district(s) will contribute toward maintenance of standards.

**Consistent:** The City will make the requisite findings prior to any approval of the Project. The Project applicant will pay all requisite development fees as a condition of Project approval. Otherwise, the Project has incorporated various components as elements of Project design that make mitigation unnecessary, as explained in the Project Description and in the impact discussion throughout this document.

**Conclusion**

The Project complies with the General Plan’s Low Density Residential land use designation requiring densities of one to two housing units per acre, and is consistent with all applicable General Plan policies, as indicated in the table above. The Project applicant has applied for a General Plan amendment to allow for future use of and public access to the Moraga Adobe, consistent with the terms of the J&J Ranch and Friends’ MOU.
Zoning Code

Density

The number of developable lots permitted on the Project site is determined by the zoning of the site and the slope density calculation equation set forth in OMC section 17.7 Residential Minimum Lot Size and Hillside Development. The site is zoned RL-40 and the average slope of the Project site is 24.05% percent. Per OMC Schedule 17.7.4, the minimum lot size is 62,229 square feet and the Project site yields 13 residential lots. Adjustments to the minimum lot size are permitted subject to the following requirements:

“…a plan is found to be in conformance with the intent and development standards of this chapter, subject to the following requirements: (1) no lot may be less than twenty thousand (20,000) square feet in size; and (2) the total number of allowable units per acre may not be exceeded. To grant an adjustment, the Planning Commission must make findings of fact to support each of the following:

A. The clustering of lots reduces either environmental impact and/or off-site visual impact, and the proposed plan is consistent with any underlying tentative map and/or planned development approval.

B. The clustering of lots allows for a greater degree of conformity to development standards of the underlying zone.”

The Project’s lot sizes range from 20,900 square feet to 154,569 square feet. Clustering has been employed to minimize impacts on aesthetic and biological resources. The proposed open space easement that encompasses required creek setbacks and species habitat also creates construction buffers to preserve privacy and views for the existing residences north and downhill from the three proposed lots along the north and northwest property line of the Project site (Lots 9, 10, and 11). The footprint of the open space easement also was designed to be consistent with setback requirements for water channels, pursuant to OMC section 17.4.6. By clustering the lots, the Project also avoids development within creek setbacks, minimizes roadway construction and associated water runoff, minimizes the impact of creek crossings, and preserves protected trees, thus reducing the Project's potential environmental impacts and allowing for a greater degree of conformity to the City’s design review standards.

Furthermore, the proposed lot sizes are larger than existing development in surrounding neighborhoods. The average lot size of the developed sites within 300 feet of the Project site is 19,639 square feet, with the largest lot being 61,240 square feet and the smallest lot being 10,400 square feet. The smallest lot proposed in the Project is 20,900 net developable square feet and the largest lot is 154,569 square feet.

The Project includes a change in zoning for the Moraga Adobe parcel to be consistent with its future use and public access provisions. The Project is subject to a Use Permit for the Moraga Adobe whether it is acquired by the Friends or used as a community clubhouse by the Project’s HOA. This EIR analyzes the more intensive of the two uses (acquisition by the Friends) in various chapters of this document, and concludes that all potential impacts are mitigated to less than significant levels.

Conclusion

The Project is consistent with the City’s RL-40 zoning for the site, and consistent with the minimum lot size and clustering provisions of OMC section 17.7.4. The Project includes a proposed zoning change for the Moraga Adobe parcel to better enable future use of and public access to the Moraga Adobe, consistent with the terms of the J&J Ranch and Friends’ MOU.

Conservation Plans

Impact LU-3: Development of the Project would not conflict with any applicable habitat conservation plan or natural community conservation plan. (No Impact)

No applicable habitat conservation or natural community conservation plans encompass the Project site.
Cumulative Land Use and Planning Impacts

Impact LU-4: The Project would not combine with other projects to result in cumulatively considerable land use and planning impacts. \textit{(LTS)}

The design and operation of the Project would not combine with the approved and as yet undeveloped Lavenida Lane subdivision to divide an existing community, as the two projects will not block any pre-existing routes or construct new barriers to travel. Conflicts with plans are not cumulative impacts by nature. Therefore, the Project would not result in any cumulatively considerable effects related to land use and planning.

Mineral Resources

Availability of Mineral Resources

Impact Min-1: Development of the Project would not 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. \textit{(No Impact)}

There are no known mineral resources on the site. The Conservation Element of the Orinda General Plan shows those areas of the city that may be designated by the State Mining and Geology Board as resource sectors for construction aggregate; the Project site is not located within those areas.

Mineral Resource Recovery Site

Impact Min-2: Development of 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. \textit{(No Impact)}

The Project site is not designated as a locally important mineral resource recovery site under the City of Orinda General Plan's Conservation Element. Furthermore, General Plan policies prohibit mineral resource extraction.

Cumulative Mineral Resource Impacts

Impact Min-3: The Project would not combine with other projects to result in cumulatively considerable mineral resources impacts. \textit{(No Impact)}

The Project would have no impact on mineral resources and therefore would not contribute toward cumulative mineral resource impacts.

Population/Housing

Substantial Population Growth

Impact Pop-1: Development of the Project would not induce substantial population growth in the area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure). \textit{(LTS)}

The Project would develop 13 new single family homes on the Project site. This amount of development is consistent with the amount of new residential development anticipated for the area in the City's General Plan (as amended), and the 2015-2023 Housing Element Update.
The General Plan identifies the potential for 35 units to be developed in the area encompassing the Project site (i.e., the South Orinda Area). The Housing Element identifies the potential for 30 housing units to be developed in the area encompassing the Project site (i.e., the Ivy Drive area). The change from the 35 units designated in the General Plan to the 30 units in the Housing Element is because five of the parcels originally identified as developable have since been developed. The 13 units to be developed by the Project fall within the 30 potential units for the South Orinda/Ivy Drive area, allowing an additional 17 units to be developed in the area.

The General Plan EIR evaluated potential growth inducing impacts of development consistent with the General Plan and did not identify any growth-inducing impacts related to development on the Project site or in the surrounding area. Residential growth in the City has not exceeded the projections included in the General Plan so this finding remains valid.

The City released a Draft EIR on October 17, 2014 for the 2015-2023 Housing Element update, which found that development of potential housing sites as identified in the Housing Element would have a less than significant impact on population growth. The IS/MND notes that the average number of persons per household in Orinda is 2.6, which suggests the Project will result in 34 new residents. Given the City’s 2012 population of approximately 17,600, the Project would increase the City’s population by less than one percent (0.19%).

The Project does not include new commercial uses. The new and extended infrastructure developed for the Project would not serve other developments, as the Project site is located at the city limits and is already surrounded by developed land in the form of single family homes and a golf course.

As a result of its consistency with the growth projected in the General Plan and Housing Element, which was found to have less than significant impacts on population growth, and the nature of the Project, the impact would be less than significant.

**Cumulative Population Growth Effects**

The Project would not combine with other projects to result in cumulatively considerable population and housing impacts. The Lavenida Lane project would add another 8 housing units to the South Orinda/Ivy Drive area. The combined development of the Project (13 units) and Lavenida Lane project (8 units) would be 21 units, which would remain consistent with growth levels anticipated under the City General Plan and Housing Element. The Camino Ricardo development is located in the Town of Moraga and not subject to the City of Orinda’s plans and environmental review, but the City of Moraga’s EIR for this project concluded that its contribution to cumulative population growth would also be less than significant. The Project, combined with these other two reasonably expected projects, would not result in a cumulatively significant population growth.

**Displacement**

**Impact Pop-2**: Development of the Project would not displace substantial numbers of existing housing or people, necessitating the construction of replacement housing elsewhere. *(No Impact)*

The Project does not require or result in the movement, displacement, or alteration of existing housing or other habitable structures. Further, the Project would provide additional supply to the existing housing stock.

The Project does not displace people or housing, and therefore does not contribute to cumulative displacement.

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4 The General Plan refers to the relevant area as the “South Orinda Area”, whereas the Housing Element refers to the relevant area as “Ivy Drive.”
Public Services

New Public Facilities

Impact Public Serv-1: Due to the small size of the Project and its location within the developed area of Orinda, the Project would not require new or physically altered governmental facilities in order to maintain acceptable service ratios, response times or other performance objectives. *(LTS with Mitigation)*

Fire Protection

Mitigation Measures

The Moraga-Orinda Fire District has reviewed the Project\(^5\), and the Project applicant has incorporated all recommendations proposed by the District as applicant-proposed mitigation measures, as follows.

**Mitigation Measure Public Serv-1: Compliance with MOFD Recommendations.** The Project shall meet the recommendations and requirements of the Moraga Orinda Fire District for the Project, including:

1. The Project shall meet minimum standards for fire apparatus access and water supply.
2. Roads and fire hydrants will be in service prior to the start of combustible construction.
3. Structures constructed on the site will comply with the construction provisions of Chapter 7A of the California Building Code and meet minimum State and Moraga-Orinda Fire District standards for vegetation management.
4. Residential fire sprinkler systems will be installed in all residences regardless of size.
5. The Project sponsor will contact the Fire District for street addressing.

Conclusions

With implementation of Mitigation Measure Public Serv-1, the Project will comply with the City's fire safety ordinance, the California Fire Code fire safety provisions of the City's building and subdivision ordinances and the California Building Code. The Project site is located within a low-density urbanized area, surrounded by single family homes and two schools. Given the Project's compliance with the Moraga Orinda Fire District's requirements and recommendations, its minor addition to the built form (13 homes) and population (estimated 34 people) served by the District, and its location within the Moraga Orinda Fire District service area, the Project will have a less than significant impact.

Cumulative Effects

The Project and the Lavenida Lane project both conform to the housing development anticipated under the 2015-2023 Housing Element Update. The Draft EIR for the Housing Element Update evaluated the impact of all of the expected growth and found less than significant impacts on the city's fire services. The Camino Ricardo development is located in the Town of Moraga and does not contribute to these impacts. Therefore, the Project would not result in any cumulatively considerable effects related to fire protection services.

\(^5\) Moraga-Orinda Fire District, July 1, 2014 (see Appendix 13A)
**Police**

The Orinda police chief has reviewed the Project and determined that police service may adequately be provided with existing facilities. As a result, the impact would be less than significant.

**Cumulative Effects**

The Project and the Lavenida Lane project both conform to the housing development anticipated under the 2015-2023 Housing Element Update. The Draft EIR for the Housing Element Update evaluated the impact of all the expected growth under the element and found less than significant impacts on the city's police services. The Camino Ricardo development is located in the Town of Moraga and does not contribute to these impacts. Therefore, the Project would not result in any cumulatively considerable effects related to police services.

**Schools**

The Project site is served by the Del Rey Elementary School, which according to the Orinda Union School District Facilities Master Plan, has a capacity of 443 students as the school is currently configured, with a potential capacity of 558 upon utilization of vacant rooms and rooms not currently used as regular classrooms. Recent statistics show enrollment has risen to 402 students.

To calculate the number of new elementary school students generated by the Project, actual elementary school student enrollment data for 2010, available from the Orinda Union School District (OUSD), was compared to 2010 Census Data. According to the 2010 census, there were 6,553 households in Orinda in 2010. Elementary school enrollment within the OUSD during 2010 was 1,886 students, resulting in an elementary school student/household rate of 0.287 students per household. Applying this student/household rate to the 13 units of the Project indicates that the Project would result in between three and four new elementary school students. The Del Rey Elementary School has surplus capacity to accommodate up to 156 students, so it more than adequate to accommodate students from the Project. As a result, the impact would be less than significant.

**Cumulative School Effects**

Construction of both the Project and the approved Lavenida Lane Subdivision would result in a level of development substantially below the development potential identified for the area in the General Plan. The General Plan EIR did not identify any impacts to school capacity resulting from development consistent with the General Plan. Assuming an equal number of students generated from the Lavenida Lane Project as was estimated for the larger Project (for a rounded total of 11 new students); the Del Rey Elementary School would have a surplus capacity of 30 as currently configured, and 145 under potential configurations that would maximize classroom space. Thus, development of both the Project and the approved Lavenida Lane Subdivision would not exceed the capacity of the elementary school. Therefore, there are no significant off-site or cumulative school impacts.

Overall, the Orinda Union School District’s enrollment numbers are projected to increase over the next ten years, but this the growth is not expected to exceed the District’s existing capacity.7

**Parks**

OMC section 3.28.040 specifies that, as a condition of approval of a subdivision, the sub-divider must dedicate land, pay an in-lieu fee, or do a combination of both for park, trail, or recreational purposes. The fee and dedication amounts are based on a standard the City has set by ordinance, requiring five acres of parkland and recreational property for each 1,000 persons residing within the City (OMC § 3.28.060 et

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6 Orinda Union School District Facility Master Plan Update, June 2013  
7 Orinda Union School District, *District Facility Master Plan Update*, June 2013
Chapter 13: Other Less-Than-Significant Impacts

seq.). Once land is dedicated or fees are collected, such resources only may be used for the purpose of developing new facilities or rehabilitating existing trail, park, or recreational facilities in compliance with the City's capital improvement plan (OMC § 3.28.130.).

The Project will be required to comply with these policies and regulations by both developing and dedicating new trails, parks or recreation facilities, payment of an in-lieu fee, or a combination of both, thereby reducing its impacts on parks to a level of less than significant.

Cumulative Parks Impacts

The park dedication or in-lieu fee regulations, policies and standards discussed above are uniformly applicable to both the Project and the approved Lavenida Lane Subdivision, as well as to any other development proposed in Orinda. Compliance with these requirements will ensure that the Project, along with other anticipated development in the area, would not result in significant cumulative impacts to parklands.

The Project and the Lavenida Lane project both conform to the housing development anticipated under the 2015-2023 Housing Element Update. The Draft EIR for the Housing Element Update evaluated the impact of all the expected growth, and found less than significant impacts on the city's parks and recreation facilities. The Camino Ricardo development is located in the Town of Moraga and does not contribute to these impacts. Therefore, the Project would not result in any cumulatively considerable effects related to parks and recreation facilities.

Deterioration of Existing Recreational Facilities

Impact Rec-1: The Project would not increase use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of these facilities would occur or be accelerated. (LTS)

As discussed under Impact Public Serv-1, the City of Orinda currently has parkland acreage substantially above its service standard. The Project will add approximately 34 residents to Orinda who, by the City's park standards, would require 0.17 acres of parkland. The Project will create large lots with ample space for passive and active recreation. The smallest lot is 20,900 square feet in area, and there would be almost 17,000 undeveloped square feet on the Project site after subtracting the maximum house footprint. Other lots are larger and would have more surrounding yard space. The Project site will also include an open space easement over 7.95 acres. Given the large surplus of existing parkland in Orinda, the relatively small needs of the Project population, and the large amount of open space on the Project site, the Project would not result in substantial physical deterioration of existing neighborhood park facilities.

The Project site is also located near an extensive array of large regional parks, such as Sibley Volcanic, Huckleberry, San Pablo Dam Recreation Area, and Orinda Oaks, among others. These regional parks have ample space for a large population, and use by an additional 34 people would not result in substantial physical deterioration of the facilities. For these reasons, the impact would be less than significant.

Construction of Recreation Facilities

Impact Rec-2: Implementation of Project elements will ensure that the pedestrian paths included in the Project will not have an adverse physical effect on the environment. The Project will not require the construction or expansion of additional recreation facilities. (LTS)

The Project’s impact on recreation facilities will not be significant because of the relatively small size of the Project and the multiple opportunities for recreation at nearby parklands.

Project Elements

The Project includes construction of a system of pedestrian paths. One pedestrian path will maintain the existing connection on the northeast side of the site between the northwesterly segment of Donna Maria
Way and the southeasterly segment of Donna Maria Way. This heavily-used existing connection will be enhanced with an elevated boardwalk over an existing wetland. A second path will be created to provide a new pedestrian connection between the end of Dolores Way and the westernmost cul-de-sac on the newly created Adobe Lane. The Project also includes a 20-foot wide trail easement that provides potential trail access that extends from the new roadway at the Moraga Adobe northward to Donna Maria Way. The Project also includes a four-foot-wide gravel/concrete path along the new roadway. Potential impacts related to construction of these Project elements have been fully considered as part of development of the Project throughout this EIR.

Cumulative Recreation Impacts

The Project, along with the Lavenida Lane and Camino Ricardo projects, will result in construction of a total of 47 housing units. These projects would combine to add approximately 122 people to the area. These new residents represent a small fraction of the population already using the nearby regional parks, and they would not result in substantial deterioration of regional park facilities. Therefore, the Project would not result in any cumulatively considerable effects related to recreation.

Utilities and Service Systems

Wastewater Treatment and Disposal

Impact Util-1: The Project will not require or result in the construction of new wastewater treatment facilities or the expansion of existing facilities, will not affect the CCCSD’s (Central Contra Costa Sanitary District) capacity to serve its existing commitments in addition to the Project's projected demand, and will not cause the CCCSD wastewater facilities to exceed wastewater treatment requirements of the Regional Water Quality Control Board. (LTS with Mitigation)

The City of Orinda receives wastewater services from the CCCSD. A network of local sanitary sewer lines serving the city's neighborhoods feeds into trunk lines which connect to local pumping stations, which transport sewage to a treatment plant located near Highway 4 and 1-680 in Martinez. On February 8, 2012, the Regional Water Quality Control Board adopted National Pollutant Discharge Elimination System (NPDES) permit CA0037648 authorizing the Central Contra Costa Sanitary District Wastewater Treatment Plant and its associated wastewater collection system to continue its operations through March 31, 2017. Approval of the NPDES permit indicates that the SFRWQCB endorses the CCCSD system as operating within the Board’s wastewater treatment requirements.

The Project site is within CCCSD's boundaries, and sewer service has been planned for this area. The existing main sewer is adequate for the additional wastewater that will be generated by the Project.8

Project Elements

A new sanitary sewer line will be connected from the Project site to existing sewer lines located within the Donna Maria Way right-of-way. The new sewer line will serve the proposed new residences.

An eight-inch diameter public main sewer is located onsite within proposed Lots 1 and 2. The Project will repair, replace, or relocate this existing sewer pipe as it has been damaged by past earth movement.

The Project will also include private side sewers that will be owned and maintained by future property owners connecting the plumbing system of the homes to the main sewer. CCCSD policy requires that the developer be responsible for installation of the side sewer, and the property owner be responsible for operation and maintenance of the side sewer.

8 Per Russell Leavitt, Engineering Assistant III with CCCSD, November 21, 2011
Installation of these utility elements will occur along with the rest of the construction phase of the Project. The environmental impacts resulting from this sewer system have been fully evaluated as part of the Project throughout this EIR, and found to be less than significant.

**Mitigation Measures**

The Project applicant has agreed to implement the following additional mitigation measures relative to the design of the on-site wastewater system.

**Mitigation Measure Util-1: Sewer System Design.** The Project’s on-site sewer collection system shall be designed and constructed in compliance with the design policies of CCCSD and the City of Orinda General Plan, including:

1. Utilization of gravity service, street location specifications, public easement requirements and hillside, creek and tree protection policies.
2. General Plan performance standards require capacity to carry and treat 100 gallons per capita per day for residential users, that sewer mains should be designed to be 2/3 full, and that trunk lines should be designed to be 100% full.
3. Design of side sewers shall meet current Standard Specification of CCCSD to reduce the amount of rainfall and groundwater that will infiltrate the sewer, thereby avoiding unnecessary pumping and treatment costs.

**Conclusions**

The Project will not require construction of new wastewater treatment facilities or the expansion of existing facilities, will not affect the CCCSD’s capacity to serve its existing commitments in addition to the Project’s projected demand, and will not cause the CCCSD wastewater facilities to exceed wastewater treatment requirements. These impacts would be less than significant.

**Cumulative Wastewater Effects**

CCCSD’s current discharge permit allows an average dry weather flow (ADWF) rate of 53.8 million gallons per day (mgd) based on a secondary level of treatment. The actual ADWF rate in the year 2008 was 35.2 mgd. The 53.8 mgd treatment plant capacity should be adequate for the next several decades, based upon expected connection rates to CCCSD’s collection system. However, unforeseen circumstances in the Treatment Plant Expansion Program or requirements imposed by state, federal or regional authorities could affect the availability of sewer connections at any time.

CCCSD facilities downstream of the Project site do not have adequate flow carrying capacity under CCCSD’s current design criteria for ultimate conditions (i.e., long-term regional buildout). To maintain its system and ensure that the system carries adequate capacity into future years, CCCSD has developed a ten-year Capital Improvement Plan (CIP) for the District’s capital facilities and financing needs, which is updated every year and funded by various fees and charges levied throughout the District boundaries. Specifically, the CIP identifies and prioritizes capital projects needed to accomplish CCCSD’s mission, as well as their estimated costs. These improvements would occur regardless of development of the Project, and are not a part of this Project. The Project would be required to pay all applicable fees and charges of the CCCSD, thereby mitigating its contribution to cumulative wastewater collection and treatment facilities to a level of less than cumulatively significant.
Water Supply and Delivery

Impact Util-2: There is sufficient water supply from existing entitlements and resources available to serve the Project, and the Project will not require an expansion of existing water treatment facilities. (LTS)

Within the City of Orinda, water is provided by East Bay Municipal Utilities District (EBMUD). The Project site is within EBMUD’s jurisdictional boundaries, and water service has been planned for this area.9

Separately and independently from this Project, EBMUD has adopted an Urban Water Management Plan (UWMP) that addresses long range water demand, water supplies, and necessary facilities. The UWMP accounts for build out projected under the City of Orinda General Plan, which includes development of the Project site at densities consistent with that of the Project.

Project Elements

The Project is expected to be served from an extension of existing water lines located within the Donna Maria Way right-of-way. However, a water main extension from EBMUD’s Baseline Pressure Zone may be required to serve the Project. The nearest Baseline Pressure Zone water main is located at the intersection of Valencia Road and Gabriel Way. All main extensions will be placed within the existing roadway right-of-way, and extensions of these utilities on-site will be installed under the new Adobe Lane roadway. Separate water meters for each lot will be provided at locations acceptable to EBMUD.

Installation of these water service utilities will occur along with the rest of the construction phase of the Project. The environmental impacts resulting from these water system extensions have been fully evaluated as part of the Project throughout this EIR, and found to be less than significant.

Conclusions

The Project will not require new water supply entitlements or resources, nor will it require an expansion of existing water treatment facilities. These impacts would be less than significant.

Cumulative Water Supply Effects

OMC section 16.44.020 requires that the applicant of a subdivision make the required arrangements with the utility companies (including EBMUD) to make fair-share payments for planned water infrastructure improvements. This ordinance will apply to the Project, thereby mitigating its contribution to cumulative water facility impacts to a level of less than cumulatively significant.

Storm Water Conveyance

Impact Util-3: The Project will not cause expansion of existing off-site storm water drainage facilities that could cause a significant environmental effect. (LTS)

The storm water drainage improvements necessary to serve the Project are all located within the Project site, and fully addressed and analyzed in the Hydrology and Water Quality, and Biology chapters of this EIR, which conclude that impacts related to the Project’s Storm Water Control Plan will be less than significant.

9 Per letter from EBMUD dated August 12, 2010
Solid Waste Generation and Landfill Capacity

Impact Util-4: The Project will comply with local statutes and regulations related to solid waste, and will be served by a landfill with sufficient permitted capacity to accommodate the Project’s solid waste disposal needs. (LTS)

The Central Contra Costa Solid Waste Authority (CCCSWA) provides solid waste and residential recycling services for the City of Orinda through franchise agreements with Allied Waste Services for the collection, transfer and disposal of residential solid waste, and with Valley Waste Management for the collection of residential recycling, green waste and compostable waste. The City of Orinda mandates by ordinance that every use comply with the regulations and standards of the CCCSWA (OMC section 8.28.010). The CCCSWA’s Ordinance regulates solid waste, green waste and recyclable material collection, processing, disposal and litter (Ordinance No. 97-01 of the CCCSWA).

Solid waste collected within the City of Orinda is disposed of within the Keller Canyon Landfill. This landfill, which currently handles 2,500 tons of waste per day, is permitted to manage up to 3,500 tons of waste per day at the facility. The landfill has 50 years of available capacity remaining, with a maximum permitted capacity of 75 million cubic yards and a remaining capacity of about 63 million cubic yards.

Project Elements

The Project residences would be served with trash and recycling pick-up service currently provided to the adjacent neighborhoods. The Project will comply with all regulations and standards of the CCCSWA regarding the collection of residential recycling, green waste and compostable waste. The Project would not induce solid waste needs beyond that of typical single-family residences. Thus, the Project’s effects on solid waste disposal and landfill capacity would be less than significant and less than cumulatively considerable.
Alternatives

Introduction and Overview

CEQA Guidelines require that an EIR describe a range of reasonable alternatives to the proposed project or its location. The purpose of the alternatives section is to provide decision-makers and the public with a discussion of alternatives that could feasibly attain most of the project’s basic objectives and that are capable of avoiding or substantially lessening any significant effects of the project. The alternatives selected might impede to some degree the attainment of the project objectives, or be more costly. Evaluation of alternatives should present the proposed action and all the alternatives in comparative form to define the issues and provide a clear basis for choice among the options.

CEQA provides the following guidelines for discussing project alternatives:

- An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation (§15126.6(a)).
- An EIR is not required to consider alternatives which are infeasible (§15126.6(a)).
- The discussion of alternatives shall focus on alternatives to the project or its location that are capable of avoiding or substantially lessening any significant effects of the project (§15126.6(b)).
- The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects (§15126.6(c)).
- The EIR should identify any alternatives that were considered but were rejected as infeasible and explain the reasons for the decision to reject them (§15126.6(c)).
- The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis and comparison with the proposed project (§15126.6(d)).
- The range of alternatives is governed by a “rule of reason” that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to those that would avoid or substantially lessen any of the project’s significant effects (§15126.6(f)).

Accomplishing Basic Project Objectives

The Project objectives are as follows:

- Develop an infill site within the City of Orinda that is served by existing infrastructure and located near a major transportation route.
- Maximize housing opportunities, while accommodating and integrating substantial amenities such as open space and pedestrian corridors.
- Create a visually stimulating and attractive neighborhood that effectively integrates the topography of the site.
- Ensure site planning allows for all Project components as described in the Project Description, and allows for restoration of the Joaquin Moraga Adobe in a manner that provides for its enhancement, protection from further vandalism and blight, and limited access by the public.
• Cluster development to limit development on steep slopes, on sensitive biological habitat (e.g., Coast Live Oak riparian forest), Coast Live Oak woodland, other riparian areas, and stream channels, and to provide buffers between Project lots and adjacent residential areas.

• Minimize disturbance to wetlands to the greatest extent feasible.

• Balance housing opportunities and amenities while minimizing off-site construction of infrastructure, to the greatest extent feasible, through careful site planning and placement of lots.

• Provide for pedestrian connections and infrastructure to adjacent uses in order to maximize walkability of proposed neighborhood development.

• Provide for on-site traffic circulation that addresses and exceeds safety concerns and standards.

• Maximize the Project contribution to the economic vitality of the City of Orinda and region by maximizing construction jobs and generating substantial amounts of revenue in the form of taxes and lawfully imposed development fees, the latter of which will help fund vital improvements to City infrastructure, services, and amenities.

Reducing Significant and Unavoidable Project Impacts

CEQA Guidelines, sections 15126.6 (b) and (c) require that the discussion of alternatives focus on alternatives to the Project or its location that are capable of avoiding or substantially lessening any significant effects of the Project. The analysis in the preceding chapters demonstrates that the mitigation measures that the applicant has agreed to implement in combination with applicable regulatory requirements will eliminate potentially significant impacts or reduce all such impacts to insignificant levels, thus ensuring that the proposed Project will not have any significant effects on the environment. Although the Project does not have any significant effects, it is possible to analyze alternatives to the Project that are capable of avoiding specific environmental effects. Accordingly, the EIR provides an in-depth analysis of alternatives that will foster informed decision making and public participation, including the required no project alternative, various alternative access routes to the Project site, and a reduced project alternative.

Alternatives Analyzed

Alternative 1: No Project

CEQA Guidelines section 15126.6(e)(3)(B) states that “If the project is...a development project on an identified property, the no project alternative is the circumstance under which the Project does not proceed. If disapproval of the Project under consideration would result in predictable actions by others, such as the proposal of some other project, this “no project” consequence should be discussed.”

If the Project does not proceed (i.e., if no subdivision of the Project site occurs), then a number of potential circumstances could occur. A differently configured subdivision could be proposed (too speculative for consideration in this EIR), there could be no change at the site (a continuation of existing conditions but with no additional restrictions on future development), or a single housing unit with permissible accessory structures could be constructed on the existing parcel (no subdivision map required). Under CEQA Guidelines, the No Project Alternative is intended to represent the “practical result” of the Project’s non-approval. Given that the site is zoned for development, the current parcel configuration represents the practical result of Project non-approval. Therefore, the No Project Alternative assumed for this EIR is development of one (1) new single family home not requiring approval of a subdivision.

Alternative 2: Reduced Project

The Reduced Project Alternative would be similar to the proposed Project, except that the developed portion of the site would end in a cul-de-sac prior to crossing the central ephemeral stream. Lots 9 and 10 would not be developed. The remaining lots and roadways would be developed consistent with the Project plan. This alternative would avoid permits and regulations related to the proposed creek crossing and creek-side riparian habitat.
Alternative 3: Retain and Widen Adobe Lane
Alternative 3: Retain and Widen Adobe Lane is similar to the Project in almost all respects except in its design of the on-site roadways, which for this alternative retains the existing alignment of Adobe Lane rather than the Project’s proposed realignment as an easterly extension of the west terminus of Donna Maria Way. The intention of this alternative is to maintain the existing roadway alignment on the Project site to help maintain the historic setting of the Moraga Adobe, and to reduce the number of existing protected trees removed by development of the Project. Alternative 3 necessarily widens the existing Adobe Lane right-of-way to accommodate two-way traffic and emergency access. This alternative also adds a cul-de-sac from Donna Maria Way in order to access Lots 1 and 2.

Alternative 4: Dolores Way Access
The Dolores Way Access Alternative is also similar to the Project in almost all respects, except that primary access to the site would enter from Dolores Way to the west, rather than from Donna Maria Way. This alternative would result in most Project-generated traffic bypassing the segment of Donna Maria Way between the Project site and El Camino Moraga. Instead, a short cul-de-sac at Donna Maria Way would serve as an entrance to the Project site to provide access to Lot 1. The Dolores Way extension would enter the Project site from the southern edge of the parcel, from where it would follow the same alignment as the proposed Project from Lot 10 to Lot 3. The Dolores Way extension would end in a cul-de-sac and hammerhead at approximately Lot 2.

Alternative 5: Donna Maria Way East Access
The Donna Maria Way East Access Alternative is also similar to the Project in almost all respects, except that primary access to the site would enter from the eastern segment of Donna Maria Way, rather than the westerly segment of Donna Maria Way. This alternative would result in most Project-generated traffic bypassing the western segment of Donna Maria Way, although a short cul-de-sac will enter the Project site from westerly Donna Maria Way to access Lot 1. The easterly extension of Donna Maria Way would enter the Project site from the east, crossing over the existing wetland and proceeding up the hill to access Lots 3 through 12 and the Adobe, similar to the alignment as proposed under the Project. A hammerhead extension will access Lot 2.

Summary Comparison of Alternatives
Table 14-1 compares the amount of development proposed by the Project and the five alternatives.
Table 14-1: Summary Comparison of Alternatives

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</table>

* Excluding home sites

**Alternatives Considered but Not Further Studied**

The following alternatives were considered but rejected for the reasons set forth below.

**Retain Adobe Lane and Add Second Roadway**

The Project applicant explored the option of retaining the existing Adobe Lane as a one-way road and adding a second parallel traffic lane further down the hill as a couplet. This configuration would avoid certain impacts to existing protected trees caused by widening the existing Adobe Lane. However, to provide adequate emergency access, Adobe Lane would need to be widened anyway, resulting in similar impacts to protected trees. In addition, the slope of the hill would make it difficult to allow traffic to switch between the two segments of Adobe Lane, creating a problem for traffic flow to or from Lots 1 and 2 and possibly complicating emergency access. For these reasons this alternative was eliminated from further consideration.

**Donna Maria Way Thru-Connection**

This alternative would be similar to the Project but would connect the two existing, un-connected segments of Donna Maria Way. This design would have the benefit of distributing Project-generated traffic in two different directions for the site, and would improve connectivity within the surrounding residential neighborhoods. The TJKM Traffic Impact Study of May 2010 evaluated this option and found no appreciable difference in intersection operations between this configuration and the Project. However, this alternative would create impacts in the wetland along the eastern border of the Project site with the construction of a bridge and would also be considerably more expensive, and would have no reduction in other environmental impacts. For these reasons this alternative was eliminated from further consideration.
Alternative Site Location

In considering the range of alternatives to be analyzed in an EIR, CEQA Guidelines state that an alternative site location should be considered when feasible alternative locations are available, and if significant effects of the project would be avoided or substantially lessened by putting the project in another location.

The Project applicant does control other locations that are either currently proposed for development or are suitable for future development. However, considering an alternative site for this Project would not accomplish any of the objectives of the Project, including developing an infill site served by existing infrastructure within Orinda and restoring the historic Moraga Adobe. Development of thirteen housing units at a different location instead would reduce or eliminate effects at this Project site, but could result in similar or more severe impacts at an alternative site, as the Project at the proposed location has been found to have no significant and unavoidable environmental impacts. Additionally, even if residential units are proposed at a different location, the Project site would remain zoned for the proposed residential use. For these reasons, an alternative site location was eliminated from further consideration in this EIR.
Chapter 14: Alternatives

Alternative 1: No Project

CEQA Guidelines Section 15126.6(e) requires that a “no project” alternative be evaluated, along with its impacts. The “no project” alternative must be the practical result of non-approval of the project.

Description of Alternative 1

The No Project Alternative is defined as the practical result of not approving a subdivision at the Project site. However, since the property is a private lot, is zoned for residential use, located within an incorporated city, adjacent to existing utilities and service systems, and surrounded by other developed lands, it is practical to assume future development of a single new residence on the site, that would not require approval of a subdivision. The current Adobe Lane would remain, and the single new house would likely be sited within an open and generally flat grassland portion of the site. Assuming the house is not built on a location with a history of slope failure, grading and slide repair would likely be minor. The Moraga Adobe would remain, likely in its current state given the cost of rehabilitation, and the entire site would remain private property with no public access.

Comparative Environmental Analysis

Aesthetics (LTS)

The Project site is not located on or visible from designated scenic corridors. The Project site would remain largely undeveloped and as it currently exists. The visual character of the site, including character-defining views of surrounding ridgelines from the Moraga Adobe porch, would be substantially preserved. City Design Review and zoning regulations would guide placement and design of the house, which may be visible from the Moraga Adobe and off-site locations. The new home would have external lighting as well as internal lighting which may be visible at night. City requirements regarding hillside lighting and glare, as well as site landscaping would reduce off-site light and glare from the house.

Agriculture and Forestry Resources

This alternative would not convert important farmland or conflict with agricultural or forest land zoning or a Williamson Act contract.

Air Quality

The alternative would not impede implementation of air quality control measures, and would have no impact related to an inconsistency with the Clean Air Plan.

The alternative would entail minimal construction and grading, and construction equipment exhaust and fugitive dust resulting from building a single house would be minimal. Per City requirements, this alternative would be required to implement “basic” construction-period dust and emission control measures, resulting in less than significant impacts related to emission of PM$_{10}$ during the construction period.

The No Project Alternative would not entail large-scale grading or site improvements, therefore diesel engine exhaust from the operation of construction equipment would be limited to activities to prepare a single home site and build one house. A Construction Health Risk Analysis Report (HRA) prepared for the Project found less than significant impacts. The construction activities for Alternative 1 would be smaller in scale, less intense, and shorter in duration than under the Project, as a result the impact would also be less than significant.

The alternative does not exceed the BAAQMD screening criteria for operational impacts related to criteria pollutants, and its impacts would be less than significant.

Development of the alternative would not include any activities that are typical sources of objectionable odors, generate objectionable odors, or place sensitive receptors adjacent to a use that generates odors.
Biological Resources

Development of a single house would likely avoid all impacts to sensitive biological communities on the Project site, especially as no alterations would be made to Adobe Lane, no pathway would be constructed through the wetland, and no stormwater outfall pipeline to Moraga Creek would be required. Since the Project site abuts a waterway, the City will require the construction application to include a landscape plan which provides appropriate native riparian vegetation and other improvements designed to protect the environment, including allowance for wildlife movement and construction practices protective of native trees (OMC sections 17.7.1 and 18.04.010). Setbacks from the perennial and ephemeral creeks on the Project site would also be required by the City’s development standards (OMC sections 16.64.220 C. 2 and 3). The No Project Alternative would result in construction of a house on an annual grassland. The annual grassland habitat that would be developed is not of high quality for use by special status species and is not crucial to the survival or reproductive success of special status species. In addition, the amount of loss of annual grassland will be relatively minimal. Given the small scale of development, the ample locations of the Project site to avoid sensitive natural communities, and City requirements, Alternative 1 would have a less than significant impact on riparian habitat, sensitive natural communities and protected wetlands.

The No Project Alternative would develop only a small fraction of the Project site, leaving the majority in its existing condition. As a result, this alternative would not eliminate any special status species habitat. As a result of the small scale of development under the No Project Alternative, it is unlikely that implementation of regulatory policies and standards applicable to special status wildlife species and their associated habitats would be necessary. The No Project Alternative would not block any wildlife movement or migration through the site.

Development of the single house would likely not require removal of any trees from the Project site, but if any trees were to be removed, the City’s tree permit requirements would ensure that replacement tree plantings would occur.

Cultural Resources

The No Project Alternative would likely result in no change to the existing state of the Moraga Adobe. Assuming the placement of the new home on the site is not immediately adjacent to the Moraga Adobe and does not block its existing views, impacts to the integrity of the Moraga Adobe structure and its setting would be less than significant. Site preparation, grading, and construction activities could adversely impact archeological resources, paleontological/geological resources, and human remains. Given the sensitivity of the Project site, any development would be required to implement measures similar to those required of the Project to avoid impacts or reduce them to a less than significant level.

Geology /Soils

The No Project Alternative would disturb substantially less of the Project site and would interact with fewer areas with potential for ground failure. It is assumed that the No Project Alternative would avoid placing the new house on any of the identified slide areas within the site, and if the house is placed on such an area, the mitigating design elements to be implemented by the Project would apply. These elements, along with CBC compliance, would result in a less than significant impact.

Construction activities for the No Project Alternative would be subject to uniformly applicable regulations that would substantially mitigate potential impacts related to soil erosion. These requirements may include preparation of a Stormwater Pollution Prevention Plan and a preliminary Stormwater Control Plan. Compliance with these regulations would result in the same less than significant impact as the Project.

Greenhouse Gas Emissions

The thresholds for GHG emissions are not applicable to a single home, and this alternative would have no significant or cumulatively considerable GHG impact.
Chapter 14: Alternatives

Hazards & Hazardous Materials
Like the Project, routine use of materials considered hazardous during the construction period and incidental operational use of household hazardous chemicals would be required to comply with applicable regulations regarding the handling of these materials. Required compliance with applicable regulatory requirements would minimize hazards to workers, the public, and the environment from use of hazardous products.

The Project site is not located on a known hazardous materials site, including the DTSC's EnviroStor database and the SWRCB's GeoTracker database.

Unlike the Project, Alternative 1 would leave the Project site largely in its existing condition, within a Very High Fire Hazard Severity Zone. The No Project Alternative would not substantially increase landscape maintenance or regular on-site monitoring, and would not reduce the potential for a wildland fire. The house in Alternative 1 would be subject to the provisions in the California Government Code sections 51182 through 51189, which require the maintenance of defensible space and adherence to applicable State building standards for properties in a Very High Fire Hazard Severity Zone. Compliance with these policies would reduce impacts to a less than significant level.

Hydrology / Water Quality
Site preparation and construction activity associated with the No Project Alternative could result in soil erosion, which could have adverse effects on water quality. Operational activities at the Project site may result in pollution of stormwater runoff that, if allowed to enter the storm drainage system, could eventually contribute to surface water quality degradation. City regulations in the OMC regarding grading, drainage, stormwater management, discharge control, site design, and clean water require implementation of all applicable federal, State, and regional regulations related to water quality and waste discharge. These regulations would require that the alternative be designed to minimize and treat stormwater runoff into surface waters and protect the quality of surface waters through setbacks, landscape standards, and other measures. Compliance with these regulations and treatment of stormwater runoff will result in less than significant impacts.

The City's creek setback requirement ensures that the new house would not be sited within the 100-year flood zone designated by FEMA along Moraga Creek.

Land Use / Planning
Alternative 1 would not construct a barrier that would physically divide an established community, and would not conflict with existing zoning, the General Plan land use designation, applicable General Plan policies, or habitat conservation or natural community conservation plans.

Noise
Alternative 1 would involve minimal construction activity with less construction equipment and in a smaller portion of the Project site. As a result, it would generate lower construction-period noise levels than the Project. Similarly, Alternative 1 would result in fewer activities on the Project site, generating a low level of operational noise, with lower levels than under the Project.

Population / Housing
Alternative 1 would develop only one new home, resulting in a less than significant impact on inducement of population growth, and would not displace substantial numbers of existing housing or people.

Transportation/Traffic
Per the City's standards, the No Project Alternative would generate too few peak hour vehicle trips to be considered to have a significant impact on traffic.
Utilities / Service Systems

Alternative 1 would develop only one residence, resulting in lower levels of wastewater treatment, water supply demand, solid waste generation, and landfill use than under the Project. Alternative 1 would install on-site treatment for storm water runoff and not require expansion of existing off-site storm water drainage facilities.

Alternative 2: Reduced Project

Description of Alternative 2

The Reduced Project Alternative assumed for this EIR reduces the Project by two lots (eliminating Lots 9 and 10 from the Project), with a resulting Reduced Project Alternative of 11 total parcels plus the Moraga Adobe parcel.

Comparative Environmental Analysis

The Reduced Project Alternative would be similar to the proposed Project in nearly all respects (with a slight reduction in the magnitude of effects), but would avoid, rather than require mitigation for the following potentially significant effects discussed below.

Biological Resources

The on-site roadway would end at a cul-de-sac on the easterly side of the central ephemeral stream, serving as access to Lots 8 and 11. As such, the road would not cross the ephemeral stream and the creek channel would not be placed in a culvert at this location. This ephemeral stream falls within the jurisdiction of the Corps, the RWQCB and CDFW, and placement of a culvert within the creek channel would be considered "fill". Without this crossing, no fill of the stream would occur, and no Section 404 or 401 permits from the Corps and the RWQCB would be required. No work would be done within the stream channel, so no Section 1602 permits would be required from CDFW, and no Watercourse Alteration Permit would be required from the City. No other environmental safeguards and mitigations other than setbacks from the creek would be required, and no compensatory mitigation through restoration of stream habitat elsewhere on the site would be necessary.

Under this Reduced Project Alternative, the layout of the subdivision would occur further away from riparian areas and in non-biologically sensitive areas, avoiding streams, wetlands, and potential riparian areas. The open space easement would encompass a much larger portion of the site (virtually the entire westerly third of the property), and would establish a large open space buffer between the Project site and surrounding developed properties.

By eliminating the stream crossing, two fewer trees would need to be removed under this Reduced Project Alternative.

Geology

A shallow landslide of 10 to 12 feet in depth (Slide C) exists in the south-central portion of the Project site, in the immediate vicinity of the central ephemeral stream. This slide extends upslope into the adjacent golf course area. A keyway previously excavated into the slide in the adjacent golf course near the Project site boundary removed landslide debris from the golf course area and also included placement of subdrains. Design elements are incorporated into the Project to minimize impacts related to ground-shaking and unstable soils, including installation of a row of large diameter, closely spaced, heavily reinforced stitch piers along the southerly edge of the property at Slide C. These piers are intended to act as an underground retaining wall to provide structural resistance to slide movement, but would not require excavation within the riparian zone located on this slide area. Additionally, depending on final home site location, over-excavating landslide materials and repairing soils in Slide C that may be located under the building footprint, only, is recommended. If Lots 9 and 10 are not developed (as provided for under this Reduced Project Alternative), then the need for soil remediation of Slide C is not required as no new building or road construction would occur in this area.
Alternative 3: Retain and Widen Adobe Lane

Description of Alternative 3

Development under Alternative 3 would be substantially the same as under the Project, with the following differences:

- This alternative retains the existing alignment of Adobe Lane, although widening it to allow for two-way traffic and emergency access. A cul-de-sac would extend from Donna Maria Way in order to provide access to Lots 1 and 2.

- The parcel locations and sizes would be substantially the same as under the Project, with minor adjustments to the boundaries and configuration of Lots 1, 2, 3, and 12. Lot 13 remains in the same general location but would be located on the north side of Adobe Lane due to the roadway realignment.

See Figure 14-1 for a depiction of the Existing Adobe Lane Alignment.

Comparative Environmental Analysis

Because this alternative is so similar to the proposed Project in nearly all respects, other than the road alignment and specific lot configurations, its environmental effects would be substantially the same as those of the Project. Therefore it is not necessary to reiterate these similar environmental effects. Rather, the following discussion identifies and compares this alternative’s environmental effects that differ from the Project’s effects.

In general, Alternative 3 would have a slightly smaller open space easement, disturb slightly more land during grading and construction, and would result in removal of more trees than would the Project. Although Alternative 3 would involve less overall grading than would the Project, it would result in 20 percent more impervious area (not including home sites) than the Project.

All of the Project elements, as well as the regulatory compliance measures and mitigation measures to reduce and/or avoid potential environmental impacts, would also apply to development of Alternative 3.

Air Quality

Alternative 3 would entail essentially the same construction activities as would the Project, although it would involve less overall site grading (1,400 cubic yards less earth movement, or a 13% reduction in comparison to the Project), and thus would likely generate less fugitive dust. As required of the Project, Alternative 3 would also implement all necessary BAAQMD construction-period dust and emission control measures. Consequently, Alternative 3 would result in similar, less than significant impacts related to emission of PM$_{10}$ during the construction period, as would the Project.

Biological Resources

WRA Environmental Consultants assessed this alternative’s impacts to biological resources (see Appendix 15A). WRA determined that the types and extent of biological resource impacts likely to result from Alternative 3 are mostly similar to those of the Project. The primary differences in biological resources impacts of this alternative include:

- a 69% increase in tree removal as compared to the Project;
- a decrease in the total area included within an open space easement, and
- anticipated future work to develop Lot 13 would be in close proximity to the nearby wetland area, and the wetland would likely be affected by subsequent lot development.
Figure 14-1
Alternative 3: Project Retain and Widen Adobe Lane
These biological impacts are more substantial than the impacts of the Project, but it can be assumed that Alternative 3 would also comply with applicable regulations and design requirements intended to reduce and/or avoid potential environmental impacts. These measures would be sufficient to reduce biological resource impacts of Alternative 3 to a level that is less than significant.

**Hydrology / Water Quality**

Alternative 3 would result in a 19% increase in impervious surface as compared to the Project, primarily due to construction of a new cul-de-sac to serve Lots 1 and 2, not otherwise required under the Project. As a result, the bio-retention system would need to be increased in size to accommodate the increased flows attributable to this alternative. The stormwater drainage system would be required to comply with all municipal standards, and the design guidelines of the Contra Costa Clean Water Program Stormwater C.3 Guidebook. Alternative 3 would result in the same less than significant hydrology and water quality impacts as would the Project.

**Transportation/Traffic**

Alternative 4 would access the Project site solely via the western segment of Donna Maria Way and would involve the same traffic generation as the Project. As a result, Alternative 3 would have identical transportation and traffic impacts as would the Project.

**Alternative 4: Dolores Way Access**

**Description of Alternative 4**

Development under Alternative 4 would be substantially the same as under the Project, with the following differences:

- Access to the site (with the exception of access to one new parcel), will be from the existing terminus of Dolores Way to the immediate southwest of the Project site. The extension of Dolores Way would connect to the Project site within a 25-foot wide access easement. Due to the steep terrain along the easement, a retaining wall would likely be required. This retaining wall would have to be placed on the adjacent private property, and permission to construct this retaining wall may not be granted by the adjacent property owner.

- Because of the narrow width of the Dolores Way right-of-way, there would be no room for a pedestrian path connecting the Project site to Dolores Way.

- Once on site, the Dolores Way extension would follow along the southern edge of the Project site, along the same alignment as proposed under the Project, from Lot 10 to Lot 3, and end in a cul-de-sac and hammerhead at Lot 2. A pedestrian sidewalk would run along the edge of the roadway from the western property line to the cul-de-sac at Lot 2. The roadway and sidewalk would require a 19-foot wide crossing of the western ephemeral stream on the Project site.

- Lot 1 would be accessed from the western segment of Donna Maria Way via a short cul-de-sac.

- The parcel locations and lot sizes of this alternative would be substantially the same as those proposed pursuant to the Project, with minor adjustments to the developable space of Lots 1 and 2.

See Figure 14-2 for a depiction of the Project Access via Dolores Way Alternative.
Figure 14-2
Alternative 4: Project Dolores Way Access
Comparative Environmental Analysis

Because this alternative is so similar to the proposed Project in nearly all respects other than the main access road alignment and specific lot configurations, its environmental effects would be substantially the same as those of the Project. Accordingly, these similar environmental effects are not further discussed. Rather, the following discussion identifies and compares the alternative’s environmental effects that differ from the Project’s effects.

In general, Alternative 4 would have a slightly smaller open space easement, disturb significantly more land during grading and construction, and would result in removal of approximately three times the number of trees as would the Project. Alternative 4 would involve more overall grading than would the Project, and would result in 37% more impervious area (not including home sites) than does the Project.

All of the Project elements, as well as the regulatory compliance measures and mitigation measures to reduce and/or avoid potential environmental impacts, would also apply to development of Alternative 4.

Aesthetics

Under Alternative 4, the extension of Dolores Way would run along the high ground of the southwestern property line immediately adjacent to the golf course, and may be more visible from distant vantage points than would the road alignment of the Project. The Dolores Way extension would not be located at the top of a ridgeline however, and new trees planted along the roadway would be able to reduce its visibility over time. The new roadway connection to Dolores Way would also be visible from the rear of the Moraga Adobe, but would not affect a major vista and would not block views of the surrounding ridgelines.

Air Quality

Alternative 4 would entail essentially the same construction activities as would the Project, although it would involve more overall site grading (approximately 600 cubic yards more earth movement, or a 6% increase in comparison to the Project), and thus would likely generate slightly more fugitive dust. As required of the Project, Alternative 4 would also implement all necessary BAAQMD construction-period dust and emission control measures. Consequently, Alternative 4 would result in similar, less than significant impacts related to emission of PM$_{10}$ during the construction period, as would the Project.

Biological Resources

WRA Environmental Consultants reviewed the Dolores Way access route (Alternative 4) and determined that it would have similar types of impacts on biological resources as would the Project, but the extent of these impacts would be greater than the Project. This alternative would increase the extent of impacts to biological communities, special status species, trees, and wildlife and decrease the size of the open space easement. As more fully discussed below, although these biological impacts would be more substantial than the impacts of the Project, it can be assumed that Alternative 4 would also comply with applicable regulations and design requirements similar to those identified for the Project. These measures would be sufficient to reduce biological resource impacts of Alternative 4 to a level that is less than significant.

Riparian Habitat, Sensitive Natural Communities, and Protected Wetlands

Alternative 4 would increase potential impacts to stream, wetland, and riparian areas as compared to the Project. The extension of Dolores Way into the site would require a new road crossing over the westerly-most on-site stream that would not otherwise be affected by the Project. The access road would require placing a segment of this stream within a culvert where it crosses below the road. Additionally, the terminus of the access road at Lot 2 would require grading within a wetland and riparian area on the eastern edge of the Project site, in an area that the Project would only minimally affect.

As is required of the Project, this alternative would be required to comply with all federal, State, regional, and City permitting requirements, potentially including compensatory mitigation through the restoration of stream habitat elsewhere on the site and/or purchase of off-site wetland mitigation credits. Due to its
greater disturbance of creek and wetland areas, Alternative 4 would require more compensatory mitigation than would the Project. The increased compensatory mitigation, together with the implementation of avoidance, minimization, and mitigating design elements and with mitigation measures incorporated into the Project would likely be sufficient to reduce impacts to streams, wetlands, and riparian areas to a less than significant level.

**Special Status Species and Associated Habitat**

Alternative 4 would have a greater potential impact on special-status wildlife than the Project. The stream, wetland, and riparian areas of the Project site provide habitat and have the potential to support special-status species. Compared to the Project, Alternative 4 would create conditions potentially more hazardous to special-status wildlife during the construction period, and would ultimately reduce the amount of available stream, wetland, and riparian habitat on site. Alternative 4 would increase the potential for impacts to special-status wildlife compared to the Project, and would be required to implement the same avoidance, minimization and mitigating design elements incorporated into the Project to reduce these impacts to a less than significant level.

**Wildlife Movement and Nursery Sites**

The western portion of the Project site would be directly bisected by the new Dolores Way access road proposed under Alternative 5. This is an area that is proposed to be undeveloped and placed within a conservation easement under the Project. If a new roadway were to be constructed in this area, it would decrease cover for animals and increase the levels of light, noise, and vehicle and pedestrian traffic, reducing the suitability of this area for wildlife. However, these changes would not substantially affect wildlife as this area does not currently provide substantial benefits as a wildlife corridor. Under this Alternative, the Moraga Creek corridor, which does provide sufficient cover and habitat for wildlife movement, would be preserved within an open space easement, similar to that proposed under the Project.

**Consistency with the Orinda Tree Management Ordinance**

Alternative 4 would result in a total of 114 trees, 96 of which are City of Orinda protected trees, to be removed (a 164% increase in the number of protected trees to be removed as compared to the Project). Removed trees would include a number of large native trees in the western corner of the Project site, and trees located within the oak woodland habitat. Neither of these areas would be affected by construction and development of the Project.

Like the Project, Alternative 4 would be required to comply with the City of Orinda’s tree ordinance for protection of trees to remain, as well as new replacement tree plantings. The tree removal impacts of Alternative 4, although greater than the impacts of the Project, would still be relatively small compared to the number of trees and the amount of oak woodland habitat that would be preserved onsite, and the impacts are very small compared to the regional abundance of these resources. The additional impacts to trees under the alternative would be mitigated in coordination with the City of Orinda and CDFW, reducing impacts to protected trees and oak woodland to a less than significant level.

**Geology /Soils**

The new access road from Dolores Way would cross over the on-site Pleistocene deposit described as Slide F. To ensure that this roadway does not exacerbate the slide potential of this area, it may require construction of a buttress fill that would include excavation of shallow soils, keying into the existing bedrock, and rebuilding the on-site excavated area with well compacted, engineered fill and sub-surface drainage. This buttressing geotechnical design would minimize slope movement and reduce impacts associated with landslides to a less than significant level. However, the excavation required to construct this engineered fill would result in further biological effects (see discussion above).

**Hydrology / Water Quality**

Unlike the Project, Alternative 4 would alter the drainage pattern in the western watershed, constructing an access road through this watershed. A storm drain system would be required to collect runoff from the
roadway and convey that runoff to the bio-retention basin for treatment and discharge. Alternative 4 would result in a 37% increase in impervious surface as compared to the Project. As a result, the bio-retention system would need to be increased in size to accommodate the increased flows attributable to this alternative. The stormwater drainage system would be required to comply with all municipal standards, and the design guidelines of the Contra Costa Clean Water Program Stormwater C.3 Guidebook. With implementation of the identified mitigation measures Alternative 4 would result in the same less than significant hydrology and water quality impact as would the Project.

This alternative would also decrease the undeveloped portion of the western watershed area, and thus would reduce the amount of flow within this creek.

Transportation/Traffic

Although Alternative 4 would access the Project site from a completely different direction, as an extension from Dolores Way, it would generate the same amount of traffic as would the Project, and would have identical transportation and traffic impacts as the Project. Traffic from the Project site would use Dolores Way to connect to Rita Way, and from there to Donna Maria Way. From that point, traffic from Alternative 4 would still pass through the intersections (and travelling in the same directions) at El Camino Moraga and Moraga Way, and would also pass by the Del Rey Elementary School during the same times and in the same directions as would the Project.

Unlike the Project, traffic from Alternative 4 would not pass through the private segment of Donna Maria Way/Adobe Lane. Maintenance of Dolores Way, Rita Way and the public segment of Donna Maria Way is the responsibility of the City.

The Moraga Orinda Fire District would need to be consulted regarding the circulation design of Alternative 4 to ensure that its design would meet minimum standards for fire apparatus access. The District would review the alternative to confirm that it meets standards for water supply, complies with the construction provisions of Chapter 7A of the California Building Code and meets minimum State and Moraga-Orinda Fire District standards for vegetation management.

**Alternative 5: Donna Maria Way East Access**

**Description of Alternative 5**

Development under Alternative 5 would be substantially the same as under the Project, with the following differences:

- Access to the site (with the exception of access to Lot 1), will be from the existing terminus of the eastern segment of Donna Maria Way to the immediate northeast of the Project site. The extension of Donna Maria Way would connect to the Project site within a 25-foot wide access easement, including a 30-foot bridge crossing over the stream/wetland which runs along the eastern boundary of the Project site. The bridge over the wetland would include a pedestrian sidewalk, greatly improving pedestrian circulation in the area. Several sub-options for the design of the stream crossing are more fully discussed under Biological Resources, below.

- Once on site, the Donna Maria Way extension would loop to the south and follow along the same alignment as proposed under the Project. A separate private drive would fork off of the main access road to provide access to Lot 2.

- Lot 1 would be accessed from the western segment of Donna Maria Way via a short cul-de-sac.

The parcel locations and lot sizes of this alternative would be substantially the same as the Project, with minor adjustments to the developable space of Lots 1 and 2.

See **Figure 14-3** for a depiction of the Project Access via Easterly Donna Maria Way Alternative.
Figure 14-3
Alternative 5: Donna Maria Way East Access
Chapter 14: Alternatives

Comparative Environmental Analysis

Because this alternative is so similar to the proposed Project in nearly all respects other than the main access road alignment and specific lot configurations, its environmental effects would be substantially the same as those of the Project. Accordingly, these similar environmental effects are not further discussed. Rather, the following discussion identifies and compares this Alternative’s environmental effects that differ from the Project’s effects.

All of the Project elements, as well as the regulatory compliance measures and mitigation measures to reduce and/or avoid potential environmental impacts, would also apply to development of Alternative 5.

Air Quality

Alternative 5 would entail essentially the same construction activities as would the Project with an almost identical amount of grading. As under the Project, Alternative 5 would be required to implement City-required construction-period dust and emission control measures. Consequently, Alternative 5 would result in less than significant impacts related to emission of PM\(_{10}\) during the construction period.

Biological Resources

WRA Environmental Consultants reviewed the easterly Donna Maria Way access route (Alternative 5) and determined that it would have similar types of impacts to biological resources as would the Project, but the extent of these impacts would be greater. This alternative would increase the extent of impacts to biological communities, special status species, trees, and wildlife and decrease the size of the open space easement.

Riparian Habitat, Sensitive Natural Communities, and Protected Wetlands

Construction of the eastern portion of Donna Maria Way passes through an area that includes a wetland, a stream, and a riparian area. The extent of impacts to these sensitive resources would vary depending on the design sub-options that may be used to connect Donna Maria Way through this area. Four such sub-options have been considered:

- Option 1 is a 50-foot wide crossing using traditional road-bed fill and a stream culvert. This option assumes that all wetlands within the right-of-way will be filled, and a culvert will be installed in the stream allowing the road to be built. While the road can likely be built using a narrower corridor, this option evaluates potential impacts to sensitive resources if the entire right-of-way is utilized.

- Option 2 includes a 35-foot wide crossing using traditional road-bed fill and a stream culvert. This option is likely the simplest and most traditional approach for the Project. A culvert would be placed in the stream, allowing drainage for both the stream and wetland. The remaining portion of the road crossing the wetland area would be built on an elevated bed of compacted fill material. This approach would require that the area of compacted fill for the road-bed be slightly wider than the width of the pavement. Thus, while the existing paved portion of Donna Maria Way is approximately 25 feet wide, this sub-option may require the area of wetland fill to be up to 35 feet wide in order to provide a stable bed for a continuation of the 25-foot wide road.

- Option 3 includes a 25-foot wide crossing using road bed fill with concrete end-walls and a stream culvert. This option would be similar to Option 2, with the exception that the roadbed through the wetland area would be built using concrete end-walls that allow the roadbed to be no wider than the pavement. Thus, under Option 3, the width of wetland fill would be 25 feet.

- Option 4 includes a 25-foot wide crossing on an elevated causeway. This option would eliminate the need for a culvert and minimize the amount of wetland fill by raising the 25-foot wide roadway above the wetland on a reinforced concrete causeway structure. However, support columns would still be necessary, thus some degree of wetland fill would occur. Of these sub-options, Option 4 may be favored by regulatory agencies. However, it may not be feasible due to expense and a number of engineering challenges.
Construction of an eastern extension of Donna Maria Way would increase the Project's impacts to streams, wetlands, and riparian areas beyond that identified pursuant to the Project. Other than Option 4 (the raised causeway) any of the other options would increase the extent of fill in wetlands and stream corridors (by 340% to 600% as compared to the Project), and would increase the fill of riparian areas (by 140% to 260% as compared to the Project). Under any of these sub-options it would be necessary to obtain a Nationwide Permit (NWP) from the Army Corps of Engineers for the fill of wetlands (the total amount of wetlands fill would still be below the fill limits specified for NWPs). Similarly, the additional work needed for this alternative would require the same types of permits that would be required for the Project from the RWQCB and CDFW, although with increased mitigation responsibilities. In addition, CDFW (in addition to the City of Orinda’s Tree Protection Ordinance) would likely require mitigation for the removal of riparian trees within the right-of-way. Riparian tree removal in this area is not necessary for the Project.

There are no mitigation banks or in-lieu fee programs that service the Project area, thus any mitigation for impacts would need to be arranged by the Project applicant. The Project avoids all wetland impacts and has limited stream and riparian impacts, such that mitigation can be achieved through on-site restoration and preservation activities. However, the wetland fill required for construction of this alternative would likely require a mitigation plan that includes the creation of new wetlands. While it may be possible to create additional wetlands on-site, such a plan would likely reduce the buildable area of the Project site. Another option may be off-site mitigation, although the details of how such an off-site mitigation would be implemented are not currently known.

In conclusion, a number of possible options for construction of the eastern extension of Donna Maria Way would be possible, with varying levels of impact to sensitive resources. However, each of these options would result in greater impacts to wetlands, riparian habitat and sensitive natural communities than would the westerly extension as proposed pursuant to the Project. The increase in impacts from the easterly extension of Donna Maria Way would result in additional resource agency mitigation requirements not currently assumed for the Project.

Special Status Species and Associated Habitat

Alternative 5 would have a greater potential impact on special-status wildlife than the Project or either of the other access alternatives. The stream, wetland, and riparian areas of the Project site provide habitat and have the potential to support special-status species. Compared to the Project, Alternative 5 would create conditions potentially more hazardous to special-status wildlife, both during and post-construction, and would ultimately reduce the amount of available stream, wetland, and riparian habitat on site. Alternative 5 would increase the potential for impacts to special-status wildlife compared to the Project, and would be required to implement avoidance, minimization and mitigating design elements as incorporated into the Project to reduce these impacts to a less than significant level.

Wildlife Movement and Nursery Sites

The easterly portion of the Project site would be directly bisected by the new Donna Maria Way access road proposed under Alternative 5. This is an area that is proposed to be undeveloped and placed within a conservation easement under the Project. If a new roadway were to be constructed in this area, it would decrease cover for animals and increase the levels of light, noise, and vehicle and pedestrian traffic, reducing the suitability of this area for wildlife. Under this Alternative, the wetland area connecting the easterly creek corridor and Moraga Creek, which provides sufficient cover and habitat for wildlife movement, would be substantially disturbed by new construction and an open, permanent roadway bisecting these two habitat areas.

Consistency with the Orinda Tree Management Ordinance

Alternative 5 would result in a 74% increase in the number of protected trees to be removed, as compared to the Project. Adherence to the City's tree permit requirements for protected trees and replacement of removed trees would be required.
Hydrology / Water Quality

Alternative 5 would incorporate substantially the same site design, implement the same elements including the bio-retention basin and stormwater drainage system, and comply with the same regulations for construction and operations as the Project. Some adjustments would be made to the stormwater drainage system to connect drains along Adobe Lane to the bio-retention basin. Alternative 5 would also result in essentially the same amount of impervious surface as the Project. As a result, Alternative 5 would result in the same hydrology and water quality impact as would the Project.

One key difference would be the in-stream construction work required to build the access roadway. City regulations regarding grading, drainage, stormwater management and control of construction-period runoff would require implementation of all applicable federal, State, and regional regulations related to water quality. These regulations would require that the alternative be designed to minimize and treat stormwater runoff into surface waters and protect the quality of surface waters through setbacks, landscape standards, and other measures. Compliance with these regulations and treatment of stormwater runoff will keep impacts at a less than significant level.

Transportation/Traffic

TJKM conducted an analysis of traffic operations for Alternative 5, focusing on the one intersection that would most likely be affected by the changed access route - Lavenida Drive at Moraga Way (see Appendix 12C). Alternative 5 differs from the Project in that only one of the proposed 13 residential parcels would be accessed via El Camino Moraga and Donna Maria Way from the west, with the remaining 12 parcels accessed from the east via Lavenida Drive and Donna Maria Way. Using the Project trip generation estimates, these trips were re-assigned to El Camino Moraga and Lavenida Drive proportionate to the number of parcels accessed by these respective roadways. These trip assignments were added to existing conditions to generate traffic volumes under Alternative 5.

This analysis determined that the minor northbound approach of the Lavenida Drive/Moraga Way intersection would be expected to continue operating at LOS D during the AM peak hour, and LOS C during the PM peak hour, with the addition of traffic generated under Alternative 5. The LOS D exceeds the City of Orinda General Plan threshold of LOS C. However, these levels of service are unchanged as compared to existing conditions, and the critical delay for the northbound approach would not be increased under the LOS D condition. Therefore, no significant traffic impacts would result.

Traffic for Alternative 5 would not pass by Del Rey Elementary School and would not affect school-related traffic.

Environmentally Superior Alternative

In addition to the discussion and comparison of impacts of the proposed Project and the alternatives provided above, Section 15126.6 of the CEQA Guidelines requires that an “environmentally superior” alternative be identified, and the reasons for such a selection disclosed. In general, the environmentally superior alternative is the alternative that would be expected to have the fewest significant impacts. Identification of the environmentally superior alternative is an informational procedure and the alternative selected as environmentally superior may not be the alternative that best meets the Project objectives or the objectives of the City of Orinda.

No significant and unavoidable impacts were identified under the proposed Project. All Project impacts are either less than significant or can be reduced to those levels through implementation of the mitigation contained in this Draft EIR. Accordingly, differences between the proposed Project and the Alternatives are marginal instead of substantial.

Alternative 1, the No Project Alternative would primarily retain the majority of the site in its existing condition, resulting in the construction of only one new home, and would have very minor (i.e., no significant) environmental effects. While impacts would be lessened or avoided, the difference between Alternative 1 and the Project would be marginal reductions in already less than significant impacts. Although the No Project Alternative would be the environmentally superior alternative, it would only be
marginally preferable. More importantly, the No Project Alternative would not achieve any of the basic Project objectives, and CEQA Guidelines require that “if the environmentally superior alternative is the ‘No Project’ Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives” (CEQA Guidelines Section 15126.6(e)(2)).

The Project, the Reduced Project Alternative and each of the alternative access routes would result in environmental effects that can be mitigated to less than significant levels through implementation of Project design elements, compliance with regulatory requirements and mitigation measures identified to reduce and/or avoid potential environmental impacts. Therefore, each of these alternatives and the Project are relatively equal in their comparative environmental effects (i.e., less than significant), with only marginally differences, as discussed below.

- Each of the alternative access routes (existing Adobe Lane per Alternative 3, Dolores Way per Alternative 4, or easterly Donna Maria Way per Alternative 5) would have similar types of impacts on biological resources as would the Project, but the extent of these impacts would be greater. Therefore, these alternative access routes are not considered environmentally superior to the Project.

- The Reduced Project Alternative (Alternative 2) would have similar or the same environmental effects as would the Project, but it would avoid impacting the site’s central ephemeral stream with a road crossing and culvert, and would also avoid development on potential landslide areas. As such, the design elements of the Project that mitigate for these impacts would not be needed. However, the proposed Project mitigates these two impacts to a less than significant level. Therefore, while this alternative would be considered environmentally superior to the Project, it is only marginally so. More importantly, the Reduced Project Alternative would not achieve two basic Project objectives:

  1) **Maximize housing opportunities, while accommodating and integrating substantial amenities such as open space and pedestrian corridors; and**

  2) **Maximize the Project contribution to the economic vitality of the City of Orinda and region by maximizing construction jobs and generating substantial amounts of revenue in the form of taxes and lawfully imposed development fees, the latter of which will help fund vital improvements to City infrastructure, services, and amenities.**

On balance, since both the Reduced Project Alternative and the Project are able to mitigate their environmental effects to a less than significant level, there are only marginal differences in impacts. However, because the Project includes a commitment to restore and rehabilitate the historic Moraga Adobe (either via the MOA with the Friends or as a community building for residents of the proposed development), the Project is marginally environmentally superior to all other alternatives considered in this EIR.
Introduction

This chapter of the Draft EIR contains discussion of the following additional CEQA considerations:

- Mandatory Findings of Significance, including Cumulative Impacts
- Significant Irreversible Modifications in the Environment
- Growth Inducing Impacts

Mandatory Findings of Significance

Appendix G of the CEQA Guidelines (Environmental Checklist) contains a list of mandatory findings of significance that may be considered significant impacts if any of the following occur:

- Does the project have the potential to 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, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of California history or prehistory?
- Does the project have impacts that are individually limited, but cumulatively considerable?
- Does the project have environmental effects which will cause substantial adverse effects on human beings either directly or indirectly?

Quality of the Environment

All impacts of the Project are considered to be less than significant or reduced to that level with mitigation. There would be no residual potential to degrade the quality of the environment that have not been otherwise assessed and identified in this EIR.

Cumulative Impacts

The Project is located within a developed urban environment. The cumulative context for analysis in this EIR includes the existing development as well as the cumulative buildout under the City of Orinda General Plan.

As discussed in the preceding chapters of this EIR, implementation of the Project would not have impacts that are individually limited but cumulatively considerable provided all policies, rules and regulations of all relevant governing bodies are adhered to, and the mitigation measures contained within this document are implemented.

Adverse Effects on Human Beings

The Project would not have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly. Construction-period emissions and potential vehicle hazards
are less than significant with mitigation. The Project would not expose people to significant new hazards. There would be no other adverse effects on human beings.

**Significant Irreversible Modifications in the Environment**

An EIR must identify any significant irreversible environmental changes that could be caused by a project. These may include current or future uses of non-renewable resources, and secondary or growth-inducing impacts that commit future generations to similar uses. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified. The CEQA Guidelines describe three distinct categories of significant irreversible changes: 1) changes in land use which would commit future generations to specific uses; 2) irreversible changes from environmental actions; and 3) consumption of non-renewable resources.

**Changes in Land Use Which Would Commit Future Generations**

The site is currently zoned for residential development such as that proposed so development of the residences proposed by the Project would not be considered a land use change. The Project would rezone the Moraga Adobe parcel to Park and Recreation (“PR”) to ensure this resource would be preserved from further development.

**Irreversible Changes from Environmental Actions**

While the Project proposes open space easements to permanently preserve sensitive habitats on the site in an undeveloped state, the portion of the Project site that will be developed will is unlikely to ever revert to a natural state. This Project would contribute to regional emissions of air pollutants and greenhouse gasses, largely from vehicle emission of residents traveling to and from the site. However, the level of impact was determined to be less than significant and is expected to be further reduced over time as regulations and changes in travel habits lead to reduced vehicle emissions.

**Consumption of Nonrenewable Resources**

Consumption of nonrenewable resources can include increased energy consumption, conversion of agricultural or forested lands, and lost access to mining reserves. The Project would not result in the loss of agricultural or forested lands or mining reserves. Development of the Project area as proposed could result in the commitment of nonrenewable resources (e.g., gravel and petroleum products) and slowly renewable resources (e.g., wood products) used in construction. The operation of the proposed use would also require commitment of water and energy resources (e.g., petroleum products for vehicle operations, natural gas and electricity for lighting, heating, and cooling, and water for restrooms). However, the relative amount of resource use is low and would comply with applicable regulations.

**Growth Inducing Impacts**

The Project site is located near the edge of the City limits and is considered an infill parcel as it would be an extension of the residential development existing to the northwest, north, and northeast. The Project does not provide for roadway or utility connection to undeveloped area and is largely surrounded by developed properties, including the Moraga Country Club to the south. Development of the Project site would not have a growth-inducing effect.
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