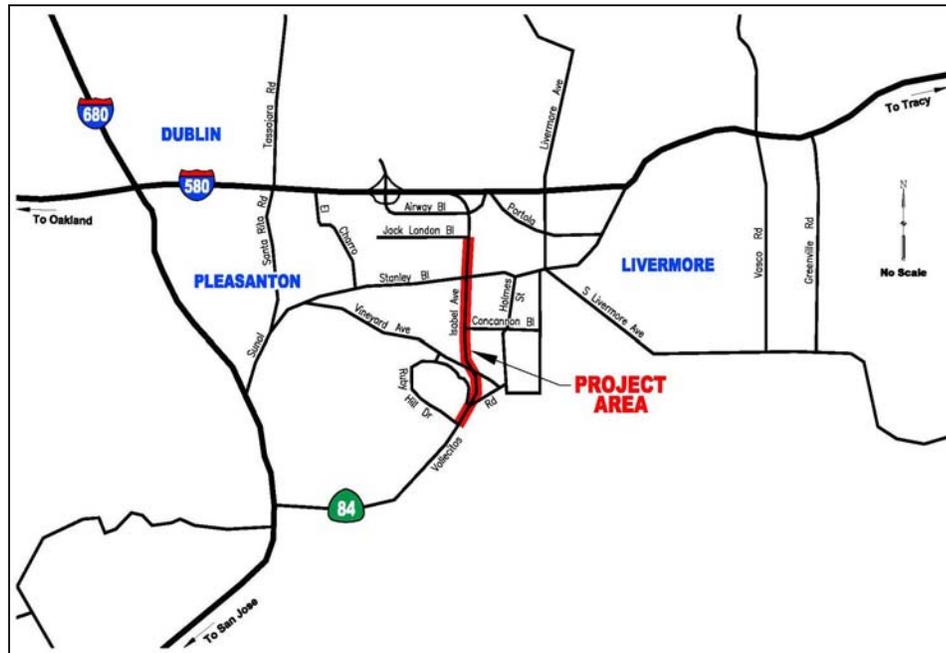


# State Route 84 Expressway Widening Project

ALAMEDA COUNTY, CALIFORNIA  
DISTRICT 04 – ALA – 84 (PM 22.5/27.3)  
EA 297600

## Initial Study with Negative Declaration/ Environmental Assessment with Finding of No Significant Impact



Prepared by the  
State of California Department of Transportation  
In cooperation with  
Alameda County Transportation Improvement Authority

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.



August 2008

For individuals with sensory disabilities, this document is available in Braille, large print, on audiocassette, or computer disk. To obtain a copy in one of these alternate formats, please call or write to Department of Transportation, Attn: Brigetta Smith, Office of Public Information, P.O. Box 23660, Oakland, CA, 94623-0660, email: [Brigetta\\_Smith@dot.ca.gov](mailto:Brigetta_Smith@dot.ca.gov), or use the California Relay Service TTY number 1 (800) 735-2929 (TTY), 1 (800) 735-2929 (Voice), or 711.

It should be noted that at a future date, the Department acting through FHWA or another federal agency may publish a notice in the Federal Register, pursuant to 23 USC §139(l), indicating that a final action has been taken on this project by the Department or another federal agency. If such notice is published, a lawsuit or other legal claim will be barred unless it is filed within 180 days after the date of publication of the notice (or within such shorter time period as is specified in the Federal laws pursuant to which judicial review of the federal agency action is allowed). If no notice is published, then the lawsuit or claim can be filed as long as the periods of time provided by other Federal laws that govern claims are met.

Widen and Upgrade State Route 84 to Expressway Standards between Jack London Boulevard and Ruby Hill Drive in Alameda County, California (Post Mile 22.5 to 27.30)

**INITIAL STUDY with NEGATIVE DECLARATION /ENVIRONMENTAL  
ASSESSMENT with FINDING OF NO SIGNIFICANT IMPACT**

Submitted Pursuant to: (State) Division 13, California Public Resources Code and  
(Federal) 42 USC 4332(2)(C) and 49 USC 303

THE STATE OF CALIFORNIA  
Department of Transportation

8-5-08

Date

  
\_\_\_\_\_  
**BIJAN SARTIPI**, District Director  
California Department of  
Transportation



## Negative Declaration (ND)

Pursuant to: Division 13, Public Resources Code

### ***Project Description***

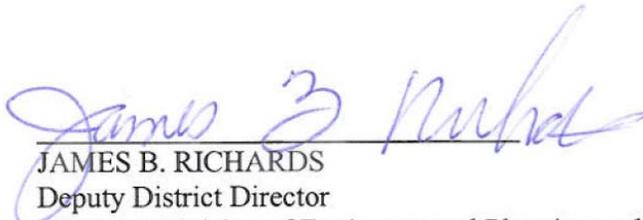
The California Department of Transportation (Department), in cooperation with the Alameda County Transportation Improvement Authority (ACTIA) and the City of Livermore, propose to widen and upgrade State Route (SR) 84 to expressway standards (55 miles per hour) from Ruby Hill Drive to Jack London Boulevard in eastern Alameda County, California. The purpose of the project is to improve SR 84 as a regional route, improve traffic circulation, upgrade SR 84 to an expressway facility, and improve bicycle and pedestrian access.

### ***Determination***

An Initial Study has been prepared for this project, and following public review, the Department has determined from this study that the proposed project would not have a significant effect on the environment for the following reasons:

The proposed project would have no effect on cultural resources, energy, hydrology and floodplains, and population and housing (relocation). In addition, the proposed project would have no significant effect on air quality, emergency services, farmlands/timberlands, geology and soils, growth, hazardous waste and materials, land use, noise, water quality and stormwater runoff, traffic and transportation, utilities, and visual/aesthetics resources. The proposed project would have no significantly adverse effect on mineral resources and biological resources, because the following mitigation measures would reduce potential effects to insignificance:

- Mitigate the unavoidable loss of quarry mining lands through fair market compensation.
- Replace native oak trees that cannot be avoided by the project.

  
\_\_\_\_\_  
JAMES B. RICHARDS  
Deputy District Director

District 4 Division of Environmental Planning and Engineering  
California Department of Transportation

8/5/08  
Date



## Summary

The California Department of Transportation (Department), in cooperation with the Alameda County Transportation Improvement Authority (ACTIA) and the City of Livermore, propose to improve traffic operations and relieve congestion by widening existing State Route (SR) 84 from two to four lanes between Ruby Hill Drive and Stanley Boulevard and two to six lanes between Stanley Boulevard and Jack London Boulevard in the City of Livermore, Alameda County, California. The project would also modify and upgrade the intersections of SR 84 with local roads. The widening would generally follow the existing alignment. SR 84 north of Vallecitos Road is also referred to as Isabel Avenue.

The Department is the lead California Environmental Quality Act (CEQA) agency for the project, and effective July 1, 2007, has been assigned environmental review and consultation responsibilities under the National Environmental Policy Act (NEPA) pursuant to 23 United States Code (USC) 327. ACTIA is responsible for providing regional funding and advancing delivery of projects contained in its expenditure plan, including the proposed SR 84 improvements.

The purpose of the project is to improve SR 84 as a regional connection between I-680 and I-580, consistent with the Department's SR 84 Pigeon Pass Safety Project and the City of Livermore/Caltrans I-580/Isabel Avenue Interchange Project located directly to the south and north of this project. In addition, the project is intended to improve local traffic circulation by adding capacity to SR 84, constructing intersection improvements, and completing the statutory designation of this section of SR 84 as an expressway facility with controlled access and utilities relocated outside of the State right-of-way.

This Initial Study/Environmental Assessment (IS/EA) addresses the proposed project's potential to have adverse impacts on the environment. Potential impacts and mitigation/minimization measures are summarized in Table S-1.

In addition to NEPA and CEQA compliance, the project is subject to other Federal, State, and local laws, policies, and guidelines that are addressed in this IS/EA. Applicable regulatory consultation or approvals may be needed from the following agencies:

- U.S. Fish and Wildlife Service (USFWS) – Concurrence on Biological Evaluation
- U.S. Army Corps of Engineers (USACE) – Nationwide Permit authorization
- State Historic Preservation Officer (SHPO) – Concurrence on finding that the project does not affect historic resources and Section 106 requirements are satisfied
- California Department of Fish and Game (CDFG) – Streambed Alteration Agreement permit
- Regional Water Quality Control Board (RWQCB) and State Water Resources Control Board (SWRCB) – Water quality certification or waiver and National Pollutant Discharge Elimination System (NPDES) permit.

**Table S-1 Summary of Environmental Impacts**

Potential Impact	Proposed Project	No Build Alternative	Cumulative	Avoidance/Minimization/Mitigation
<b>Land Use</b>	Most of existing right-of-way generally accommodates widening with exception of partial parcel acquisitions. All property owners would be compensated for loss of acreage.	None	None	<ul style="list-style-type: none"> <li>• None</li> </ul>
<b>Growth</b>	Project would require partial parcel acquisitions but would not change land use designations, create a new transportation corridor, or provide new access.	None	None	<ul style="list-style-type: none"> <li>• None</li> </ul>
<b>Farmlands/ Timberlands</b>	Roadway widening requires acquisition and conversion of 0.04 acre of agricultural land that is not in current cultivation. The project would not affect farmland.	None	No additional Impacts.	<ul style="list-style-type: none"> <li>• Compensation would be provided for property acquisition, including the 0.04 acre of uncultivated agricultural land (see Section 2.3.4).</li> </ul>
<b>Mineral Resources</b>	Impacts to existing quarry lands minimized by maintaining Stanley Blvd. connections on east side of SR 84. Portions of parcels owned by mining/quarry operators would be acquired for access/utility easements. Lands are vacant except for 0.52 acre within current mining limits.	None	No additional Impacts.	<ul style="list-style-type: none"> <li>• Financial compensation to property owners would minimize impacts (see Section 2.4.3).</li> </ul>

**Table S-1 Summary of Environmental Impacts**

Potential Impact	Proposed Project	No Build Alternative	Cumulative	Avoidance/Minimization/Mitigation
<b>Community Impacts</b>	Existing private driveways, private utilities, Zone 7 Water Agency, and other parcels would be affected by expressway controlled access requirements.	None	No additional impacts.	<ul style="list-style-type: none"> <li>New consolidated driveway access will be provided for all affected landowners.</li> </ul>
<b>Utilities and Emergency Services</b>	Private utilities would require relocation outside of State right-of-way. No utility or emergency services would be interrupted. All service impacts would be avoided.	None	None	<ul style="list-style-type: none"> <li>Emergency service providers would be notified of schedule for project construction and utility relocation work.</li> </ul>
<b>Traffic and Transportation</b>	Project would increase capacity of SR 84, provide increased capacity for future traffic conditions, and improve several intersections within project limits. Some intersection operating conditions in vicinity of I-580 would decrease insignificantly.	None	No additional impacts	<ul style="list-style-type: none"> <li>None</li> </ul>
<b>Visual/Aesthetics</b>	Construction activities would increase visibility of equipment and materials. Trees and vegetation along SR 84 would be affected, and new retaining walls and concrete safety barriers would be installed. A soundwall at the Ruby Hill tennis and recreation facilities would block views.	None	No additional impacts.	<ul style="list-style-type: none"> <li>Landscaping would be incorporated into the project to reduce visual impacts. Aesthetic treatments (color, texture and pattern) that are similar in design to existing walls within the corridor would be applied to the safety barriers and retaining walls (see Section 2.8.4).</li> </ul>
<b>Cultural Resources</b>	No properties listed on the National Register of Historic Places would be affected.	None	No additional impacts.	<ul style="list-style-type: none"> <li>If any cultural resources are encountered during the course of the project, all work would stop until a qualified archaeologist makes an assessment and follows the appropriate protocol for the resource (see Section 2.9.4).</li> </ul>
<b>Hydrology and Floodplains</b>	None	None	None	<ul style="list-style-type: none"> <li>None</li> </ul>
<b>Water Quality and Stormwater Runoff</b>	Construction activities would increase the potential for stormwater runoff and soil erosion due to the increase of impervious surfaces (i.e., paved roads).	None	No additional impacts.	<ul style="list-style-type: none"> <li>Pollution control and soil erosion measures would be incorporated. A Storm Water Pollution Prevention Plan would be implemented during construction (see Section 2.11.4).</li> </ul>

**Table S-1 Summary of Environmental Impacts**

Potential Impact	Proposed Project	No Build Alternative	Cumulative	Avoidance/Minimization/Mitigation
<b>Geology, Soils, and Seismicity</b>	Construction activities could increase the potential for erosion due to runoff.	None	No additional impacts.	<ul style="list-style-type: none"> <li>Proper roadway design and construction techniques, site specific exploratory testing in geologically sensitive locations and the implementation of soil and slope stability measures will be implemented (see Section 2.12.4).</li> </ul>
<b>Hazardous Waste and Materials</b>	Construction activities could increase the potential for exposure to agricultural chemicals, former gas tank, and aerially deposited lead.	None	No additional impacts.	<ul style="list-style-type: none"> <li>Conduct shallow soil investigation prior to construction.</li> <li>Investigate and abate potential asbestos and lead-based paint.</li> <li>Develop a Construction Risk Management Plan (CRMP).</li> </ul>
<b>Air Quality</b>	Project would not cause exceedance of any air quality criteria and meets State and Federal air quality conformity requirements. Construction activities would temporarily increase dust and combustion emissions.	None	No additional impacts.	<ul style="list-style-type: none"> <li>Dust control practices listed in Section 2.14.6 would be incorporated.</li> </ul>
<b>Noise</b>	Future noise levels would increase from 1 to 6 dBA, No increases or maximum levels predicted would exceed the FHWA/Department Noise Abatement Criteria (NAC) at any residences. The Ruby Hill development tennis courts and adjacent recreation fields would approach the NAC. Existing and future noise levels would exceed the NAC at the Isabel Trail, but due to its transitory use this trail does not qualify as a sensitive receptor. Construction activities would temporarily expose residences to noise associated with construction vehicles and activities such as pile driving.	None	No additional impacts.	<ul style="list-style-type: none"> <li>Future worst-case noise levels do not meet the threshold for consideration of additional barriers at any residences.</li> <li>A soundwall at the Ruby Hill tennis courts and fields would be feasible with regard to effectiveness and cost but would block views. The soundwall has been determined to be not reasonable and will not be included in the project.</li> <li>Pavement surface types can be considered to reduce tire noise. Effectiveness of these measures varies and may reduce over time. Local (non-Federal or Department) funding would be required (see Section 2.15.4).</li> </ul>
<b>Natural Communities</b>	Native oak trees/woodland nearest SR 84 would require removal for widening within southern portion of alignment.	None	No additional impacts.	<ul style="list-style-type: none"> <li>Proposed alignment minimizes oak tree impacts; replacement will be provided for remaining unavoidable trees (see Section 2.16.3).</li> </ul>

**Table S-1 Summary of Environmental Impacts**

Potential Impact	Proposed Project	No Build Alternative	Cumulative	Avoidance/Minimization/Mitigation
<b>Wetlands and Waters of the United States</b>	The proposed project would have a permanent impact on 0.136 acre of wetlands and 0.029 acre of nonwetland waters of the U.S.	None	No additional impacts	<ul style="list-style-type: none"> <li>Temporary and permanent impacts would be minimized and avoidance measures would be instituted. Construction work area (including staging areas and necessary routes) restrictions will need to be implemented. Unavoidable permanent wetland fill will be mitigated (see Section 2.17.4).</li> </ul>
<b>Plant and Animal Species</b>	Nonprotected vegetation may be affected along SR 84. Potential for increased erosion during construction.	None	No additional impacts.	<ul style="list-style-type: none"> <li>Best Management Practices (BMPs) will be implemented (i.e., erosion control). Measures outlined in Section 2.18.4 would minimize impacts.</li> </ul>
<b>Threatened and Endangered Species</b>	No impacts to any listed or protected species expected.	None	No additional impacts	<ul style="list-style-type: none"> <li>Avoidance and minimization measures listed in Section 2.19.4 would be required of the contractor. These include fencing, erosion control, construction limitations, and speed limit restrictions.</li> <li>Measures to avoid or minimize potential impacts to California red-legged frog, California tiger salamander, and San Joaquin kit fox include pre-construction surveys, biological monitoring, purchase of 34.17 acres of habitat to benefit the three species, and conservation measures outlined in the USFWS Biological Opinion.</li> </ul>
<b>Invasive Species</b>	Potential exists for inadvertent spreading of noxious weeds from construction activities.	None	No additional impacts	<ul style="list-style-type: none"> <li>Requirements for contractor to not use listed weed species, and inspection and cleaning of construction equipment (see Section 2.20).</li> </ul>

***Preferred Alternative***

The preferred alternative is the Build Alternative, which consists of the project components described in Section 1.4.1. The Build Alternative includes maintaining the SR 84/Vallecitos Road intersection in its current location to avoid acquisition of land held in an agricultural easement by the Tri-Valley Conservancy.

The October 2007 Draft Environmental Document (DED) for this project included the relocation and realignment of the SR 84/Vallecitos Road intersection to meet highway design standards for the widened roadway. In response to public concerns

about the effects of the proposed intersection change, the Department reconsidered previously eliminated design options for the SR 84/Vallecitos Road intersection. Additional technical studies were conducted and subsequently identified that the intersection could remain in its current location if specific design changes are incorporated. The changes include adjusting the angle of the Vallecitos Road approach to the intersection to reduce the potential for high-sided vehicles to overturn, eliminating the left-turn movement from SR 84 to Vallecitos Road, and additional modifications to further improve safety and enhance traffic operations. As a result, the project design was changed to maintain the SR 84/Vallecitos Road intersection in its current location.

After comparing and weighing the benefits and impacts of the study alternatives, the Project Development Team has identified the Build Alternative, with the modified SR 84/Vallecitos Road interchange, as the preferred alternative.

# Table of Contents

Cover Sheet .....	i
Negative Declaration (ND) .....	iii
Summary .....	v
Table of Contents .....	xi
List of Figures .....	xv
List of Tables .....	xvi
List of Acronyms and Abbreviations .....	xvii
<b>Chapter 1.</b> Proposed Project .....	1-1
1.1. Introduction .....	1-1
1.2. Project Purpose .....	1-2
1.3. Project Need .....	1-7
1.3.1. Improve Regional Connectivity .....	1-7
1.3.2. Improve Local Traffic Circulation .....	1-9
1.3.3. Improve SR 84 to Expressway Standards Within Project Limits .....	1-9
1.3.4. Improve Pedestrian and Bicycle Access Within Project Limits .....	1-10
1.4. Project Description .....	1-10
1.4.1. Proposed Build Alternative .....	1-10
1.4.2. No Build Alternative .....	1-14
1.4.3. Traffic Systems Management .....	1-15
1.4.4. Preferred Alternative .....	1-15
1.5. Alternatives Considered but Eliminated from Further Discussion Prior to Draft Environmental Document .....	1-15 1-15
1.5.1. SR 84 Alignment from Ruby Hill Drive to Vallecitos Road .....	1-16
1.5.2. SR 84/Isabel Avenue and Vallecitos Road Intersection .....	1-17
1.5.3. Stanley Boulevard Connection to SR 84 .....	1-19
1.5.4. SR 84/Isabel Avenue and Vineyard Avenue Intersection .....	1-20
1.6. Permits and Approvals Needed .....	1-21
<b>Chapter 2.</b> Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures .....	2-1 2-2
<i>Human Environment</i> .....	2-2
2.1. Land Use .....	2-2
2.1.1. Existing and Future Land Use .....	2-2
2.1.2. Environmental Consequences .....	2-10
2.1.3. Avoidance, Minimization, and/or Mitigation Measures .....	2-16
2.2. Growth .....	2-16
2.2.1. Regulatory Setting .....	2-16
2.2.2. Existing and Planned Growth .....	2-16
2.2.3. Development Trends .....	2-17
2.2.4. Transportation Improvements and Planned Growth .....	2-18
2.2.5. Growth Constraints .....	2-18
2.2.6. Growth Pressures .....	2-19
2.2.7. Conclusions .....	2-19
2.3. Farmlands/Timberlands .....	2-19
2.3.1. Regulatory Setting .....	2-19
2.3.2. Affected Environment .....	2-20
2.3.3. Environmental Consequences .....	2-21
2.3.4. Avoidance, Minimization, and/or Mitigation Measures .....	2-21
2.4. Mineral Resources .....	2-21

2.4.1.	Affected Environment .....	2-21
2.4.2.	Environmental Consequences .....	2-22
2.4.3.	Avoidance, Minimization, and/or Mitigation Measures.....	2-23
2.5.	Community Impacts .....	2-23
2.5.1.	Community Character and Cohesion .....	2-23
2.5.2.	Environmental Justice .....	2-25
2.6.	Utilities and Emergency Services.....	2-27
2.6.1.	Affected Environment .....	2-27
2.6.2.	Environmental Consequences .....	2-28
2.6.3.	Avoidance, Minimization, and/or Mitigation Measures.....	2-28
2.7.	Traffic and Transportation/Pedestrian and Bicycle Facilities .....	2-28
2.7.1.	Regulatory Setting.....	2-28
2.7.2.	Affected Environment .....	2-29
2.7.3.	Environmental Consequences .....	2-32
2.7.4.	Avoidance, Minimization, and/or Mitigation Measures.....	2-35
2.8.	Visual/Aesthetics.....	2-35
2.8.1.	Regulatory Setting.....	2-36
2.8.2.	Affected Environment .....	2-36
2.8.3.	Environmental Consequences .....	2-37
2.8.4.	Avoidance, Minimization, and/or Mitigation Measures.....	2-41
2.9.	Cultural Resources .....	2-42
2.9.1.	Regulatory Setting.....	2-42
2.9.2.	Affected Environment .....	2-43
2.9.3.	Environmental Consequences .....	2-46
2.9.4.	Avoidance, Minimization, and/or Mitigation Measures.....	2-46
	<i>Physical Environment</i> .....	2-47
2.10.	Hydrology and Floodplains.....	2-47
2.10.1.	Regulatory Setting.....	2-47
2.10.2.	Affected Environment .....	2-47
2.10.3.	Environmental Consequences .....	2-49
2.10.4.	Avoidance, Minimization, and/or Mitigation Measures.....	2-51
2.11.	Water Quality and Stormwater Runoff .....	2-51
2.11.1.	Regulatory Setting.....	2-51
2.11.2.	Affected Environment .....	2-52
2.11.3.	Environmental Consequences .....	2-53
2.11.4.	Avoidance, Minimization, and/or Mitigation Measures.....	2-55
2.12.	Geology, Soils, and Seismicity.....	2-57
2.12.1.	Regulatory Setting.....	2-57
2.12.2.	Affected Environment .....	2-57
2.12.3.	Environmental Consequences .....	2-60
2.12.4.	Avoidance, Minimization, and/or Mitigation Measures.....	2-62
2.13.	Hazardous Waste and Materials .....	2-63
2.13.1.	Regulatory Setting.....	2-63
2.13.2.	Affected Environment .....	2-64
2.13.3.	Environmental Consequences .....	2-66
2.13.4.	Avoidance, Minimization, and/or Mitigation Measures.....	2-66
2.14.	Air Quality.....	2-67
2.14.1.	Regulatory Setting.....	2-67
2.14.2.	Affected Environment .....	2-68
2.14.3.	Environmental Consequences .....	2-74
2.14.4.	Construction Impacts.....	2-76

2.14.5. Mobile Source Air Toxics .....	2-76
2.14.6. Avoidance, Minimization, and/or Mitigation Measures .....	2-79
2.15. Noise .....	2-80
2.15.1. Regulatory Setting .....	2-80
2.15.2. Affected Environment .....	2-82
2.15.3. Environmental Consequences .....	2-84
2.15.4. Abatement Measures .....	2-88
<i>Biological Environment</i> .....	2-91
2.16. Natural Communities .....	2-91
2.16.1. Affected Environment .....	2-91
2.16.2. Environmental Consequences .....	2-92
2.16.3. Avoidance, Minimization, and/or Mitigation Measures .....	2-92
2.17. Wetlands and Other Waters of the United States .....	2-93
2.17.1. Regulatory Setting .....	2-93
2.17.2. Affected Environment .....	2-94
2.17.3. Environmental Consequences .....	2-96
2.17.4. Avoidance, Minimization, and/or Mitigation Measures .....	2-98
2.18. Plant and Animal Species .....	2-99
2.18.1. Regulatory Setting .....	2-99
2.18.2. Affected Environment .....	2-101
2.18.3. Environmental Consequences .....	2-103
2.18.4. Avoidance, Minimization, and/or Mitigation Measures .....	2-103
2.19. Threatened and Endangered Species .....	2-103
2.19.1. Regulatory Setting .....	2-104
2.19.2. Affected Environment .....	2-105
2.19.3. Environmental Consequences .....	2-109
2.19.4. Avoidance, Minimization, and/or Mitigation Measures .....	2-110
2.20. Invasive Species .....	2-111
2.20.1. Regulatory Setting .....	2-111
2.20.2. Affected Environment .....	2-111
2.20.3. Environmental Consequences .....	2-112
2.20.4. Avoidance, Minimization, and/or Mitigation Measures .....	2-112
<i>Cumulative Impacts</i> .....	2-112
2.21. Cumulative Impacts .....	2-112
2.21.1. Regulatory Setting .....	2-112
2.21.2. City of Livermore General Plan and Arroyo las Positas Watershed Area .....	2-113
2.21.3. Nearby Projects Considered for Cumulative Impacts .....	2-114
2.22. Climate Change .....	2-118
<b>Chapter 3. Comments and Coordination</b> .....	3-1
3.1. Early Community and Landowner Coordination .....	3-1
3.2. Public Coordination on the Draft Environment Document .....	3-2
3.3. Permits and Approvals .....	3-4

**Chapter 4.** List of Preparers .....4-1  
**Chapter 5.** Distribution List ..... 5-1  
**Chapter 6.** References .....6-1  
**Chapter 7.** List of Technical Studies..... 7-1  
**Appendix A** Project Plans and Cross Sections ..... A-1  
**Appendix B** Design Options..... B-1  
**Appendix C** Environmentally Sensitive Resources ..... C-1  
**Appendix D** CEQA Checklist..... D-1  
**Appendix E** Glossary of Technical Terms ..... E-1  
**Appendix F** Title VI Policy Statement..... F-1  
**Appendix G** Consultation and Coordination ..... G-1  
**Appendix H** Minimization and/or Mitigation Summary ..... H-1  
**Appendix I** Comments and Responses on the Draft Environmental Document ..... I-1  
**Appendix J** Wetlands Only Practicable Finding and Floodplain Determination ..... J-1  
**Appendix K** Resources Evaluated Relative to the Requirements of Section 4(f)..... K-1

## List of Figures

Figure 1-1	Site Location Map .....	1-3
Figure 1-2	Vicinity Map.....	1-5
Figure 2.1-1	Existing Land Use and Build Alternative.....	2-3
Figure 2.1-2	Study Area Census Block Boundaries.....	2-5
Figure 2.7-1	Levels of Service for Intersections with Traffic Signals .....	2-31
Figure 2.8-1	SR 84 Between Ruby Hill Drive and Vallecitos Road, With and Without Proposed Project.....	2-39

## List of Tables

Table S-1	Summary of Environmental Impacts .....	vi
Table 1-1	Comparison of 1995 and 2005 Regional Freeway Traffic Volumes.....	1-7
Table 1-2	SR 84 Annual Average Daily Traffic (AADT) Travel Demand Forecasts.....	1-8
Table 1-3	Regulatory Permits and Approvals .....	1-21
Table 2.1-1	Properties Potentially Affected by the Project Right-of-Way.....	2-11
Table 2.2-1	Study Area Populations.....	2-17
Table 2.7-1	Project Intersection Levels of Service.....	2-32
Table 2.7-2	Ramp Intersection Level of Service.....	2-34
Table 2.13-1	Hazardous Material Release Sites.....	2-65
Table 2.14-1	Bay Area Air Quality Attainment Status .....	2-70
Table 2.15-1	Federal Noise Abatement Criteria.....	2-81
Table 2.15-2	Noise Levels of Common Activities .....	2-81
Table 2.15-3	Noise Model Results – Comparison of Existing to 2030 With Project and 2030 No Build .....	2-85
Table 2.17-1	Potentially Jurisdictional Waters in the ESL and Potential Permanent Impact Areas .....	2-97
Table 2.21-1	Other Nearby Improvements Considered for Cumulative Impacts.....	2-114
Table 2.21-2	Summary of Cumulative Development Project Impacts to Wetlands and Waters of the United States and Vegetation Communities .....	2-117

## List of Acronyms and Abbreviations

AADT	Annual Average Daily Traffic
ABAG	Association of Bay Area Governments
ACCMA	Alameda County Congestion Management Agency
ACTIA	Alameda County Transportation Improvement Authority
APE	Area of Potential Effect
ASR	Archaeological Survey Report
BAAQMD	Bay Area Air Quality Management District
BMP	Best Management Practice
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CDFG	California Department of Fish and Game
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CGS	California Geological Survey
CNDDB	California Natural Diversity Data Base
CNPS	California Native Plant Society
CO	carbon monoxide
CRHR	California Register of Historic Resources
CHRIS/NWIC	California Historic Resources Inventory System, Northwest Information Center
CRMP	Construction Risk Management Plan
CWA	Clean Water Act
dBA	A-weighted decibel
DBH	diameter at breast height
DED	Draft Environmental Document
Department	California Department of Transportation
EA	Environmental Assessment
ESL	Environmental Study Limit
EMF	electromagnetic field
FED	Final Environmental Document
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHPM	Federal-Aid Highway Program Manual
FHWA	Federal Highway Administration
HOV	High-occupancy vehicle
I	Interstate
IS	Initial Study
ISA	Initial Site Assessment
kV	kilovolt
LAVQAR Plan	Specific Plan for Livermore-Amador Valley Quarry Area Reclamation (Alameda County 1981)
$L_{eq}$	equivalent sound level
LOS	Level of service
<b>M</b>	moment magnitude, an earthquake intensity measure
$\mu\text{g}/\text{m}^3$	microgram(s) per cubic meter
$\text{mg}/\text{m}^3$	milligram(s) per cubic meter
mph	miles per hour

MSAT	Mobile Source Air Toxics
MTC	Metropolitan Transportation Commission
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
ND	Negative Declaration
NEPA	National Environmental Policy Act
NO <sub>2</sub>	nitrogen dioxide
NOAA Fisheries	National Oceanic and Atmospheric Administration's National Marine Fisheries Service
NO <sub>x</sub>	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O <sub>3</sub>	Ozone
PM	Post mile
PM <sub>10</sub>	particulate matter less than 10 micrometers in diameter
PM <sub>2.5</sub>	particulate matter less than 2.5 micrometers in diameter
ppm	part(s) per million
PDT	Project Development Team
PSR	Project Study Report
ROGs	Reactive organic gases
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SHPO	State Historic Preservation Office(r)
SIP	State Implementation Plan
SO <sub>2</sub>	sulfur dioxide
SO <sub>x</sub>	sulfur oxides
SR	State Route
STIP	State Transportation Improvement Program
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TIP	Transportation Improvement Program
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VMT	vehicle miles traveled

# **Chapter 1. Proposed Project**

---

The California Department of Transportation (Department), in cooperation with the Alameda County Transportation Improvement Authority (ACTIA) and the City of Livermore, propose to widen and upgrade State Route (SR) 84 to expressway standards between Ruby Hill Drive and Jack London Boulevard in the City of Livermore, Alameda County, California.

This project is included in the Transportation 2030 Plan, which is the San Francisco Bay Area's Regional Transportation Plan (RTP).<sup>1</sup> The project is also included in the Metropolitan Transportation Commission's (MTC's) financially constrained 2007 Transportation Improvement Program (TIP).

The Department is the lead California Environmental Quality Act (CEQA) agency for the project, and effective July 1, 2007, has been assigned environmental review and consultation responsibilities under the National Environmental Policy Act (NEPA) pursuant to 23 United States Code (USC) 327. ACTIA is responsible for providing regional funding and advancing delivery of projects contained in its expenditure plan, including the proposed SR 84 improvements. The City of Livermore is a stakeholder and project sponsor.

## **1.1. Introduction**

Regionally, SR 84 follows a discontinuous route consisting of two segments. One segment runs east-west from Livermore to Fremont in Alameda County, crosses San Francisco Bay via the Dumbarton Bridge, and continues from Menlo Park to San Gregorio in San Mateo County. The other segment runs north-west from Rio Vista to the Interstate 80 (I-80) interchange in Sacramento. In eastern Alameda County, SR 84 provides local access for the cities of Pleasanton and Livermore, as well as an alternative east-west link between the Central Valley and the San Francisco Bay Area via the I-580 and I-680 corridors. Within the project area, SR 84 is the same corridor/road as Isabel Avenue and the portion of Vallecitos Road south of Isabel Avenue (Figure 1-1).

---

<sup>1</sup> The project is listed in the MTC Transportation 2030 Plan under Reference No. 22776, and in the TIP under ID No. ALA050014.

The proposed project follows the existing alignment of SR 84 from Ruby Hill Drive to Jack London Boulevard (Post Mile [PM] 22.5 to 27.3) in the City of Livermore, near the eastern boundary of the City of Pleasanton (Figure 1-2). The project conforms to the Department's SR 84 Pigeon Pass Safety Project (EA #172400) to the south and the City of Livermore/Caltrans I-580/Isabel Avenue Interchange Project (EA #171300) to the north.

SR 84 originally followed an alignment through Livermore along Vallecitos Road, Holmes Street, and First Street. Isabel Avenue was a two-lane undivided road between Vineyard Avenue and Stanley Boulevard. No roadway previously existed between Stanley Boulevard and Jack London Boulevard. Since the 1950s, the City of Livermore and the Department planned to realign SR 84 away from Central Livermore to reduce congestion in the downtown area. In 1960, the California Highway Commission (predecessor of the current California Transportation Commission) adopted a new alignment for SR 84 that followed Isabel Avenue from Vallecitos Road to north of Jack London Boulevard and I-580. In 1986, Alameda County voters passed the Measure B sales tax program, which included the following specific improvements related to the corridor:

- Extending Isabel Avenue from Airway Boulevard to the Arroyo del Valle Bridge and widening to a two-lane roadway within a six-lane right-of-way; and
- Constructing a new I-580/Isabel Avenue interchange.

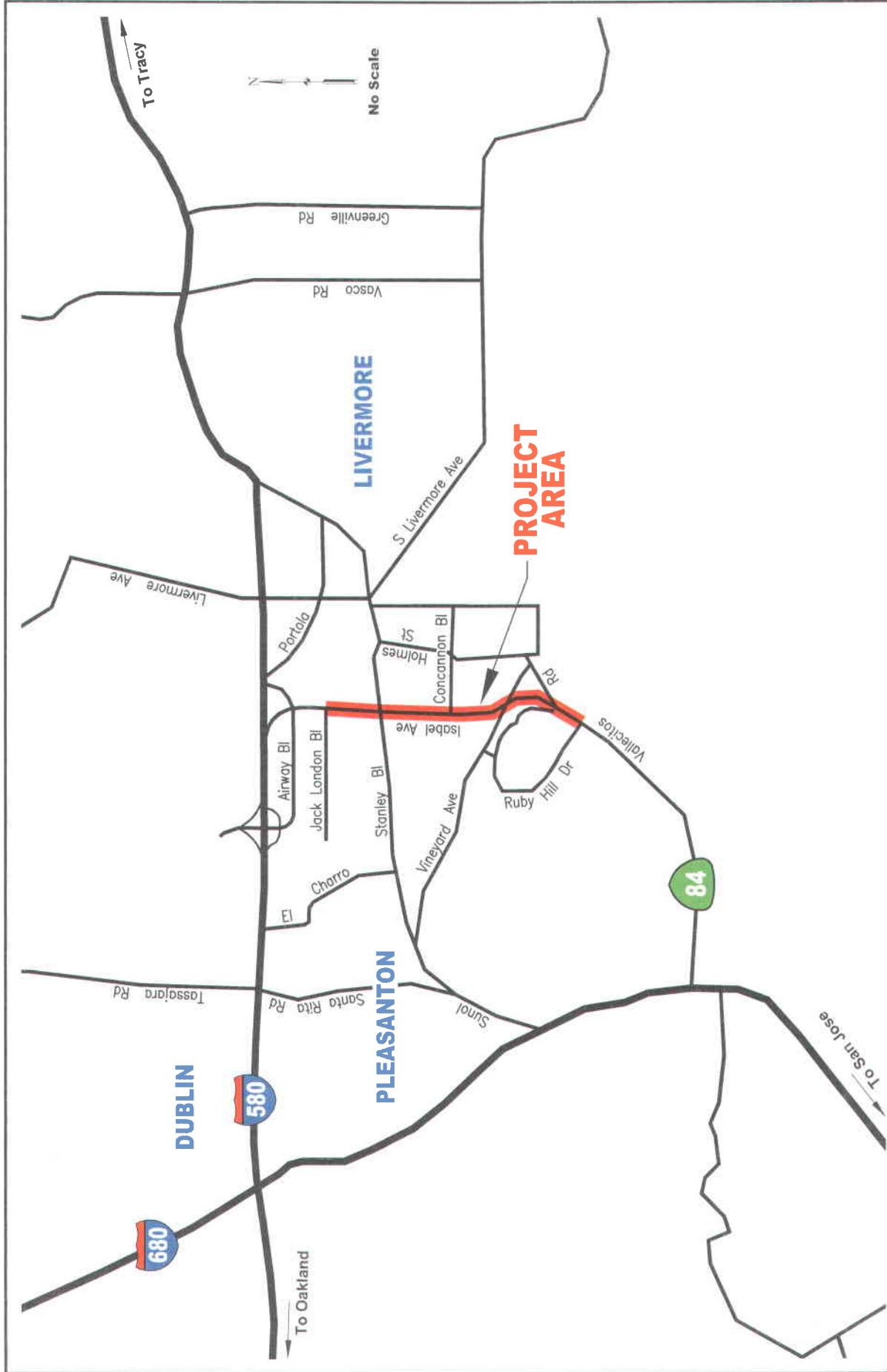
The Isabel Avenue extension project was completed in 2001. In December 2003, the SR 84 highway designation was transferred from the previous route through downtown Livermore to Isabel Avenue. Environmental clearance is complete and final design for the new I-580/Isabel Avenue interchange is under way.

This project, widening and upgrading SR 84 to expressway standards, is included in ACTIA's current Measure B 2002 reauthorization and associated Expenditure Plan.

## **1.2. Project Purpose**

The purpose of the project is to:

- Improve SR 84 as a regional connection between I-680 and I-580, consistent with other programmed projects, by completing a continuous four- to six-lane facility between Pigeon Pass and the I-580/Isabel Avenue interchange;



September 2005

Figure  
1-1

# SITE LOCATION MAP

**ROUTE 84  
EXPRESSWAY WIDENING**  
ALA 84 - PM 22.5 / 27.3  
04 - 297600









- Improve local traffic circulation by adding capacity on SR 84 and including intersection improvements, thereby attracting regional traffic currently using local streets back onto the SR 84 corridor; and
- Complete the statutory designation of this segment of SR 84 as an expressway facility by providing controlled access and relocating private utilities outside of State right-of-way.

Consistent with regional planning, the project also provides the opportunity to improve pedestrian and bicycle access along this section of SR 84 by connecting and extending multiuse trails.

### 1.3. Project Need

#### 1.3.1. Improve Regional Connectivity

One of the Bay Area’s heaviest regional commutes is between the employment centers of the South Bay and Southern Alameda County, and the growing residential areas in Eastern Alameda County and the Central Valley. The I-680 and I-580 freeway corridors link these areas.

Annual Average Daily Traffic (AADT) on these freeway corridors increased substantially between 1995 and 2005 (Table 1-1). In 2005, eastbound I-580 from Hopyard Road to El Charro Road, and westbound I-580 from the Altamont Pass to Airway Boulevard, were rated as the second- and third-worst congestion hotspots in the Bay Area.<sup>2</sup> These freeways have shared these rankings for the past three years.

**Table 1-1 Comparison of 1995 and 2005 Regional Freeway Traffic Volumes**

Route	Location	1995 Volume (AADT)	2005 Volume (AADT)	Change in AADT	Percent Increase
I-580	Vasco Road to 1 <sup>st</sup> Street	126,000	180,000	26,000	21
I-580	1 <sup>st</sup> Street to N. Livermore Avenue	119,000	172,000	53,000	45
I-580	N. Livermore Avenue to Portola Avenue	118,000	174,000	56,000	47
I-580	Portola Avenue – Airway Boulevard	140,000	191,000	51,000	36
I-680	Bernal Avenue to Sunol Boulevard	101,000	129,000	28,000	28
I-680	Sunol Boulevard to SR 84 Junction	94,000	122,000	28,000	30
I-680	South of SR 84 Junction.	109,000	148,000	39,000	36

Source: Annual Average Daily Traffic (AADT) counts from <http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm>

<sup>2</sup> Bay Area Transportation State of the System Report, MTC and Caltrans District 4.

SR 84 and I-580 serve as the only two east-west links for Tri-Valley<sup>3</sup> regional commutes and are recognized in the Alameda County Congestion Management Agency’s (ACCMA’s) Congestion Management Plan as “Routes of Regional Significance.”

SR 84 serves as a primary alternative route to the I-680/I-580 freeway corridor and currently experiences heavy year-round traffic use from both regional and inter-regional traffic between I-580 and I-680. Predicted traffic growth along the SR 84 corridor for the years 2010 and 2030 is shown in Table 1-2.<sup>4</sup>

**Table 1-2 SR 84 Annual Average Daily Traffic (AADT) Travel Demand Forecasts**

SR 84 Segment	Existing (2005)	2010		2030	
		No Build	Build	No Build	Build
Ruby Hill Drive to Vallecitos Road	31,774	39,466	42,641	56,173	60,217
Vallecitos Road to Vineyard Ave.	5,747	13,145	19,969	19,229	29,629
Vineyard Ave. to Concannon Blvd.	14,332	16,867	24,397	24,100	34,761
Concannon Blvd. to Stanley Blvd.	13,842	20,638	29,441	24,247	39,299
Stanley Blvd. to Jack London Blvd.	14,023	26,681	35,847	29,760	47,198

Note: Traffic volumes include both directions. Existing traffic volumes are based on State traffic count data.

In mid-2007, the Department began construction to realign and widen over 2 miles of SR 84 from Ruby Hill Drive to south of Pigeon Pass to provide two lanes in each direction over the summit. The City of Livermore and the Department also plan to extend SR 84 from Jack London Boulevard to I-580 with a new interchange connection to I-580 between Airway Boulevard and Portola Avenue. Construction of this interchange project is scheduled to begin in spring 2009.

These two programmed projects, together with the proposed project, would complete a continuous four- to six-lane facility on SR 84 between Pigeon Pass and I-580. The added capacity on SR 84 is expected to attract more regional traffic to SR 84 and reduce congestion on I-680 and I-580.

<sup>3</sup> Tri-Valley generally refers to the area encompassed by the Livermore, San Ramon, and Amador Valleys.

### **1.3.2. Improve Local Traffic Circulation**

Heavy congestion on I-680 and I-580 has forced regional travelers to find alternative routes in the Tri-Valley area. Local streets in the Cities of Livermore, Pleasanton, and Dublin experience congestion from regional traffic diverting from freeways to avoid congestion there, as well as local and sub-regional traffic that would otherwise use the freeway corridors.

The Department and the City of Livermore recognized the importance of removing traffic from downtown Livermore with the transfer of SR 84 from Central Livermore (Vallecitos Road and First Street) to the Isabel Avenue corridor in December 2003.

The City of Pleasanton has also indicated that widening SR 84 is needed to reduce the impacts of regional traffic diverting from I-580 and I-680 onto local city streets.

SR 84 is currently a two-lane facility within the project limits. The proposed improvements would provide additional lanes on SR 84 and improve the operations at existing intersections, thereby improving ingress and egress for local traffic. Widening SR 84 within the project limits in combination with adjacent corridor improvements<sup>5</sup> would also divert truck and commute traffic from residential and commercial areas in the cities of Livermore and Pleasanton to SR 84.

### **1.3.3. Improve SR 84 to Expressway Standards Within Project Limits**

As part of the Cooperative Agreement for Transfer and Relinquishment of SR 84 between the City of Livermore and the Department,<sup>6</sup> future improvements on the section of SR 84 between Vallecitos Road and Jack London Boulevard must upgrade the route to expressway standards in accordance with State statutes.

The proposed project would meet those requirements by:

- Acquiring access control rights for State right-of-way (access onto SR 84 would be restricted to signalized intersections, and private driveway access to SR 84 would be relocated to controlled intersections);

---

<sup>4</sup> The Project Report prepared for the proposed project provides additional future year traffic data and operating conditions.

<sup>5</sup> Caltrans SR 84 Pigeon Pass Safety Project and City of Livermore/Caltrans I-580/Isabel Avenue Interchange Project.

<sup>6</sup> Cooperative Agreement #1979-C.

- Relocating private utilities out of State right-of-way; and
- Constructing roadway improvements that meet or exceed expressway design standards.

### **1.3.4. Improve Pedestrian and Bicycle Access Within Project Limits**

The MTC Regional Bicycle Plan for the San Francisco Bay Area (MTC 2001) includes a proposed bikeway for the SR 84 corridor from I-680 to I-580. The Alameda Countywide Bicycle Plan (ACCMA 2001) also identifies a proposed Class III bikeway for the SR 84 corridor between the freeways.

This project includes extending the Isabel Trail southward from Alden Lane to provide a continuous Class I bikeway from Jack London Boulevard to Vineyard Avenue that will connect to the planned East Bay Regional Parks and Recreation Department Trail on Vineyard Avenue. Connections to the Arroyo Mocho Trail and Stanley Boulevard bike path would be maintained, and a Class III bikeway would also be provided on SR 84 within the project limits.

## **1.4. Project Description**

### **1.4.1. Proposed Build Alternative**

The purpose of the project is to improve SR 84 as a regional connection between I-680 and I-580, consistent with the Department's SR 84 Pigeon Pass Safety Project and the City of Livermore/Caltrans I-580/Isabel Avenue Interchange Project located directly to the south and north of this project. In addition, the project is intended to improve local traffic circulation by adding capacity to SR 84, constructing intersection improvements, and completing the statutory designation of this section of SR 84 as an expressway facility with controlled access and utilities relocated outside of the State right-of-way.

#### **1.4.1.1. Planned Roadway Improvements**

The project proposes to widen and upgrade SR 84 to expressway standards (55 miles per hour [mph]) from just south of Ruby Hill Drive to Jack London Boulevard. SR 84 would be widened from two to four lanes between Ruby Hill Drive and Stanley Boulevard, and from two to six lanes between Stanley Boulevard and Jack London Boulevard. The widening would generally follow the existing roadway alignment, and would conform to the SR 84 Pigeon Pass Safety Project to the south and the City of Livermore/Caltrans I-580/Isabel Avenue Interchange Project to the north.

As an expressway facility, SR 84 access would be limited to controlled intersections to improve traffic flow and safety. Signalized intersections at Ruby Hill Drive, Vallecitos Road, Vineyard Avenue, Concannon Boulevard, Stanley Boulevard, Jack London Boulevard, and Discovery Drive (a new road under construction at the Oaks Business Park) would be widened and upgraded to accommodate future traffic demand. To address safety concerns for an expressway facility, the alignment of the Vallecitos Road approach to SR 84 intersection would be increased, and the left-turn movement from SR 84 to Vallecitos Road would be eliminated. At the request of the City of Pleasanton, no widening of Vineyard Avenue west of SR 84 is proposed to deter regional traffic from using Vineyard Avenue as a detour route.

The Isabel Trail, a multiuse trail located on the east side of SR 84 between Jack London Boulevard and Alden Lane, may require temporary closures for safety reasons during construction but would be reopened following completion of the project. The Isabel Trail will ultimately be extended from Alden Lane south to Vineyard Avenue under a future construction contract.

The roadway cross section would consist of 12-foot traveled lanes, 10-foot shoulders, and a 22-foot median. The median would include a concrete safety barrier from north of Vallecitos Road to Jack London Boulevard except at intersections. Roadway side slopes would vary in steepness depending on safety requirements. The roadway median at intersections would be widened to accommodate left-turn lanes.

The planned improvements are illustrated in the map sheets and cross section diagrams in Appendix A.

#### **1.4.1.2. Drainage and Utilities**

Roadway runoff would be conveyed by gutters to existing drainage systems. The outfalls for the drainage systems are at Arroyo del Valle, Arroyo Mocho, and Arroyo las Positas. An existing stormwater pump station is located between the Stanley Boulevard bridges. Minor modifications to this facility would be required to accommodate the roadway widening.

To meet expressway standards, some existing gas, sanitary sewer, storm drain, electrical, cable, telephone, and recycled water utilities within the proposed right-of-way for the project would be relocated. The study limits for the proposed project include adequate area to relocate these private utilities. The affected major utilities would include a 24-inch gas line (Pacific Gas and Electric Company [PG&E]), 12

kilovolt (kV) and 60kV electrical overhead lines (PG&E), and a 15-inch to 39-inch sanitary sewer line (City of Livermore).

#### **1.4.1.3. Right-of-Way Requirements**

The existing right-of-way along SR 84 generally accommodates the proposed widening with minor exceptions. The majority of right-of-way requirements involve acquisition of portions (or slivers) of vacant parcels. Construction access, permanent easements, and utility easements would also be required from several parcels. No acquisition of any residences or businesses would be required. The current project design now avoids impacts to land held in an agricultural easement by the Tri-Valley Conservancy (see Section 1.5.2). Section 2.1 discusses specific right-of-way needs and impacts of the project.

#### **1.4.1.4. Bridge Structures**

Existing SR 84 bridges at Arroyo del Valle and Arroyo Mocho would be widened to accommodate the project. New bridges would be constructed to provide a trail crossing over Arroyo del Valle and a private access road over Arroyo Mocho.

The existing SR 84 bridge over Arroyo del Valle would be widened to the east by approximately 53 feet to accommodate four 12-foot lanes (two in each direction), a 22-foot median, and approximately 10-foot shoulders. The bridge widening would be designed to accommodate a future spillway and conduit to be constructed by the Zone 7 Water Agency as part of a plan to reclaim the quarries in the project vicinity for groundwater recharge and flood control (see Section 2.1.1.2). Rock slope protection would be used to protect the channel.

The existing SR 84 bridge over Arroyo Mocho would be widened to the west by approximately 71 feet to accommodate six 12-foot lanes (three in each direction), a 26-foot median, 10-foot shoulders, and a 10-foot bike lane adjacent to the northbound lanes.

The widened portion of each SR 84 bridge would match the superstructure and substructure design of the existing bridge. Neither bridge is anticipated to require seismic retrofitting.

A new 130-foot-long bicycle and pedestrian trail crossing bridge with a 15-foot-wide roadway would be constructed over Arroyo del Valle, parallel to the existing SR 84 bridge structure. Rock slope protection would be used to protect the channel embankments. A new private access bridge would be constructed over Arroyo Mocho

west of the existing SR 84 bridge to replace a private access road for City of Livermore, Zone 7 Water Agency, and PG&E facilities. The private access bridge would be 120 feet long and have a 15-foot-wide roadway.

The project would not impact the Union Pacific Railroad bridge structure just north of Stanley Boulevard or impact Union Pacific operations.

#### **1.4.1.5. Private Driveway Access Changes**

Private driveways that currently connect to SR 84 would be closed and relocated and/or extended to connect to the public road intersections described in Section 1.4.1. An existing private access road just south of Arroyo Mocho that serves City of Livermore, Zone 7 Water Agency, and PG&E facilities would be closed with respect to direct entrance onto SR 84, and access would be relocated to a new road connecting to the Oaks Business Park development that would include the new bridge crossing of Arroyo Mocho (Section 1.4.1.4). Between Stanley Boulevard and Arroyo del Valle, a private driveway would be closed and relocated to provide shared access to quarry mining areas west of SR 84 and the Isabel Trail extension.

#### **1.4.1.6. Retaining Walls and Soundwall**

A new retaining wall would be installed on the west side of the expressway. Between Ruby Hill Drive and Vallecitos Road, SR 84 would be widened but follow approximately the same alignment as the existing roadway through this hillside area to avoid encroachment into an environmental conservation easement located to the east. The wall would vary in height up to a maximum of 30 feet.

SR 84 passes under Stanley Boulevard and the Union Pacific Railroad tracks. At this location, SR 84 would be widened on both sides and require retaining walls with maximum heights of 22 feet (west side) and 16 feet (east side). Three additional retaining walls would be constructed on the east side of SR 84 to avoid impacts to the Isabel Trail due to local pavement widening for acceleration and deceleration lanes at Concannon and Jack London Boulevards. These walls will vary in height up to a maximum of 4 feet.

Evaluation of future traffic noise levels (discussed in Section 2.15) identified one segment of SR 84, at the Ruby Hill tennis courts and adjacent recreation fields, that approaches or exceeds the criteria for consideration of traffic noise abatement. A 930-foot-long, 6-foot-high soundwall was identified as feasible noise abatement but would introduce visual impacts by blocking existing views. Resident and public input on the soundwall was solicited during the Draft Environmental Document (DED) review

period. The soundwall has been determined to be not reasonable and will not be included in the project.

#### **1.4.1.7. Project Cost and Schedule**

The proposed project is estimated to cost \$120.8 million. Plans, specifications, and estimates; right-of-way acquisition; utility relocation; construction administration; and construction costs for the project will be funded from the following sources:

- ACTIA Measure B funds \$84.8 million
- State Transportation Improvement Program (STIP) and future STIP funds \$12.0 million
- Future State and/or Federal funds \$14.0 million
- Tri-Valley Transportation Development fees \$10.0 million

The following reflects the planned major milestone dates for the proposed project:

- Circulate DED: October 2007
- Approval of the Project Report and Final Environmental Document: Mid 2008
- Complete Design: May 2011
- Right-of-Way Certification: May 2011
- Begin Construction: 2011
- Complete Construction: 2013.

Landscaping will be installed under a separate contract when construction is completed.

#### **1.4.2. No Build Alternative**

The No Build Alternative would make no improvements to SR 84. The existing capacity of SR 84 would remain the same. Traffic demand for the use of this corridor will increase, consistent with the conditions described in Section 1.3. As regional traffic increases as forecasted, portions of SR 84 will become more of a constraint or “bottleneck” where traffic will back up or divert to local roads, especially at the southern end of the project limits.

The No Build Alternative would avoid the impacts associated with the Build Alternative because it would involve no construction or right-of-way acquisition and no roadway widening. However, the No Build Alternative would neither improve SR 84 as a regional connection between I-680 and I-580 nor improve local traffic circulation by adding capacity to SR 84, constructing intersection improvements, and completing the

statutory designation of this section of SR 84 as an expressway facility. The No Build Alternative would not meet the purpose and need for the action and was therefore not advanced for further consideration.

### **1.4.3. Traffic Systems Management**

Traffic systems management and traffic demand management refer to actions that can maximize the efficiency of the existing transportation system. These actions include promotion or expansion of ridesharing and high-occupancy vehicle (i.e., carpool) use, traffic flow improvements (such as signal timing), accommodations for mass transit use, and use of traffic operations and surveillance equipment that can monitor or alert centers that control traffic flow.

No separate traffic systems management and traffic demand management alternatives were developed for the project. The project proposes to widen SR 84 to improve the route as a regional connection between I-680 and I-580 and improve local circulation. A separate traffic operation system project installed closed-circuit television cameras and microwave vehicle detection system facilities on SR 84 in 2007. No additional traffic operation system improvements are proposed in this project. All intersections on SR 84 within the project are signalized, and traffic signal optimization will be conducted during the final project design phase. No new park and ride facilities are proposed.

### **1.4.4. Preferred Alternative**

After comparing and weighing the benefits and impacts of all of the study alternatives, including those summarized in Section 1.5, the Project Development Team has identified the Build Alternative as the preferred alternative.

## **1.5. Alternatives Considered but Eliminated from Further Discussion Prior to Draft Environmental Document**

The following discussion relates to design options that could improve SR 84 consistent with the project's purpose and need and were considered but withdrawn from further evaluation due to the following project constraints at various locations along the route.

- Ongoing and future gravel mining operations within 50 feet of the existing right-of-way on the west side of SR 84 between Stanley Boulevard and Vineyard Avenue, and on the east side of SR 84 between Alden Lane and Vineyard Avenue;

- An environmental conservation easement over property on the east side of SR 84, between Ruby Hill Drive and Vallecitos Road, and adjacent riparian habitat at a creek tributary of Arroyo del Valle;
- A high-speed intersection located within a curve on SR 84 at Vallecitos Road;
- Residential and commercial development abutting each side of SR 84; and
- A multipurpose trail along the east side of the SR 84 between Jack London Boulevard and Alden Lane.

Due to these constraints, several alternative geometric configurations (referred to as design options) were proposed and considered for the section of SR 84 between Ruby Hill Drive and Vallecitos Road, and the SR 84 intersections with Vallecitos Road, Vineyard Avenue, and Stanley Boulevard. The following discussion describes the design options considered but found infeasible due to nonstandard geometric design features, safety concerns, right-of-way conflicts, unacceptable environmental impacts, or funding limitations.

Descriptions of the design options that were considered and a comparison to the Build Alternative (leading to the withdrawal of these design options) are provided in Appendix B.

### **1.5.1. SR 84 Alignment from Ruby Hill Drive to Vallecitos Road**

During the early project programming stage,<sup>7</sup> an alignment was proposed that would shift SR 84 east of the existing roadway to eliminate the S-curve within this roadway segment. However, the option would encroach into and bisect property on the east side of SR 84 that is under an environmental conservation easement<sup>8</sup> established as a biological mitigation site by the developer of the Ruby Hill community. This option would also result in removal of numerous mature native oak trees, impacts to species habitat for the protected California tiger salamander and California red-legged frog, loss of riparian habitat and protective floodplain, and longitudinal encroachment and diversion of a creek tributary of Arroyo del Valle. This alignment option would require extensive cuts into a steep hillside and result in highly visible cut slopes up to 80 feet high, and would require creek channelization and new culvert crossings to accommodate the realigned roadway and associated fill slopes. This option is no longer

---

<sup>7</sup> Project Study Report/Project Development Support document approved in 2003.

<sup>8</sup> The lands are privately owned and managed as an environmental conservation easement by the Tri-Valley Conservancy and the City of Livermore.

being considered because of the severity of these effects and because the other alignment option that follows the existing route avoids many of these impacts.

### **1.5.2. SR 84/Isabel Avenue and Vallecitos Road Intersection**

Under a Department of Transportation encroachment permit, the City of Livermore completed a realignment of the Vallecitos Road connection to SR 84 in late 2006. The Vallecitos Road signalized intersection was relocated slightly to the north to provide a perpendicular connection to SR 84. With the previous intersection alignment (and despite the presence of directional signs), traffic traveling northbound on SR 84 from the Pigeon Pass area could inadvertently continue northeast onto Vallecitos Road and toward downtown Livermore, instead of turning northbound on SR 84/Isabel Avenue. The City's reconfigured Vallecitos Road intersection better directs through traffic on SR 84 and provides improved sight distance for turning movements to and from Vallecitos Road.

The SR 84 Expressway Widening Project is planned for a design speed of 55 mph. The curve on the proposed alignment of SR 84 at the Vallecitos Road intersection cannot be increased in radius (larger curve) to meet this speed standard without realigning the existing roadway or skewing the Vallecitos Road connection to SR 84 and eliminating certain directional movements. Maintaining the intersection at the current location would not meet the 55 mph speed standard because State highway design criteria require local roads to connect to State highways in locations where the "superelevation rate" is 4 percent or less. Superelevation is the banking of a roadway to help offset the centripetal forces (lateral acceleration) developed as a vehicle travels around a horizontal curve. The amount of roadway banking, together with the curve radius and skid friction factor, affects the speed at which a vehicle can safely negotiate a horizontal curve on the highway without skidding or overturning. With the widened SR 84, the current Vallecitos Road intersection would be on a curve with a superelevation rate of 10 percent, which exceeds the maximum rate for the conditions at this location. The concern is that a high-sided vehicle could overturn while making turning maneuvers at the intersection.

The five design options discussed in Sections 1.5.2.1 through 1.5.2.4 were studied to address State and local concerns.

### **1.5.2.1. Design Option A**

Design Option A would skew the connection of Vallecitos Road to SR 84 to provide a larger curve radius for turning vehicles. Option A was initially considered and withdrawn because its original design did not fully address safety concerns.

Following the public review period for the DED, additional modifications were made to Option A to improve safety and enhance traffic operations, including elimination of the left-turn movement from southbound SR 84 to Vallecitos Road. The existing and future traffic volumes for this movement are insignificant and can be accommodated by the SR 84/Vineyard Avenue intersection without additional traffic impacts. Removal of left turn from SR 84 to Vallecitos Road would also reduce conflicting turning movements at the intersection, further improve safety, and allow for a two-phase traffic signal to improve traffic operations. Additional signing and striping would also be installed to increase driver awareness of the intersection configuration and speed requirements for safe turning maneuvers. With these modifications to the proposed design, the Vallecitos Road intersection can remain at its current location, with no additional right-of-way required.

This option, as modified, was ultimately incorporated into the Build Alternative.

### **1.5.2.2. Design Option B**

Design Option B would either reduce the superelevation rate on SR 84 to 4 percent to improve the design speed for turning vehicles or use signing and other traffic calming measures to promote reduced speeds for turning vehicles. Option B was considered and withdrawn since it would present safety concerns with the potential for high-sided vehicles to overturn while making turning maneuvers at the intersection.

### **1.5.2.3. Design Option C**

The proposed project presented in the DED circulated for public review in October 2007 included Option C, which would relocate the Vallecitos Road intersection with SR 84 by 450 feet to the north to increase the intersection's curve radius. The proposed relocation and realignment of the intersection satisfied State highway design requirements. However, realignment of the intersection would require acquisition of at least 3.2 acres of active vineyard land held in an agricultural easement by the Tri-Valley Conservancy.

During the public review period, strong opposition to the Vallecitos Road intersection relocation and realignment was noted, primarily from the Tri-Valley Conservancy and others. In response, the Department took another look at previously eliminated design options to determine whether the impact to the agricultural easement area could be avoided. It was subsequently determined that the angle at which the Vallecitos Road intersection connected to SR 84 could be skewed to reduce the potential for high-sided vehicles to overturn and thereby allow the intersection to remain in its current location. Therefore, the Build Alternative includes Option A, as modified (see Section 1.5.2.1), instead of Option C.

#### **1.5.2.4. Design Options D and E**

Two other design options address the need to conform the Vallecitos Road intersection to the required design speed but are not being advanced because the Build Alternative meets State expressway design standards. Option D would close the Vallecitos Road intersection and shift traffic to alternate routes such as Vineyard Avenue and Concannon Boulevard. Option E would establish a traffic one-way couplet with only eastbound movements to Vallecitos Road from SR 84. Westbound Vallecitos Road traffic would be shifted to Vineyard Avenue or Concannon Boulevard. The signalized intersection at SR 84 and Vallecitos Road would be removed and replaced with an exit ramp layout for northbound SR 84 traffic bound for Vallecitos Road. Intersection improvements to accommodate additional left-turning traffic on westbound Vineyard Avenue at SR 84 would also be required to accommodate southbound Vallecitos Road traffic diverted to westbound Vineyard Avenue. These design options are not being advanced because the City of Livermore is concerned about maintaining the existing access to and from residences and businesses on Vallecitos Road (north of SR 84) and on Vineyard Avenue.<sup>10</sup>

#### **1.5.3. Stanley Boulevard Connection to SR 84**

SR 84 crosses underneath Stanley Boulevard. A short ramp located southeast of this crossing connects the two roadways at signalized intersections (see Layout Sheet L-14, Appendix A). Conceptual planning documented in the 2003 Project Study Report/Project Development Support proposed to replace the existing connector ramp and signalized intersection with a half-cloverleaf interchange configuration located on the south side of Stanley Boulevard. However, the conceptual interchange footprint

---

<sup>10</sup> The City of Livermore received public opposition to the temporary closure of the Vallecitos Road intersection during its recent reconstruction.

would encroach approximately 700 feet into an active gravel quarry property west of SR 84.

A range of full and partial interchange design options, as well as closure of the Stanley Boulevard connector to SR 84, were considered and withdrawn for the following reasons:

***Full and Partial Interchange***

- Both full and partial interchange designs would involve major right-of-way acquisition from the quarry property, requiring significant compensation<sup>11</sup> for the loss of up to 4.5 million cubic yards of potential mined aggregate (or mineral resources). These additional costs would exceed the available funding, to the point that the project would be considered infeasible.
- The full interchange facility would provide traffic operations similar to those offered by the Build Alternative but at a far higher capital cost to the proposed project.
- The interchange footprint would significantly reduce the available water storage for planned elements of the Zone 7 Water Agency’s future flood control facility.
- The State would not support a partial interchange configuration unless full interchange construction is available in the future.

***Close Stanley Boulevard Connector to SR 84***

- Traffic would divert to alternate routes, resulting in additional congestion on local streets and intersections.
- Emergency access between SR 84 and Stanley Boulevard would be removed and result in increased response time to incidents.

**1.5.4. SR 84/Isabel Avenue and Vineyard Avenue Intersection**

The City of Pleasanton wants the heavy left-turn movement from eastbound Vineyard Avenue to northbound SR 84 reduced during the evening peak period. The City has already made strong efforts to discourage use of Vineyard Avenue as a regional travel route by restricting its capacity.

To eliminate left-turn movements at the Vineyard Avenue intersection, the design option of closing the median at this location was considered and withdrawn since diverted traffic would result in additional congestion on local streets and intersections,

---

<sup>11</sup> Estimated costs up to \$30 million.

and access to commercial, retail, and residential uses in this area would be unduly affected.

## 1.6. Permits and Approvals Needed

Table 1-3 summarizes the regulatory permits and approvals needed for project construction.

**Table 1-3 Regulatory Permits and Approvals**

Agency	Permit or Approval	Status or Planned Action
U.S. Fish and Wildlife Service (USFWS)	Consultation for threatened and endangered species under Section 7 of the Federal Endangered Species Act.	<ul style="list-style-type: none"> <li>• Consultation initiated in June 2005 by obtaining and reviewing species list for project area.</li> <li>• Biological Evaluation prepared for USFWS.</li> <li>• USFWS Biological Opinion issued in February 2008.</li> <li>• Biological Opinion requirements will be implemented.</li> </ul>
U.S. Army Corps of Engineers (USACE), San Francisco District	Section 404 approval for placement of fill within waters of the U.S. The project is anticipated to qualify for a Nationwide Permit.	<ul style="list-style-type: none"> <li>• Draft wetland delineation performed.</li> <li>• USACE approval of wetland delineation will be requested.</li> <li>• USACE permit application will be submitted during final design phase.</li> </ul>
California Department of Fish and Game (CDFG)	1602 Agreement for Lake and Streambed Alteration Permit.	<ul style="list-style-type: none"> <li>• Permit application will be submitted during final design phase.</li> </ul>
San Francisco Bay Regional Water Quality Control Board (RWQCB)	Section 401 Water Quality Certification and National Pollutant Discharge Elimination System (NPDES) approval for work greater than 1 acre.	<ul style="list-style-type: none"> <li>• Notice of Intent for coverage under Statewide permit will be submitted prior to construction.</li> </ul>
Cities of Pleasanton and Livermore	City ordinances define trees meeting Heritage (Pleasanton) or Ancestral (Livermore) tree status requiring protection or a permit. (Note: Local ordinances do not apply to State-owned right-of-way.)	<ul style="list-style-type: none"> <li>• Permit not required, but native tree removal will be mitigated.</li> </ul>



## **Chapter 2. Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures**

---

This chapter addresses the environmental impacts of the proposed project as well as identified avoidance and mitigation measures that will be carried out as part of the project. Project design layout sheets showing the project alignment and details are included in Appendix A. Appendix C contains maps showing sensitive environmental resources along the route.

The environmental resource discussions presented in this chapter are based on the technical studies cited at the beginning of each discussion and listed in Chapter 7. An evaluation of the proposed project consistent with CEQA checklist criteria is provided in Appendix D. Mitigation measures for each of the environmental resource areas are discussed in the following sections and summarized in Appendix H.

As part of the scoping and environmental analysis for the project, the following environmental issues were considered but no adverse impacts were identified. Consequently, these issues will not be discussed further.

- **Energy:** The project would provide improved operating conditions within the downtown area of the City of Livermore by adding capacity on the existing SR 84. Benefits of the project are expected to include slightly reduced congestion in the downtown Livermore area. With lower congestion, the energy efficiency of the traffic using SR 84 should improve with the project, and no adverse impacts are foreseen.
- **Relocation:** No housing or commercial businesses would be acquired or relocated as a result of the project.
- **Paleontology:** A review of environmental studies for projects surrounding the proposed project found no indication of paleontological resources in the local area. No evidence of paleontological resources was observed during field studies along the project alignment.
- The project would not affect a wild or scenic river, and is not within the Coastal Zone.

## **Human Environment**

### **2.1. Land Use**

This section summarizes the existing land uses, General Plan land use designations, and urban policies related to the corridor study area as described in the proposed project's Community Impacts Technical Study (Vernazza Wolfe Associates, June 2006).

The project is primarily located in the City of Livermore. However, a portion of the corridor is located in unincorporated Alameda County, and the west side of the southern terminus of the corridor (Ruby Hill) is located in the City of Pleasanton (Figure 2.1-1). The study area discussed in this section through Section 2.5 is defined as the contiguous census block area that overlies the east and west sides of SR 84 from Jack London Boulevard to Ruby Hill Drive. Figure 2.1-2 shows the boundaries of these selected blocks and block groups.

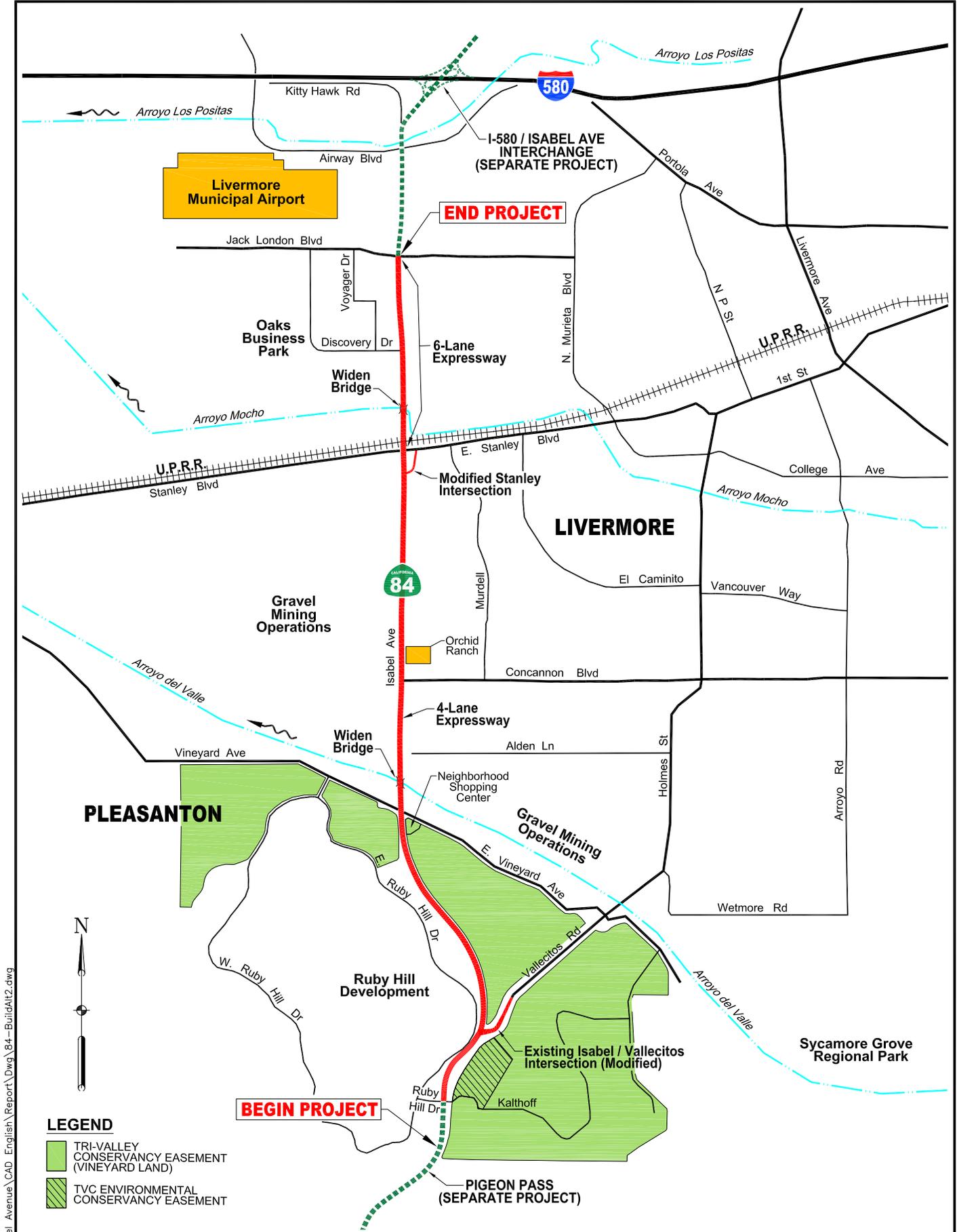
#### **2.1.1. Existing and Future Land Use**

##### **2.1.1.1. Current Land Use**

The study area is mainly composed of single-family neighborhoods and recreational facilities, vineyards, mining operations, commercial uses, and undeveloped land.

##### ***Residential Uses and Community Facilities***

Along the east side of SR 84, between Jack London Boulevard to Alden Lane, just north of Arroyo del Valle, land uses consist of residences and recreational trails. These areas were developed beginning in approximately 1990 as residential subdivisions and include the original developments of Prima and Sandhurst, as well as a residential tract between Alden Lane and Concannon Boulevard. These single-family home developments abut SR 84 right-of-way, but do not have direct driveway access to the highway. Near the intersection of Concannon Boulevard and Isabel Avenue is the former Orchid Ranch, which provided space for three different nursery businesses and had direct (driveway) access to SR 84. The Orchid Ranch has been sold to a developer, and plans are in place to redevelop the site for residential use,



**LEGEND**

- TRI-VALLEY CONSERVANCY EASEMENT (VINEYARD LAND)
- TVC ENVIRONMENTAL CONSERVANCY EASEMENT



**ROUTE 84 EXPRESSWAY WIDENING**  
 ALA 84 - PM 22.5 / 27.3  
 04 - 297600

**EXISTING LAND USE AND BUILD ALTERNATIVE**

Not to Scale  
 Figure  
**2.1-1**  
 March 2008

X:\Route 84-Isabel Avenue\CAD English\Report\Draw\84-BuildAlt2.dwg





**Figure 2.1-2**



**Study Area Census Boundaries (Selected blocks and block groups in the City of Livermore, City of Pleasanton, and Unincorporated Alameda County)**



with access from within the residential development.<sup>12</sup> The other area of developed neighborhood along the project is Ruby Hill, a gated golf course community located in Pleasanton. This development includes suburban and larger estate homes. Ruby Hill is an existing planned development with public open space and landscaped common areas. Most of Ruby Hill is separated from SR 84 by vineyards and hills.

Ida Holm Park is located along SR 84 between Stanley and Concannon Boulevards. The Isabel Trail (used by bicyclists, pedestrians, and equestrians) extends along SR 84 from Jack London Boulevard to Alden Lane, where it turns east. Isabel Avenue also has bike lanes on the road itself. Along Arroyo Mocho is another multipurpose trail that terminates at Isabel Avenue north of Stanley Boulevard.

### ***Agricultural/Vineyards and Environmental Conservation Easements***

Vineyards and wineries are on both sides of Isabel Avenue from Vineyard Avenue to Vallecitos Road and continuing north along Vallecitos Road. The City of Livermore encouraged the creation of the Tri-Valley Conservancy, a local nonprofit organization that has established conservation easements within the study area with landowners.<sup>13</sup> Figure 2.1-1 shows the existing conservancy area with respect to SR 84.

An environmental conservation easement is also designated within the creek area that runs alongside SR 84, directly across from the Ruby Hill development, between approximately Ruby Hill Drive and Vallecitos Road. This easement was designated to protect the natural resources and wildlife species as a result of the development of the Ruby Hill residential area.

### ***Mining and Flood District Lands***

Sand and gravel pits are located on the west side of Isabel Avenue between Stanley Boulevard and Vineyard Avenue and on both sides of Isabel Avenue from Alden Lane to Vineyard Avenue. Agreements permit quarry mining to continue through 2030, and implementation of a reclamation plan that will ultimately create deep basins and a “chain of lakes,” access roads, landscaping and other measures that will be managed primarily for groundwater recharge and flood control by the Zone 7

---

<sup>12</sup> Ownership of the Orchid Ranch changed in spring 2006, and now Orchid Ranch LLC owns the land. This business entity plans to develop 16 residential units on the site. The existing driveway access to SR 84 will be closed and the planned residential development will be accessible from the residential road system east of SR 84. Abutters’ rights (that is, rights to access the highway from neighboring parcels) will be relinquished.

<sup>13</sup> A conservation easement is a legal agreement between a property owner and the Tri-Valley Conservancy that places permanent restrictions on future use to maintain the property’s agricultural, scenic or habitat value.

Water Agency. Access to the flood district and quarry lands will be provided by consolidated access roads that connect to SR 84 opposite Concannon Boulevard or indirectly from local streets.

### ***Commercial and Business***

Commercial uses in the study area include Oaks Business Park, currently under development and located along the west side of Isabel Avenue between Jack London and Arroyo Mocho. It will provide space for light industrial, research and development, office, and ancillary commercial uses. A small park that will provide direct access to the regional trail system will be located at this business park. Another parcel (formerly known as the Ashwill parcel), located near the Oaks Business Park, is also designated for commercial development. Piazza Rubino, a small shopping center located at the southeast corner of Vineyard and Isabel Avenues, was constructed in 2005/2006.

### ***Parks and Recreation***

The Livermore Area Recreation and Parks District manages the public parks in the City of Livermore. The City of Livermore has 40 parks of various sizes, and Ida Holm Park is the only park located along the project corridor. In addition, several multiuse trails are located within the City of Livermore. The Isabel Trail and the Arroyo Mocho trail are located in the project area.

The City of Pleasanton offers 40 community and neighborhood parks, approximately 21 miles of trails and over 330 acres of undeveloped open space. No public parks are located in Ruby Hill; however, walking paths, a small neighborhood park and tennis court, and an 18-hole golf course are located within the development but are private facilities. No parks are located in the unincorporated portions of the project corridor.

### ***Pedestrian Access and Trails***

SR 84/Isabel Avenue currently has a pedestrian crossing at Jack London Boulevard. The City of Livermore would like to retain this crossing with the proposed project.

A decomposed granite trail on the south side of Vineyard Avenue (west of SR 84) connects with Isabel Avenue. The project will provide crosswalks at the SR 84/Vineyard Avenue intersection to improve safety for pedestrians using the trail.

The City of Livermore plans to extend the existing multiuse trail along the east side of SR 84 south of Alden Lane to Vineyard Avenue once mining operations are

completed. The City does not want the SR 84 widening project to preclude adding the trail extension in the future.

#### **2.1.1.2. Land Use Planning**

The study area crosses the jurisdictional boundaries of the Cities of Livermore and Pleasanton, and Alameda County. Eastern Alameda County (including the study area) has been steadily urbanizing over the last 30 years. However, city and county policies support the preservation of open space, agriculture (primarily vineyards), and mineral extraction (gravel and sand pit mines). The study area is largely built out, and remaining undeveloped land in the project area is used for vineyards and mining. Only limited development is likely to occur in these areas in the near future, as the General Plans for the Cities of Pleasanton and Livermore (City of Pleasanton 1996, update in progress; City of Livermore 2003) and the East County Area Plan for Alameda County (Alameda County 1994, updated 2005) support the continuing viability of the sand and gravel pits and the vineyards. The Specific Plan for the Livermore-Amador Valley Quarry Area Reclamation (Alameda County 1981) governs the future development of the mining and quarry areas for use by Zone 7 as a regional water management facility for water supply and flood control. Existing land uses are consistent with land use designations presented in the most recent General Plans.

##### ***City of Livermore***

The City of Livermore is completely surrounded by the Alameda County Urban Growth Boundary (voter approved in 2000), which protects existing agricultural uses and natural resources outside the city from future urban development. The support and development of wineries and vineyards, as well as the continuation of sand and gravel pit mining, are of particular importance in the General Plan.

General Plan land use designations along the SR 84 corridor are consistent with the actual land uses. In terms of land area, the most important land use designations are open space (sand and gravel), urban low medium and urban medium residential, and agriculture/viticulture, which also allows very low-density residential development (up to one unit per 20 acres).

##### ***City of Pleasanton***

A small part of the SR 84 corridor – the vineyards between Isabel Avenue and the Ruby Hill community, and Ruby Hill itself – is located in the City of Pleasanton. The

City of Pleasanton's General Plan (1996, update in progress) shows Ruby Hill designated for fewer than two units per acre.

### ***Alameda County***

The East County Area Plan was updated in 2000 as a result of Alameda County Measure D, a voter-approved initiative to protect more land from development. Consistent with the City of Livermore's General Plan (2003), the East County Area Plan encourages the expansion of cultivated agriculture, particularly viticulture (Alameda County 1994, last updated 2005).

### ***Livermore-Amador Valley Quarry Reclamation***

The Specific Plan for Livermore-Amador Valley Quarry Area Reclamation (LAVQAR Plan; Alameda County 1981) was established as part of the Alameda County General Plan to govern land uses in the 3,280-acre area designated for sand and gravel quarry use between Pleasanton and Livermore. The LAVQAR Plan includes objectives for reclamation, productive reuse, and rehabilitation of the quarry area; mitigation for the effects of mining; and planning to optimize the future geology, hydrology, and land use of the quarry. Mining uses are permitted through 2030, after which the plan area will be managed primarily for groundwater recharge and flood control by the Zone 7 Water Agency.

## **2.1.2. Environmental Consequences**

### **2.1.2.1. Land Use Changes**

With some exceptions, the existing SR 84 right-of-way provides sufficient space for adding additional lanes. Table 2.1-1 lists the parcels affected by the project and the potential project right-of-way needs. As discussed in Section 1.4.1, the project includes changes in access at some locations to meet expressway design standards.

The proposed project would closely follow the existing SR 84 roadway and has been specifically designed to avoid right-of-way acquisition and impacts to the existing environmental conservancy area along the creek (between approximately Ruby Hill Drive and the SR 84/Vallecitos Road intersection). Acquisition of slivers or portions of parcels would be necessary along the Ruby Hill development, but none of these takes would affect the continued use of the properties.

Now that the project design has been revised to allow the SR 84/Vallecitos Road intersection to remain at its current location with additional design and traffic

**Table 2.1-1 Properties Potentially Affected by the Project Right-of-Way**

Item	Appendix A Sheet	Assessor's Parcel #	Owner	Land Use Designation	Current Property Use	Impact Description	Area of Take	
							Square Feet	Acres
1	L-2	950-0023-012-00	Ruby Hill Development	Unknown	Vacant	Partial take; utility easement; no effect to residents or businesses	1,101	0.03
2	L-2	950-0023-006-02	Ruby Hill Development	Unknown	Vacant	Partial take; no effect to residents or businesses	988	0.02
3	L-2	950-0023-005-00	Ruby Hill Development	Unknown	Vacant	Partial take; utility easement; no effect to residents or businesses	29,597	0.68
4	L-3	950-0023-011-00	Ruby Hill Development	Unknown	Vacant	Partial take; no effect to residents or businesses	4,725	0.11
4A	L-3	950-0023-011-00	Ruby Hill Development	Unknown	Vacant	Permanent easement	5,532	0.13
5	L-3	950-0023-010-00	Ruby Hill Development	Unknown	Vacant	Partial take; no effect to residents or businesses	7,621	0.17
5A	L-3	950-0023-010-00	Ruby Hill Development	Unknown	Vacant	Permanent easement	1,376	0.03
6	L-3	950-0023-004-02	Ruby Hill Development	Street	Ruby Hill Drive right-of-way	Partial take; no effect to residents or businesses	1,815	0.04
6A	L-3	950-0023-004-02	Ruby Hill Development	Street	Ruby Hill Drive right-of-way	Permanent easement	25,371	0.58
6B	L-4	950-0023-009-00	Ruby Hill Development	Unknown	Vacant	Permanent easement	4,059	0.09
6C*	L-4	---	City of Livermore	County road	Isabel Avenue	Access control rights	-	-
7A*	L-2	099-1343-035-00	Private	Agriculture	Vacant	Access control rights	-	-
7B*	L-3	099-1343-030-00	Vineyard Estates	Agriculture	Vacant	Access control rights	-	-
9	L-8	950-0010-007-02	Wente Bros.	Agriculture	Vacant, part of Agricultural Conservation Easement	Partial take; requires eminent domain process. Owner plans to develop parcel.	1,795	0.04
9A	L-8	099-1356-009-00	Ruby Hill Land Co.	Commercial	Vacant	Utility easement	10,060	0.23
9B	L-8	099-1356-008-00	Ruby Hill Land Co.	Commercial	Vacant	Utility easement	14,778	0.34
10	L-8	950-0006-004-02	PG&E	Public utility	Utility	Full take	479	0.01

**Table 2.1-1 Properties Potentially Affected by the Project Right-of-Way**

Item	Appendix A Sheet	Assessor's Parcel #	Owner	Land Use Designation	Current Property Use	Impact Description	Area of Take	
							Square Feet	Acres
11	L-8	950-0006-001-05	Cemex	Quarry	Vacant; future water management <sup>1</sup>	Partial take. Ingress/egress & utility easements; not within mining limits. Obtain access control rights.	5,645	0.13
12	L-8, L-9	099-0290-011-07	Cemex	Quarry	Vacant; future water management <sup>1</sup>	Partial take. Ingress/egress & utility easements; not within mining limits. Obtain access control rights.	16,543	0.38
13	L-8	904-0008-001-02	Cemex	Quarry	Vacant; future water management <sup>1</sup>	Partial take. Ingress/egress & utility easements; not within mining limits. Obtain access control rights.	861	0.02
14	L-9 – L-11	904-0008-002-04	Pleasanton Gravel Co.	Gravel quarry	Vacant; future water management <sup>1</sup>	Partial take. Ingress/egress & utility easements; partially within mining limits. Obtain access control rights.	22,722	0.52
15	L-10	099-0281-019-00	Standard Pacific LP	Unknown	Vacant	Partial take.	3,760	0.09
16*	L-10	---	City of Livermore	County road	Isabel Avenue	No take.	-	-
17*	L-10	---	City of Livermore	County road	Isabel Avenue	No take.	-	-
18*	L-11	099-0283-003-01	City of Livermore	Public trail	Multi-Use Trail	Partial take.	-	-
19	L-11	099-0283-003-02	Maynard	Light industrial	Former orchid nursery. Develop for condominiums	Partial take; impacts 4 buildings (to be removed as part of condo development). Obtain access control rights.	11,749	0.27
20*	L-11	---	City of Livermore	County road	Isabel Avenue	Partial take	-	-
21	L-12	904-0007-006-05	Pleasanton Gravel Co.	Gravel quarry	Vacant; future water management <sup>1</sup>	Possible land swap with quarry owner. Ingress/egress & utility easements; obtain access control rights.	32,005	0.73
22**	L-12, L-13	904-0007-003-02	Pleasanton Gravel Co.	Gravel quarry	Vacant; future water management <sup>1</sup>	Surplus land; ingress/egress easement.	-	-
23*	L-14	099-0260-011-02	State of California	Unknown	Vacant	Partial take.	-	-
24*	L-14	---	City of Livermore	County road	East Stanley Boulevard	Obtain access control rights at Stanley Blvd./Stanley connector ramp intersection	-	-

**Table 2.1-1 Properties Potentially Affected by the Project Right-of-Way**

Item	Appendix A Sheet	Assessor's Parcel #	Owner	Land Use Designation	Current Property Use	Impact Description	Area of Take	
							Square Feet	Acres
25*	L-14	---	City of Livermore	County road	Isabel Avenue	Partial take.	-	-
26*	L-14	099-0185-004-00	Union Pacific	Public utility	Railroad	Access control rights	-	-
27*	L-14	099-0185-003-00	Union Pacific	Public utility	Railroad	Access control rights	-	-
28*	L-15	099-0176-007-01	City of Livermore	Unknown	Vacant	Partial take.	-	-
29*	L-15	904-0010-002-06	City of Livermore	Biological mitigation site	Vacant	Ingress/egress easement. No impact to biological mitigation area	-	-
30	L-15	904-0010-002-05	Zone 7	Flood control	Arroyo Mocho right-of-way	Ingress/egress easement. Obtain access control	9,292	0.21
31	L-15	904-0010-002-02	Pleasanton Gravel Co.	Agriculture	Vacant	Ingress/egress easement. Obtain access control rights.	3,529	0.08
32*	L-15	904-0012-003-00	City of Livermore	Unknown	Vacant	Partial take	-	-
33	L-16	904-0012-008-00	Orchard Livermore Assoc.	Light industrial	Oaks Business Park. Under development	Ingress/egress easement. Obtain access control rights.	34,976	1.10
34*	L-17	904-0012-007-00	Orchard Livermore Assoc.	Light industrial	Oaks Business Park. Under development	Owner has provided irrevocable dedication to city for transfer to state in fee title. Obtain access control rights. Utility easement.	-	-
35*	L-17, L-18	904-0005-002-14	City of Livermore	Unknown	Planned commercial development	Partial take. Obtain access control rights. Utility easement.	-	-
<b>TOTALS</b>							<b>250,379</b>	<b>5.75</b>

\* Not included in parcel count; classified as publicly owned property; area of take not included.

\*\* Not included in parcel count; surplus land.

1. Designated for future (2030) water management under Zone 7, in accordance with the 1981 Specific Plan for Livermore-Amador Valley Quarry Area Reclamation.

operation modifications (see Section 1.5.2.), acquisition of the 3.2 acres of land under a Tri-Valley Conservancy agricultural easement is no longer required.

Between Vallecitos Road and Stanley Boulevard, the project would eliminate the existing access to SR 84 from the former Orchid Ranch located at 1330 Isabel Avenue in Livermore. However, the property owner plans to construct residences on the parcel, with access to SR 84 from the new homes via local streets. Therefore, loss of direct access from SR 84 would not constitute a permanent land use impact of the project. Access to the quarry mining area on the west side of SR 84 would be maintained but consolidated to connect to the Concannon Boulevard intersection; impacts to the existing mining properties are discussed in Section 2.4. The existing multiuse path on the east side of SR 84 would require localized realignment and would be temporarily affected during construction, but long-term access would be maintained.

Between Stanley and Jack London Boulevards, existing private driveway access to SR 84 would be realigned as described in Section 1.4.1.

SR 84 would be widened between the abutments of the existing Union Pacific Railroad bridge structure. No land take is proposed from Union Pacific property; however, the Department will require access control rights for the segment of Union Pacific right-of-way fronting the intersection of Stanley Boulevard and the Stanley connector ramp to SR 84.

In addition to the partial property takings described in Table 2.1-1, temporary construction easements would be needed at five locations along the corridor: two at Arroyo Mocho, two at Arroyo del Valle, and one near Ruby Hill Drive. No temporary easement would be greater than 0.75 acre. These easements would not adversely affect the long-term use of the parcels.

New utility easements will be required for the relocation of private utilities out of State right-of-way, and a permanent easement will be required for construction of the proposed soil-nail retaining wall on the west side of SR 84 between Ruby Hill Drive and Vallecitos Road.

The owners of any properties acquired for project right-of-way (see Table 2.1-1) would be compensated for the loss and/or use in accordance with Federal and State right-of-way requirements.

### **2.1.2.2. Consistency with Land Use Plans**

SR 84 is included in the General Plans for all three jurisdictions (Livermore, Pleasanton, and Alameda County) as a transportation corridor or use, and the plans assume that SR 84 will be widened. Plans to upgrade SR 84 to an expressway facility with additional lanes are consistent with the General Plans of all three jurisdictions.

The LAVQAR Plan requires minimum 50-foot setbacks from existing public street right-of-way around all reclamation areas. The setbacks will be maintained except on one partial parcel (item 14 in Table 2.1-1), an area of 0.52 acre within current mining limits that would be acquired to construct the consolidated quarry access at SR 84 and Concannon Boulevard. This partial parcel acquisition is discussed further in Section 2.4.3.

The Department and ACTIA have coordinated with Zone 7 on the project design to avoid or minimize impacts to the future water supply and flood management facilities included in the LAVQAR Plan. One outcome of this consultation was the elimination of full and partial interchange designs considered for the SR 84/Stanley Boulevard intersection (Section 1.5.3). Although acquisition of up to approximately 2 acres of quarry properties would be required for the addition of lanes on SR 84, the acquired areas represent a fraction of the 3,820-acre area governed by the LAVQAR Plan, and only 0.52 acre within current mining limits would be affected (and could be reinstated using excess State right-of-way). No project features, including the new bridge structures described in Section 1.4.1.4, would preclude the future construction of Zone 7 facilities. The project would not result in impacts to LAVQAR Plan implementation.

### **2.1.2.3. Parks and Trails (Including Section 4(f) Resources)**

The project would have no permanent adverse impacts on any of the public parks or recreation facilities in the study area. The Isabel Trail will be temporarily closed during some construction periods. The trail parallels the east side of SR 84 in the project area between Jack London Boulevard and Alden Lane, and is separated from the roadway by a landscaped buffer. Where feasible, the trail will remain open during construction; however, temporary trail closures or detours are anticipated to preserve public safety. The trail will be realigned where it fronts the former Orchid Ranch, and ultimately an extension of the trail from Alden Lane to Vineyard Avenue is planned, which would benefit this facility. A letter from ACTIA to the City of Livermore

confirming that the project would have no adverse impact on the trail is included in Appendix G. No adverse impact would occur to a Section 4(f) resource.<sup>14</sup>

### **2.1.3. Avoidance, Minimization, and/or Mitigation Measures**

The project is consistent with existing and proposed land uses, and no avoidance, minimization, or mitigation is required.

## **2.2. Growth**

The following information is summarized from the Community Impacts Technical Study (Vernazza Wolfe Associates, June 2006).

### **2.2.1. Regulatory Setting**

The Council on Environmental Quality regulations, which implement NEPA, require evaluation of the potential environmental consequences of all proposed Federal activities and programs. This provision includes a requirement to examine indirect consequences, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The Council on Environmental Quality regulations (40 Code of Federal Regulations [CFR] 1508.8) refer to these consequences as secondary impacts. Secondary impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

CEQA also requires the analysis of a project's potential to induce growth. Section 15126.2(d) of the CEQA guidelines requires that environmental documents "discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment."

### **2.2.2. Existing and Planned Growth**

Developed areas in eastern Alameda County have been increasing substantially in the last 20 years. Development has been both residential and commercial. Initially, residential development consisted of single-family homes. However, in the last several years, "smart growth" development has been gaining in popularity, particularly as

---

<sup>14</sup> Refers to Department of Transportation Act "Section 4(f)" (49 USC 303) and the Federal-Aid Highway Act (23 USC 138).

home prices have risen.<sup>15</sup> Now, a greater variety of housing is being constructed, including townhomes, condominiums, and small-lot single-family homes.

Development pressures have been so strong that in November 2000 the residents of Alameda County passed Measure D, which is designed to preserve agriculture and open-space lands from development pressures. The East County Area Plan and the City of Livermore’s General Plan now include urban growth limits that reflect Measure D. The City of Pleasanton’s General Plan already included an urban growth limit.

### 2.2.3. Development Trends

Approximately 30 percent of the housing units in the corridor were constructed after 1990. It is unlikely that significant residential growth will occur along the corridor in the near future, since vacant land along the corridor is already designated as sand and gravel pits (which have contracts for continued mineral extraction until 2030) and vineyards that are protected through conservation easements. The one exception, the Ruby Hill development located at the southwest end of the corridor, provides for up to 850 homes. As of 2006, 60 sites remained for future residential development. As noted previously, new commercial developments are under way and planned between Jack London Boulevard and Arroyo Mocho (at the corner of Jack London Boulevard and SR 84).

Table 2.2-1 shows that the population growth rate in the study area and in Livermore is higher than the projected population growth in Pleasanton or Alameda County. While the study area could increase in population from 6,479 to 8,085 (an increase of nearly 25 percent) between 2000 and 2010, Alameda County is forecasted to grow approximately 6 percent during the same time period.

**Table 2.2-1 Study Area Populations**

Population Characteristics	Study Area	Livermore	Pleasanton	Alameda County
<b>Number of Persons</b>				
2000	6,479	73,345	63,654	1,443,741
2005	7,310	80,810	67,441	1,484,803
2010 Projection	8,085	87,838	71,985	1,526,896
<i>Percent Change (2000 to 2010)</i>	<i>24.8%</i>	<i>19.8%</i>	<i>13.1%</i>	<i>5.8%</i>

Sources: Claritas (2005) and Census 2000

<sup>15</sup> The Association of Bay Area Governments describes smart growth as development that revitalizes central cities and older suburbs, supports and enhances public transit, promotes walking and bicycling, and preserves open spaces and agricultural lands.

#### **2.2.4. Transportation Improvements and Planned Growth**

Growth refers to the development of the built environment as communities respond to the demands of an increasing population and/or the business environment. Growth trends fluctuate over periods of low and high economic activity depending on factors such as policy, zoning, economy, and infrastructure that either encourage or discourage growth. The nature of a development project can be described as tending toward growth inducement or growth accommodation; the former being a project that creates potential for further development where it is not planned, and the latter being a project that is planned as a response to existing or foreseeable demands of the community served. This distinction generally explains the intent and purpose of a proposed project. The SR 84 Expressway Widening Project is intended to accommodate planned growth.

The project would help reduce future congestion by providing additional traffic lanes in each direction to the existing SR 84 corridor. Locally, it would serve existing suburban residential development located to the east of the corridor between Jack London Boulevard and Alden Lane, and the existing Ruby Hill residential development. Most sites are already developed along this corridor except for some remaining infill lots at the Ruby Hill development, some building lots located within larger vineyard estates, planned residential development at the former Orchid Ranch, and the Oaks Business Park, which is under construction.

#### **2.2.5. Growth Constraints**

City and County General Plan land use designations are the primary means to plan and manage future growth. Land use designations are supported by zoning ordinances that contain enforceable requirements to regulate development. The parcels along SR 84 are already designated for residential, commercial, industrial/mining, agriculture, and other uses. No changes to these uses are expected as a result of the proposed project.

The project does not change any existing constraints to growth. With or without the project, residential growth within the regional area will continue to be limited by an Urban Limit Line (a geographic boundary limiting land use changes), authorized by Alameda County's Measure D and incorporated into the East County Area Plan.

### **2.2.6. Growth Pressures**

Alameda County growth is predicted to continue over the next 24 years (through 2030). The Association of Bay Area Governments (ABAG) predicts that the County population will increase by 24 percent between 2005 and 2030 (ABAG 2005). The largest share of the County's growth will be in Oakland, followed by the Tri-Valley area (the Livermore, San Ramon, and Amador Valleys). In-fill development and smart growth policies are guiding much of this new development, particularly in the Cities of Oakland and Livermore.

### **2.2.7. Conclusions**

The land use policies of the General Plans of Alameda County and the City of Livermore and its supporting zoning ordinances are the primary land use controls that set forth the current and future planned growth in the project area. While the proposed project could require relatively minor acquisition of portions of parcels within the proposed right-of-way, the project would not change the current land use designations in the project corridor nor create a new transportation corridor or access to areas not already served by the existing roadway network. SR 84 would continue to serve local and regional trips, and this project is intended to help meet the predicted increases in traffic growth.

## **2.3. Farmlands/Timberlands**

The following information is summarized from the Community Impacts Technical Study (Vernazza Wolfe Associates, June 2006).

### **2.3.1. Regulatory Setting**

NEPA and the Farmland Protection Policy Act (7 United States Code [USC] 4201–4209; and its regulations, 7 CFR Part 658) require Federal agencies such as FHWA to coordinate with the Natural Resources Conservation Service (NRCS) if their activities may irreversibly convert farmland (directly or indirectly) to nonagricultural use. For purposes of the Farmland Protection Policy Act, farmland includes prime farmland, unique farmland, and land of statewide or local importance.

CEQA requires the review of projects that would convert Williamson Act contract land to nonagricultural uses. The main purposes of the Williamson Act are to preserve agricultural land and to encourage open space preservation and efficient urban growth. The Williamson Act provides incentives to landowners through reduced

property taxes to deter the early conversion of agricultural and open space lands to other uses.

### **2.3.2. Affected Environment**

Vineyards are present along both sides of Isabel Avenue from Vineyard Avenue to Vallecitos Road and continuing north along Vallecitos Road. Four wineries are also in the vicinity of SR 84 or Vineyard Avenue. Consistent with the Livermore General Plan, the East County Area Plan encourages the expansion of cultivated agriculture, particularly viticulture. Both Alameda County and the City of Livermore have encouraged conservation easements in the area to preserve farmland.

Three organizations/agencies monitor these farmlands: the California State Department of Conservation, Division of Land Resource Protection; Alameda County (which administers Williamson Act contracts); and the Tri-Valley Conservancy.

The California State Department of Conservation, Division of Land Resource Protection classifies and maps farmland to track farmland development throughout the State. Farmland is mapped into categories ranging from Prime Farmland, which has the best combination of physical characteristics to sustain long-term agricultural production, to Grazing Land, which allows for the grazing of livestock. The NRCS was consulted on this project, reviewed the project and right-of-way maps provided, and estimated farmland acreage in the project area.<sup>16</sup> Of the total acreage in the study area, 0.33 acre is designated as Prime Farmland and 6.4 acres are designated as Farmland of Statewide or Local Importance. This acreage represents the total farmland within the study area that might be affected by various alternatives and options; however, the project has been modified to avoid farmland. Most of the remaining mapped Prime and Statewide Important Farmland along the corridor is located either adjacent to sand and gravel quarries or adjacent to homes along Isabel Avenue.

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, the landowners receive lower property tax assessments based upon farming and open space use instead of the potential market

---

<sup>16</sup> NRCS-CPA-106 forms completed by the NRCS and AD-1006 Farmland Conversion Impact Rating forms are included in the Community Impacts Study report. The Farmland Conversion Impact Rating forms are not included in this document because the project has been modified to avoid farmland.

value's highest and best use. A number of parcels with Williamson Act contracts are located in the project area.

Due to the importance of the farmland in the area, the Tri-Valley Conservancy was formed to work with property owners to acquire conservation easements from willing landowners. A conservation easement is a legal agreement between a property owner and the Conservancy. The easement places permanent restrictions on future use in order to maintain the property's agricultural, scenic, or habitat values. As a legal deed restriction, the easement applies to the property in perpetuity. The Conservancy acquires conservation easements through purchase or donation.

### **2.3.3. Environmental Consequences**

A very small (0.04 acre) triangular parcel of land along SR 84 just south of Vineyard Avenue is needed for the project. The parcel is part of a Tri-Valley Conservancy easement but is not in active cultivation.<sup>17</sup> The project has been revised to avoid impacts to farmlands and would not affect cultivated agricultural lands under Tri-Valley Conservancy easements or Williamson Act contracts.

### **2.3.4. Avoidance, Minimization, and/or Mitigation Measures**

The affected property owner would be compensated for the loss of the 0.04 acre of land needed for the project, and this will be addressed in the right-of-way process.

## **2.4. Mineral Resources**

This section summarizes the mineral resources discussion from the Community Impacts Technical Study (Vernazza Wolfe Associates, June 2006).

### **2.4.1. Affected Environment**

The California Geological Survey (CGS) has classified much of the project area as land containing construction aggregate resources of regional significance (CGS 1996). Sand and gravel pits are located along the proposed project corridor on the west side of Isabel Avenue between Stanley Boulevard and Concannon Boulevard and between Alden

---

<sup>17</sup> The 0.04-acre take would be from Parcel 950-0010-007.

<sup>19</sup> The traffic modeling shows that the project will improve traffic flow at these intersections (that is, a slightly higher volume of traffic will be able to travel through the intersection with the project in place), but the improvement will not be enough to change the LOS F rating (Fehr and Peers 2006).

Lane and Vineyard Avenue as well as on the east side of Isabel Avenue, between Alden Lane and Vineyard Avenue. These pits are regulated by a number of agencies under the direction of Alameda County. Vulcan Materials and Cemex, the two operators of these pits, have the mining rights to this area and plan to excavate to a depth of approximately 240 feet (elevation 150 feet). The mining operations are expected to last until 2030. Alameda County approved the 1981 Specific Plan for Livermore-Amador Valley Quarry Area Reclamation for the Cemex pits and amended it to include the Vulcan Materials pits in 2005.

Under the Surface Mining and Reclamation Act (Public Resources Code, Division 2, Chapter 9, Section 2710 et seq.), Alameda County must make findings pursuant to California Public Resources Code Sections 2762 and 2763 before permitting a use that could affect mining resources.

#### **2.4.2. Environmental Consequences**

As discussed in Section 1.5, some initial designs considered for the SR 84 project at the Stanley Boulevard intersection would have involved construction of new (southbound) connector ramps on the west side of SR 84. These design options were eliminated from further consideration because they would require substantial acquisition of parcels that are planned and approved for expansion of surface mining activities. However, to accommodate adding lanes to SR 84 in the northbound and southbound directions, acquisition of up to approximately 2 acres of the parcels owned by the mining operators is unavoidable. This acquisition involves a portion of the existing parcels directly adjacent to the existing SR 84 alignment. The partial parcel acquisition is not within current mining areas, and therefore should minimize or avoid impacting quarry resources planned for future extraction.

The project would require partial acquisition of two vacant quarry parcels—0.02 acre from Cemex and 0.52 acre from Pleasanton Gravel Company to construct the consolidated quarry access at SR 84 and Concannon Boulevard. The Pleasanton Gravel Company partial parcel (0.52 acre) is within mining limits. Because the loss of mineral resources would be limited to 0.52 acre, the partial parcel acquisition is not expected to result in the loss of availability of a mineral resource of value to the region and state, put pressure on other resources, or result in the need for extractors to seek mineral resources elsewhere in the county.

In conformance with Policy 15 of the Specific Plan for Livermore-Amador Valley Quarry Area Reclamation, Caltrans has involved Alameda County in the

environmental review for this project and will coordinate with the County during the final design phase on the need to make findings required under the Surface Mining and Reclamation Act.

### **2.4.3. Avoidance, Minimization, and/or Mitigation Measures**

Impacts to existing and planned future mining activities are minimized by the proposed project as compared to the full or partial interchange options. Some land acquisition is still necessary; however, compensation to the mines' owners would offset the value of the lost mineral resources. Compensation for these impacts would be determined during right-of-way acquisition.

To compensate the quarry owner for the lost mineral resources described above, surplus State right-of-way north of the proposed Concannon Boulevard quarry access is available to offset the loss.

## **2.5. Community Impacts**

The study area for community impacts from the proposed project includes the east and west sides of SR 84 from Jack London Boulevard to Ruby Hill Drive and was defined as the census tract blocks and groups that are crossed by or surround the project route. This following summarizes the findings of the Community Impacts Technical Study (Vernazza Wolfe Associates, June 2006).

### **2.5.1. Community Character and Cohesion**

#### **2.5.1.1. Regulatory Setting**

NEPA established that the Federal government use all practicable means to ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings (42 USC 4331[b][2]). FHWA in its implementation of NEPA (23 USC 109[h]) directs that final decisions regarding projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as, destruction or disruption of human-made resources, community cohesion and the availability of public facilities and services.

Under CEQA, an economic or social change by itself is not to be considered a significant effect on the environment. However, if a social or economic change is related to a physical change, then social or economic change may be considered in determining whether the physical change is significant. Since this project would result

in physical change to the environment, it is appropriate to consider changes to community character and cohesion in assessing the significance of the project's effects.

### **2.5.1.2. Affected Environment**

#### ***Population and Community Characteristics***

The majority of the study area population is between the ages of 18 and 64, consistent with regional trends. Compared to Alameda County, the study area has a slightly higher percentage of persons under 18 years and a slightly lower percentage of persons 65 years and older. The study area has a greater percentage of Whites than other races and higher median income levels than Alameda County. Over 90 percent of the homes in the study area are single-family (attached and detached). The majority of the housing units are owner-occupied (84 percent), compared to 54 percent in Alameda County (Claritas 2005).

#### ***Employment***

The study area is near the commercial and light industrial operations adjacent to the Livermore Airport. Within the study area, the economic activities include aggregate mining operations (Cemex and Vulcan Materials), the former Orchid Ranch, and agricultural operations (vineyards). In addition to areas under cultivation, the Mitchell Katz Winery, Fenestra Winery, Thomas Coyne Winery, and Tenuta Vineyards are located in the vicinity of the project.

#### ***Community Services and Facilities***

The Livermore Valley Joint Unified School District provides the majority of school services for residents of the study area in Livermore and unincorporated Alameda County. Some of Pleasanton's Ruby Hill residents also attend schools operated by the Livermore Valley Joint Unified School District, and some attend schools operated by the Pleasanton Unified School District. No schools are located directly along the corridor.

Parks and recreation facilities, including trails, are addressed in Section 2.1.

### **2.5.1.3. Environmental Consequences**

#### ***Access To and From SR 84***

As an access-controlled expressway, existing direct driveway access to SR 84 from any parcels will be eliminated but the existing or planned businesses would not be adversely affected. The Oaks Business Park would have access to SR 84 from a new roadway, Discovery Drive. The former Orchid Ranch property has undergone a

change of ownership, and plans have been submitted to the City of Livermore to convert the parcel to residential use with access from the existing subdivision to the east. The shopping center at SR 84 and Vineyard Avenue has access from Vineyard Avenue, and would not be affected.

Access to several existing land uses would be changed to meet expressway design standards. The affected parcels are Vulcan Materials and Cemex (quarry operators), a local utility (PG&E), the City of Livermore, and the Zone 7 Water Agency. The changes in access to these parcels are not significantly adverse, and alternative access is proposed in the project design.

### ***Employment***

The proposed project could have positive impacts on the regional economy and improve travel conditions. During the construction period, the project would generate additional construction-related jobs in the region and would lead to secondary and tertiary employment impacts throughout the area. While it is expected that construction would create a significant number of jobs, it is assumed that there are sufficient workers in the San Francisco Bay Area to fill these jobs and that the project not require in-migration to the area.

#### **2.5.1.4. Avoidance, Minimization, or Mitigation Measures**

The project would result in the loss of direct access to SR 84 between Stanley Boulevard and Vineyard Avenue for the mining operators, Vulcan Materials and Cemex, but new driveway access to SR 84 would be provided at Concannon Boulevard. This allows vehicles leaving or entering the Vulcan Materials and Cemex sites to travel through an existing signalized intersection (at SR 84/Concannon Boulevard) to access SR 84, which would improve traffic operations and safety.

The project would result in closure of the existing PG&E, City of Livermore, and Zone 7 Water Agency gated driveways. The project includes provision of new alternative access/driveways for the affected properties.

### **2.5.2. Environmental Justice**

#### **2.5.2.1. Regulatory Setting**

All projects involving a Federal action (funding, permit, or land) must comply with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed by President Clinton on February 11, 1994. This Executive Order directs Federal agencies to take the

appropriate and necessary steps to identify and address disproportionately high and adverse effects of Federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the Department of Health and Human Services poverty guidelines. For 2006, this was \$20,000 for a family of four.

All considerations under Title VI of the Civil Rights Act of 1964 and related statutes have also been included in this project. The Department's commitment to upholding the mandates of Title VI is evidenced by its Title VI Policy Statement, signed by the Director, which is included in Appendix F.

### **2.5.2.2. Affected Environment**

Based on Census data averages, the estimated 2005 median income of an average household in the project corridor is \$104,677, significantly higher than Alameda County's estimated 2005 average median income of \$66,218, and the City of Livermore's estimated 2005 median household income of \$88,746. In addition, an average of 84 percent of households own their own homes in the study area in comparison to Livermore, in which 72 percent of households own their own homes. This number drops to 54 percent for Alameda County. Furthermore, the estimated average median home value in 2005 for the study area was \$630,442 in comparison to \$504,216 in Livermore and \$472,198 in Alameda County.

The racial composition of the population in the study area is approximately 83 percent Caucasian, about 8 percent Asian, less than 2 percent African American, and the remaining 7 percent Native Americans, Pacific Islanders, and people with two or more races. About 9.5 percent of the population is Hispanic, either exclusively or in combination with other races. (Respondents who select a combination of races are counted under each race, resulting in totals that are tallies of responses, rather than percentages of respondents.) Hispanics comprise a much lower percentage of the population in the corridor area than in Alameda County (20.7 percent) or in the City of Livermore (15.6 percent).

### **2.5.2.3. Environmental Consequences**

No minority or low-income populations have been identified that would be adversely affected by the proposed project as determined above. Therefore, this project is not subject to the provisions of Executive Order 12898.

### **2.5.2.4. Avoidance, Minimization, or Mitigation Measures**

No avoidance, minimization, or mitigation measures are required.

## **2.6. Utilities and Emergency Services**

This section summarizes the utilities and emergency services discussion from the Community Impacts Technical Study (Vernazza Wolfe Associates, June 2006).

### **2.6.1. Affected Environment**

#### **2.6.1.1. Utilities**

The proposed project would affect utilities. Existing gas, sanitary sewer, storm drain, electrical, cable, and telephone utilities lie within the existing and proposed right-of-way for the project and would need to be relocated to meet expressway standards.

The Department requires all longitudinally occurring utilities (such as the PG&E regional gas line) to be relocated outside of the proposed right-of-way of the new expressway facility. The 24-inch gas main (PG&E), 12 kV and 20kV electric overhead lines (PG&E), overhead telephone and cable TV lines (AT&T), 15-inch to 39-inch sanitary sewer line (City of Livermore), 42-inch-storm drain (City of Livermore), and recycled water line (City of Livermore) located along portions of SR 84 affected by the proposed project improvements would need to be relocated outside of State right-of-way to meet Department expressway standards. The utilities would be relocated to areas within the study limits for the proposed project. New or modified utility easements would be obtained during final design for relocated utilities.

PG&E has indicated a preference to relocate its 24-inch gas main out of active mining areas where feasible. This would require relocating the gas main east of SR 84 along the Isabel Trail, between Vineyard Avenue and Stanley Boulevard. During final design, relocation of the PG&E gas main within the project limits will be coordinated with affected stakeholders.

#### **2.6.1.2. Law Enforcement, Fire Protection, and Hospitals**

No emergency service provider is located within the project corridor. Police protection in the project vicinity is provided by the Livermore Police Department, the Pleasanton Police Department, and the Alameda County Sheriff's Department. The Livermore-Pleasanton Fire Department is the primary provider of fire protection in the project vicinity. Fire protection is also provided by the Alameda County Fire Department. The Lawrence Livermore National Laboratory has its own fire department on-site. Valley Memorial Hospital is the only hospital in the project vicinity.

### **2.6.2. Environmental Consequences**

During construction, some utilities would be relocated, but no utility and emergency services would be interrupted. All service impacts would be avoided. The project, when completed, would provide additional traffic capacity to SR 84, which should help maintain or improve emergency service response times.

Utility relocations include shifting power lines to accommodate the roadway widening or necessary minor realignments of SR 84. PG&E and AT&T do not propose to underground any of their existing overhead utilities. Along the project alignment, including some segments near the Ruby Hill development and north of Vineyard Avenue, the distance between power lines and some residences may be reduced slightly to accommodate the roadway widening. Any existing electromagnetic field (EMF) exposure from the power lines to these residences would be relatively low and would not change.

The relocation of the PG&E 24-inch gas main along the Isabel Trail between Vineyard Avenue and Stanley Boulevard would require additional temporary trail closures, which would require coordination of construction activities with PG&E to minimize the duration of trail closures.

### **2.6.3. Avoidance, Minimization, and/or Mitigation Measures**

Emergency service providers will be notified of the construction scheduling for the overall project work and utility relocation work.

## **2.7. Traffic and Transportation/Pedestrian and Bicycle Facilities**

This section summarizes the findings of the Traffic Operations Report (Fehr and Peers, October 2006).

### **2.7.1. Regulatory Setting**

The Department, as assigned by FHWA, directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of Federal-aid highway projects (see 23 CFR 652). It further directs that the special needs of the elderly and the disabled must be considered in all Federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every

effort must be made to minimize the detrimental effects on all highway users who share the facility.

The Department is committed to carrying out the 1990 Americans with Disabilities Act by building transportation facilities that provide equal access for all persons. The same degree of convenience, accessibility, and safety available to the general public will be provided to persons with disabilities.

## **2.7.2. Affected Environment**

The traffic forecasts for the study area were developed using a modified version of the Contra Costa Transportation Authority regional travel demand forecasting model and a subarea model of the Tri-Valley area developed by Fehr and Peers. Information on existing (2005) conditions was developed using data from the Cities of Dublin, Pleasanton, and Livermore, including traffic counts from 2003 and 2004; additional traffic counts collected in February and March 2005; and other data. The traffic analysis methods are discussed in detail in the Traffic Operations Report (Fehr and Peers 2006).

### **2.7.2.1. Roadways and Bicycle/Pedestrian Facilities**

Isabel Avenue/SR 84 is a two-lane north-south roadway on the western edge of the City of Livermore that extends between Jack London Boulevard to the north and Vallecitos Road to the south. It is a designated Regional Route of Significance and provides access between I-680 and I-580. Cross-streets that intersect SR 84 within the project limits include, from north to south, Jack London Boulevard (a four-lane roadway), Discovery Drive (a four-lane roadway), Stanley Boulevard (a four-lane expressway), Vineyard Avenue (a two-lane roadway), Vallecitos Road (a two-lane roadway), and Ruby Hill Drive (a two-lane circular access roadway to the Ruby Hill development).

A paved bicycle and pedestrian trail parallels the eastern side of SR 84 from Jack London Boulevard to just north of Vineyard Avenue. No pedestrian facilities exist from Alden Lane to Vallecitos Road. Although there are no designated bike facilities south of Alden Lane, the roadway shoulders are wide enough to accommodate bicyclists. Bike lanes or paths connect to Isabel Avenue from Jack London Boulevard, the unpaved Arroyo Mocho Trail, Stanley Boulevard, and Concannon Boulevard.

### **2.7.2.2. Traffic Conditions in 2010 (No Build Alternative)**

In 2010 with the No Build Alternative, most intersections along SR 84 or nearby would function relatively well, at Level of Service (LOS) A, B, or C (see Figure 2.7-1). The exceptions are the Isabel Avenue/Ruby Hill Drive and Isabel Avenue/Vallecitos Road intersections, which would function at LOS F in the PM and AM periods, respectively. The intersections of Airway Boulevard and the I-580 westbound ramps and First Street and the I-580 eastbound ramps would also function at LOS F in the PM period, and the intersection of Livermore Avenue and the I-580 westbound ramps would function at LOS F in the PM and LOS D in the AM period.

The construction of the SR 84 Pigeon Pass Safety Project will deliver more northbound traffic on SR 84 to the Vallecitos Road/Ruby Hill Drive intersection. This traffic would converge from two northbound lanes to one just past Ruby Hill Drive, causing a queue to extend through the Vallecitos Road/Ruby Hill Drive intersection. In 2010, this intersection would function at LOS F in the PM period under the No Build Alternative.

Anticipated metering of the I-580 ramps would result in LOS F conditions at the Airway Boulevard/I-580 westbound ramps and First Street/I-580 eastbound ramps in the PM peak hour under the No Build Alternative. Arterial congestion caused by ramp metering would result in only 90 to 95 percent of the traffic demand reaching the Isabel Avenue corridor.

### **2.7.2.3. Traffic Conditions in 2030 (No Build Alternative)**

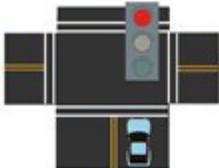
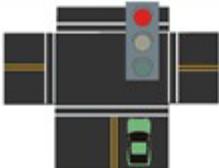
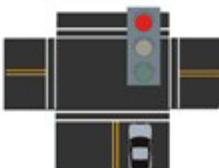
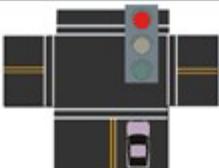
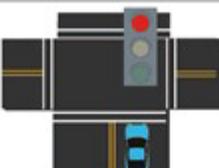
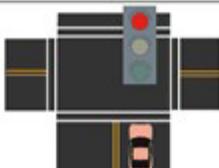
In 2030 with the No Build Alternative, 10 intersections along SR 84 or nearby would operate at LOS F, including Vallecitos Road/Ruby Hill Drive (PM only), Isabel Avenue/Vallecitos Road (AM and PM), and the I-580 ramps at Airway Boulevard, First Street, Isabel Avenue, Livermore Avenue, and Vasco Road. Congestion at the Vallecitos Road/Ruby Hill Drive and Isabel Avenue/Vallecitos Road intersections would cause substantial delays at these locations.

### **2.7.2.4. Truck Traffic in 2030 (No Build Alternative)**

Minor increases in the level of truck activity in the project vicinity are expected as areawide land uses change and intensify. As ABAG land use forecasts generally show that existing development trends will continue for the foreseeable future, the existing automobile/truck relationships would also remain consistent.

In July 2007, 24-hour traffic counts were collected for one Monday through Friday period to confirm the proportion of trucks used in the traffic modeling for the project.

Figure 2.7-1 Levels of Service for Intersections with Traffic Signals

Level of Service	Delay per Vehicle (seconds)
<b>A</b>	 ≤10
<b>B</b>	 11-20
<b>C</b>	 21-35
<b>D</b>	 36-55
<b>E</b>	 56-80
<b>F</b>	 >80

**Factors Affecting LOS of Signalized Intersections**

**Traffic Signal Conditions:**

- Signal Coordination
- Cycle Length
- Protected left turn
- Timing
- Pre-timed or traffic activated signal
- Etc.

**Geometric Conditions:**

- Left- and right-turn lanes
- Number of lanes
- Etc.

**Traffic Conditions:**

- Percent of truck traffic
- Number of pedestrians
- Etc.

Source: 2000 HCM, Exhibit 16-2, Level of Service Criteria for Signalized Intersections

The counts recorded the daily traffic by hour and by vehicle type (automobile or heavy truck by axle). These counts were used to extrapolate future (2030) average daily traffic and vehicle mix with and without the project between intersections within the project limits.

The traffic volumes and vehicle mix show that, by 2030 under the No Build Alternative, trucks would comprise 3.1 percent to 5.9 percent of average daily traffic on SR 84, depending on the segment, with an average truck mix of 4.0 percent across all segments.

### 2.7.3. Environmental Consequences

#### 2.7.3.1. Permanent Impacts

Table 2.7-1 lists the operating conditions in the study years 2010 and 2030 for SR 84 within the project limits, comparing levels of service with the project (in the “Build” columns) and without the project (in the “No Build” columns). Levels of service shown in bold indicate a predicted change in future conditions with the project.

**Table 2.7-1 Project Intersection Levels of Service**

SR 84 Intersection Location	Existing (2005)	Year 2010 No Build	Year 2010 Build	Year 2030 No Build	Year 2030 Build
	AM (PM) Peak Hour LOS				
Ruby Hill Drive	A (B)	A (F)	A ( <b>A</b> )	A (F)	A ( <b>A</b> )
Vallecitos Road	F (B)	F (B)	<b>B (C)</b>	F (F)	<b>C (B)</b>
Vineyard Avenue	A (A)	B (B)	<b>A (B)</b>	B (C)	<b>A (C)</b>
Concannon Boulevard	B (B)	B (B)	B (B)	B (C)	<b>C (B)</b>
Stanley Boulevard	C (C)	B (B)	B (B)	B (C)	B ( <b>D</b> )
Discovery Drive	N/A	A (A)	A (A)	A (B)	A ( <b>A</b> )
Jack London Boulevard	C (B)	B (B)	<b>C (B)</b>	D (D)	<b>F (E)<sup>1</sup></b>

Source: Fehr and Peers 2006

<sup>1</sup> SR 84 would operate at LOS D or better in both directions

Key changes in intersection operations are summarized as follows:

- Under the Build Alternative, most intersections along SR 84 would operate at LOS C or better by 2010 and LOS D or better by 2030;
- Under the No Build Alternative, the SR 84 intersections at Ruby Hill Drive (PM period) and Vallecitos Road (AM period) are expected to function at LOS F by 2010. Traffic using these poorly operating intersections will continue to increase

- through 2030. The Build Alternative would remove the bottleneck caused by two lanes merging into one and improve intersection operations to LOS C or better; and
- By 2010, the SR 84/Jack London Boulevard intersection would operate at LOS B or better with the No Build Alternative. By 2030, the project would increase traffic volumes and congestion at the intersection, which would deteriorate from LOS D conditions with the No Build Alternative to LOS F and E during the AM and PM peak hours, respectively. This assumes that SR 84 will have six lanes north of Jack London Boulevard, and Jack London Boulevard will be extended west to El Charro Road. The poor operations at this intersection would be largely due to heavy east-west traffic on Jack London Boulevard. SR 84 would operate at LOS D or better in the AM and PM peak hours.

The relocation and realignment of the SR 84/Vallecitos Road intersection proposed in the October 2007 DED has been eliminated from the project. Instead, the intersection will remain in its current location, and additional modifications will be made to further improve safety and enhance traffic operations. The modifications include eliminating the left-turn movement from SR 84 to Vallecitos Road. According to the Traffic Operations Report (Fehr and Peers 2006), future (2030) AM and PM peak traffic volumes for this directional movement would be 10 vehicles per hour. This volume can be accommodated by the SR 84/Vineyard Avenue intersection without decreasing the level of service or causing additional traffic impacts. Removal of the left-turn movement from SR 84 to Vallecitos Road would also reduce the number of conflicting turning movements at the intersection, further improving safety and allowing for a two-phase traffic signal to improve traffic operations. Additional signing and striping would also be installed to increase driver awareness of the intersection configuration and speed requirements for safe turning maneuvers.

Table 2.7-2 lists the operating conditions for I-580 ramp intersections. Again, levels of service shown in bold indicate a predicted change in 2030 conditions with the project.

**Table 2.7-2 Ramp Intersection Level of Service**

Ramp Intersection Location	Existing (2005)	Year 2010 No Build	Year 2010 Build	Year 2030 No Build	Year 2030 Build
	AM (PM) Peak Hour LOS				
SR 84/Airway Blvd.	C (B)	C (C)	C (D)	D (C)	D (C)
I-580/Airway Blvd. – EB	C (B)	B (B)	B (B)	C (A)	C (B)
I-580/Airway Blvd. – WB	A (A)	A (F)	A (F)	B (F)	C (F)
I-580/SR 84 – EB	N/A	A (A)	A (A)	A (C)	A (A)
I-580/SR 84 – WB	N/A	A (A)	<b>B (B)</b>	B (F)	<b>A (F)</b>
I-580/First St.– EB	A (A)	B (F)	B (F)	A (F)	A (D)
I-580/First St.– WB	B (A)	A (A)	A (A)	F (D)	F (C)
I-580/Livermore Ave. – EB	B (C)	A (C)	A (C)	A (F)	A (F)
I-580/Livermore Ave. – WB	C (C)	F (D)	F (D)	F (D)	F (E)
I-580/Vasco Rd.– EB	A (A)	N/A	N/A	C (F)	C (F)
I-580/Vasco Rd.– WB	B (A)	N/A	N/A	F (D)	F (D)

**Source:** Fehr and Peers 2006

EB = eastbound

WB = westbound

The following ramps would be affected by the project.

- The project would improve the First Street/I-580 eastbound ramps intersection from LOS F in the PM period with the No Build Alternative to LOS D. The poor operations with the No Build Alternative are due primarily to high congestion levels from the westbound on-ramp that backs into this intersection.
- The project would reduce delay at the following ramp intersections expected to operate at LOS F with both the No Build and Build scenarios<sup>19</sup>:
  - I-580/SR 84 westbound ramps (PM only)
  - I-580/Livermore Avenue eastbound ramps (PM only)
  - I-580/Livermore Avenue westbound ramps (AM only)
  - I-580/Vasco Road eastbound ramps (PM only)
- The Livermore Avenue/I-580 westbound ramp intersection would operate at LOS D with the No Build Alternative and LOS E with the Build Alternative (PM only). This change is based on a predicted project-related increase in traffic volume at the Livermore Avenue interchange. The project would cause insignificant increases to delay at several ramp intersections that are expected to operate at LOS F with both the No Build and Build scenarios.

### **2.7.3.2. Temporary Impacts**

Construction could temporarily disrupt traffic flow where lane shifts or closures are required. A Traffic Management Plan will be prepared during the final design phase to address temporary impacts from staged construction, detours, and specific traffic handling concerns during project construction.

### **2.7.3.3. Truck Traffic in 2030 (Build Alternative)**

The forecasted traffic volumes and vehicle mix show that the project would increase truck volumes by 100 to 175 trucks per day over No Build conditions. Compared to the No Build Alternative, this represents a slightly lower proportion of trucks to automobiles—between 2.9 percent (on Stanley Boulevard to Jack London Boulevard) and 5.0 percent (on Vallecitos Road to Vineyard Avenue) of average daily traffic on SR 84. The average truck mix across all segments of SR 84 within the project limits would be 3.3 percent. Therefore, the project would not result in a significant increase in truck traffic on SR 84.

Average daily traffic forecasts for each roadway segment show that truck volumes on SR 84 decrease with increasing distance from I-580. This indicates that most trucks would be serving local businesses such as supermarkets rather than using SR 84 to bypass I-580 or I-680.

### **2.7.3.4. Compliance with Americans with Disabilities Act**

Pedestrian facilities will be designed in compliance with the Americans with Disabilities Act and Title 24 of the California Code of Regulations. Curb ramps will be installed at all intersections with pedestrian access.

## **2.7.4. Avoidance, Minimization, and/or Mitigation Measures**

The project would add insignificant delays at the intersections discussed in Section 2.7.3.1 that do not require additional mitigation.

## **2.8. Visual/Aesthetics**

This section describes the visual setting of the project study area as discussed in the Visual Resources Impact Report (Haygood and Associates, April 2007).

### **2.8.1. Regulatory Setting**

NEPA establishes that the Federal government use all practicable means to ensure all Americans safe, healthful, productive, and aesthetically (emphasis added) and culturally pleasing surroundings (42 USC 4331[b][2]). To further emphasize this point, FHWA in its implementation of NEPA (23 USC 109[h]) directs that final decisions regarding projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

Likewise, CEQA establishes that it is the policy of the State to take all action necessary to provide the people of the state “with...enjoyment of aesthetic, natural, scenic and historic environmental qualities” (California Public Resources Code [PRC] Section 21001[b]).

### **2.8.2. Affected Environment**

The existing alignment of SR 84 is located on relatively flat terrain just west of the city of Livermore. Within the study area, Mount Diablo and its foothills, Brushy Peak, and Cedar Mountain are all visible from a distance. Other visual resources within the viewshed include vineyards, Arroyo Mocho, and Arroyo del Valle.

The project area is a largely built environment dominated by various forms of urban structures, a quarry operation/facility, numerous single-family residential developments, various parks, and a conservation area. Overall, most of the segments of SR 84 are rural with a combination of grassy slopes and occasional trees. Where adjacent to residential developments, the landscaping consists of ornamental trees, shrubs and grasses. Utility poles and lines, intersection traffic signals, and street lights are also present along the project corridor. SR 84 is not designated as a California Scenic Highway.

The natural landscape has been altered over time in all of the surrounding flat terrain areas of the proposed project. The natural courses of the arroyos have been altered and in some areas controlled by concrete edges. The foothills remain predominately undisturbed and support native grasses and oaks, except for agricultural crops seen on the slopes to the north. The long-range vistas to the mountains are of natural landscape features.

Views within the project area are limited except at higher elevations. When viewed from more distant locations, such as the slopes of Mount Diablo and the Pleasanton

Ridge mountains to the west of the project, details of the existing roadway structures in the project area are not distinct. Typical representative views are as follows:

- **Ruby Hill Drive to Vallecitos Road.** Views of Ruby Hill to the west are of a subdivision separated from SR 84 by well-maintained landscaped slopes that partially screen views of most homes. Views to the east are of an oak woodland drainage and hillsides within an established conservancy area;
- **Vallecitos Road to Vineyard Avenue.** Views to the west are of the Ruby Hill subdivision. Views to the east are primarily of vineyards;
- **Vineyard Avenue to Stanley Boulevard.** Views to the west include the Arroyo del Valle and gravel mining activities. Views to the east are of the Isabel Trail in the foreground and landscaping and subdivision housing in the background. Ida Holm Park is within the subdivision area; and
- **Stanley Boulevard to Jack London Boulevard.** Views to the west are of undeveloped land (as of 2006) that has been approved for office building construction. Views to the east are of residential subdivision development.

Views were selected to define existing characteristics in the project area viewshed and the potential for changes. Several locations were selected for analysis and evaluated for impacts based on the simulated addition of project features (see the Visual Resources Impact Report, Haygood and Associates 2007). Figure 2.8-1 illustrates the view with the greatest potential to change as a result of the project. The location depicted in Figure 2.8-1 was rated high for vividness, intactness and unity because the views from this visual environment are striking, the constructed elements do not encroach on the natural features, and the views have a high level of visual coherence and compositional harmony.

### 2.8.3. Environmental Consequences

The proposed project would not result in substantial adverse visual impacts. Views within the project area are limited by urban structures, quarry mining, and vegetation, except in more open areas along the southern portion of the project. Impacts that are expected to result from the proposed project are described in the following paragraphs.

During construction, which would occur over an approximate 24-month period, viewers would generally see materials, equipment, workers, and the operations of construction equipment. Impacts of construction are unavoidable but would be temporary. Motorists and pedestrians would be exposed briefly to construction

activities while passing through construction zones. Residents would be exposed on a more continuous basis.

The impacts to the various points of view, as they apply to particular groups within the community, are outlined below.

### ***Potential Impacts to Views from Adjacent Properties***

No substantial visual impacts are expected to occur. However, the proposed project would remove existing landscaping at the intersections at the Sandhurst community entrance on Concannon Boulevard and at the Ruby Hill community entrance on Ruby Hill Drive. Between Ruby Hill Drive and Vallecitos Road, the project would add new retaining walls. However, the project would follow the existing roadway alignment and would not substantially change the existing setting. Some overhead electrical poles (PG&E) would also be relocated in this area and moved closer to residential development, but these existing electrical lines are already visible. The project would remove native oak trees and a portion of a vineyard.

A concrete median barrier approximately 3 feet high would extend north from Vallecitos Road to Jack London Boulevard except at intersections. The barriers would not block residents' views of scenic resources or result in adverse visual impacts on residents' views toward SR 84. Existing traffic signals and lights at intersections would be moved to the widened edge of the roadway. In most cases, these light sources would be out of sight lines or screened from residents' views by trees, berms, or existing soundwalls. Additional lighting between intersections is not proposed.

The relocation and realignment of the Vallecitos Road intersection proposed in the DED has been eliminated from the project. Instead, the intersection will remain in its current location. Fill and retaining walls would be added to elevate the Vallecitos Road approach to the intersection by up to 15 feet in a localized area to provide adequate sight distance in compliance with the Department's highway design standards. The increased elevation of the intersection would be an adverse but not substantial visual impact since the fill slopes would blend in with the much higher existing slopes of the adjacent vineyard property. Landscaping would be provided to screen the proposed fill slopes and retaining walls needed for the modified intersection.

### ***Potential Impacts to Views for Recreational Users***

No substantial visual impacts are expected to occur. The project would create a wider roadway adjacent to the recreational trails and install concrete safety barriers between



View north on SR 84 of roadway and natural terrain to the south with wetland vegetation, native grasses, and an oak woodland



Simulated view with proposed project

**SR 84 Expressway  
Widening Project**

**SR 84 Between Ruby Hill Drive and Vallecitos  
Road, With and Without Proposed Project**

**Figure  
2.8-1**



Vallecitos Road and Jack London Boulevard except at intersections, which would introduce a change in the existing setting. Views from Ida Holm Park would remain relatively unchanged as the roadway widening would take place outside of this facility. Driver-level views beyond the expressway of vineyards and the natural open space areas would be partially blocked by the concrete safety barrier.

***Potential Impacts to Views for Motorists***

The concrete median barriers between Vallecitos Road and Jack London Boulevard would partially block views of the diverse natural environment. A contrasting linear concrete barrier that is uniform in form, texture and color may be perceived as an adverse impact.

**2.8.4. Avoidance, Minimization, and/or Mitigation Measures**

The following measures are recommended for the proposed project.

- To avoid or minimize impacts on adjacent properties, retaining walls will be constructed. The walls' color and textures could have a variety of features that would soften the impact of the walls in a natural environment. Treatments for concrete median barriers and retaining walls would be included as part of the project.
- Landscaping will be designed and planting performed as part of a separate project immediately following completion of roadway construction. Department policy states that highway planting is warranted on new highways (expressways) where adjacent properties are developed at the time of highway construction. Planting would be placed along areas disturbed by construction to screen the roadway and associated vehicles. A planting design would be developed during the project design stage. New and replacement planting within State right-of-way shall be in conformance with Department standards for types of species, setback clearances, and maintenance criteria (e.g., trees must be planted 30 feet away from the traveled way to leave a 30-foot "clear recovery zone"). In areas where direct replacement planting is not possible due to setback requirements, planting would be placed within intersection areas. Funds for the project include the cost of installing the landscaping and maintaining it for three years. After the initial three years, funding for continuation of landscape maintenance will be provided by Caltrans, the City of Livermore, and the quarry operators and will be documented in maintenance agreements among these entities.

- Categories of landscaping have been initially identified at a conceptual level for the project right-of-way (Haygood and Associates 2007). These categories identify general areas suitable for varying heights of ground cover and shrubs, trees, grasses, and wildflowers (for erosion control). The conceptual plan includes native vegetation and oak trees. To address public comments received on the DED, a full landscape concept will be considered during the final project design phase.
- Residents in the Ruby Hill area requested additional landscaping along SR 84 at the Ruby Hill tennis courts and adjacent recreation fields. Landscaping will be considered at this location during final project design.
- The Department will coordinate with Alameda County to ensure landscaping installed by the quarry operators under a separate contract, within the 50-foot-wide buffer and as part of the LAVQAR Plan, will be harmonious with the highway landscape concept.
- The need for additional landscaping to screen residences from headlight glare will be considered during development of the landscaping plan in the final project design phase.

## **2.9. Cultural Resources**

This section summarizes the project’s Historic Resource Evaluation Report, Historic Property Survey Report, and Archaeological Survey Report (Basin Research, October 2006).

### **2.9.1. Regulatory Setting**

“Cultural resources” as used in this document refers to all historical and archaeological resources, regardless of significance. Laws and regulations dealing with cultural resources include the following.

The National Historic Preservation Act of 1966, as amended, sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places (NRHP). Section 106 of National Historic Preservation Act requires Federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800). On January 1, 2004, a Section 106

Programmatic Agreement among the Advisory Council, FHWA, State Historic Preservation Officer (SHPO), and the Department went into effect for Department projects, both State and local, with FHWA involvement. The Programmatic Agreement takes the place of the Advisory Council's regulations (36 CFR 800), streamlining the Section 106 process and delegating certain responsibilities to the Department. The FHWA's responsibilities under the Programmatic Agreement have been assigned to the Department as part of the Surface Transportation Project Delivery Pilot Program (23 CFR 773) (July 1, 2007).

Historical resources are considered under CEQA and under PRC Section 5024.1, which established the California Register of Historical Resources (CRHR). PRC Section 5024 requires State agencies to identify and protect State-owned resources that meet NRHP listing criteria. It further specifically requires the Department to inventory State-owned structures in its rights-of-way. Sections 5024(f) and 5024.5 require State agencies to provide notice to and consult with the SHPO before altering, transferring, relocating, or demolishing State-owned historical resources that are listed on or are eligible for inclusion in the NRHP or are registered or eligible for registration as California Historical Landmarks.

## **2.9.2. Affected Environment**

Two study areas were defined for the cultural resources investigations: an archaeological Area of Potential Effect (APE) that encompassed the right-of-way and all areas where construction might take place, and an architectural APE that was defined to inventory the elements of the "built environment" (e.g., homes, businesses, and infrastructure such as railroads and canals).

### **2.9.2.1. Records/Archival Review**

An archival search was undertaken at the California Historic Resources Inventory System, Northwest Information Center (CHRIS/NWIC) in Sonoma for the project right-of-way and a 0.25-mile radius. It indicated that the archeological and architectural APE and adjacent areas had been evaluated or reviewed by various researchers for other development and transportation projects and various Native American and historic preservation organizations had been contacted and documented.

The archival search completed at CHRIS/NWIC determined that the majority of the APE is located in an area designated as either of "moderate" or "high" sensitivity for archaeological resources. Fifteen cultural resources compliance reports that include

the APE and/or immediately adjacent areas are on file with the CHRIS/NWIC. Four other reports that are not on file were completed by private contractors for public agencies and include reviews and archaeological inventories of a portion of the APE. No prehistoric sites have been recorded in, adjacent to, or within 0.25 mile of the APE. Three formally recorded historic sites are present within or partly within the APE, and one historic site is within 0.25 mile.

In addition to the archival review, three historical societies were also contacted: the Livermore Heritage Guild, the Amador-Livermore Valley Historical Society, and the Alameda County Historical Society. Maps on file with the Zone 7 Water Agency, the Alameda County Public Works Agency file room, and other as-built drawings were reviewed. In addition, the Caltrans Historic Bridge Survey was consulted.

### **2.9.2.2. Archeological Field Survey Results**

The majority of the APE was reviewed during previous environmental compliance studies except for a small portion extending from north of the southern project terminus to south of Vineyard Avenue. A systematic field inventory of the APE was completed for the proposed project. Three previously recorded historic resources (a canal, an orchid greenhouse complex, and a PG&E gas distribution facility) were identified from the CHRIS/NWIC records review (Section 2.9.2.1) in or adjacent to the APE. These resources were observed during the field inventory. The portion of the canal within the APE has been relocated and does not retain qualities that would make it eligible for the NRHP; in addition, the project does not affect the canal. The orchid greenhouse complex is scheduled for demolition by a private party for a residential development. The PG&E facility is less than 15 years old. No additional historic or archaeological resources were noted during the field inventory for the proposed project.

### **2.9.2.3. Native American Consultation**

A records search of the Sacred Lands File was conducted by the Native American Heritage Commission. No sacred lands were identified in the project's APE. The Native American Heritage Commission also provided a list of 10 individuals and groups with the potential to have special knowledge of the project area. Letters were sent to these groups and individuals. No responses were received, and telephone contact was attempted. One individual mentioned an ethnographic village along the creek near the old cutoff to the Veterans Administration Hospital.

Four Native Americans had been previously consulted for the Isabel Avenue Extension Project in 1992, 12 Native American individuals/groups were consulted for the I-580/Isabel Avenue Interchange Construction Project in 2001, and 12 Native American individuals/groups were consulted for the Vallecitos Road project completed by the Department in 2003. None of the individuals/groups consulted provided additional information concerning potential sacred lands within those project areas.

No known ethnographic or contemporary Native American resources, including villages, sacred places, or traditional or contemporary use areas, have been identified in or adjacent to the APE.

#### **2.9.2.4. Potential for Presence of Subsurface Resources**

The potential for the presence of buried prehistoric archaeological resources appears to be low based on the following indicators: the low density of recorded archaeological sites in the general area; the extensive previous impacts in the APE (e.g., quarrying, road and infrastructure work, and residential development); the lack of any indications of prehistoric archaeological resources including isolated finds within the APE; soil associations that suggest a lack of subsurface potential for buried archaeological resources; and negative results of a subsurface testing program in the vicinity of the northern extent of the APE. In addition, the existing topography and the lack of identifiable aboriginal food and industrial resources also suggest a low potential for prehistoric resources.

#### **2.9.2.5. Historic Resources Records and Field Inventory Results**

The field inventory consisted of a pedestrian survey of the APE to account for all buildings and structures recorded in previous reports and to determine the presence/absence of additional buildings that are potentially over 45 years of age (i.e., constructed before 1961) or that exhibited characteristics that potentially meet the criteria for listing in the NRHP.

As a result of the records search and literature review, five previously recorded built resources were identified as partially within or adjacent to the APE: a portion of the Arroyo Mocho flood control canal, a segment of the Western Pacific Railroad, the Orchid Ranch (an orchid nursery built in the early 1970s), the Holm Well (no longer extant), and a PG&E gas distribution station constructed in the mid to late 1990s. No additional built environment resources were identified during the field inventory for

the proposed project. In addition, the bridges in the APE are less than 25 years old and are listed as Category 5 bridges (not eligible for the NRHP) in the Caltrans Bridge Inventory. None of the resources in the APE appear to be eligible for the NRHP under any of the criteria. The records search and field inventory of the built environment did not identify any properties in or adjacent to the APE that are known to be listed in, determined eligible for, or pending with the NRHP or CRHR.

### **2.9.3. Environmental Consequences**

No adverse temporary or permanent impacts to archeological resources or the built environment were identified.

### **2.9.4. Avoidance, Minimization, and/or Mitigation Measures**

No further archaeological work is necessary within the APE. Additional surveys would be required if the project changes to include areas not previously surveyed. The project does not warrant the completion of a formal discovery plan based on the absence of recorded, reported, or identified archaeological sites in and adjacent to the APE and the perceived low potential for exposing unknown archaeological resources during construction.

If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.

If human remains are discovered, California Health and Safety Code Section 7050.5 states that further disturbances and activities will cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to PRC Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission who will then notify the Most Likely Descendent. At this time, the person who discovered the remains will contact the District Environmental Branch so that they may work with the Most Likely Descendent on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

## **Physical Environment**

### **2.10. Hydrology and Floodplains**

The following summarizes the findings of the Location Hydraulic Study Report (WRECO, June 2006).

#### **2.10.1. Regulatory Setting**

Executive Order 11988 (Floodplain Management) directs all Federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. FHWA requirements for compliance are outlined in 23 CFR 650 Subpart A.

In order to comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments;
- Risks of the action;
- Impacts on natural and beneficial floodplain values;
- Support of incompatible floodplain development; and
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values affected by the project.

The base floodplain is defined as “the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year.” An encroachment is defined as “an action within the limits of the base floodplain.”

#### **2.10.2. Affected Environment**

The proposed project corridor is located in the upstream Alameda Creek watershed of eastern Alameda County. Two water bodies cross SR 84 in the project limits: Arroyo Mocho near Stanley Boulevard and Arroyo del Valle near Vineyard Avenue. Another channel, Arroyo las Positas, crosses SR 84 approximately 0.6 mile north of the project. Arroyo las Positas drains into Arroyo Mocho downstream of SR 84 at Fallon Road. Arroyo Mocho and Arroyo del Valle flow into Arroyo de la Laguna and then into Alameda Creek before entering San Francisco Bay. In addition, an unnamed creek is located along the eastern side of SR 84 just south of the Isabel

Avenue/Vallecitos Road intersection. The Arroyo Mocho Bridge and Arroyo del Valle Bridge would be widened as part of the proposed project.

According to the Federal Emergency Management Agency's (FEMA's) Flood Insurance Studies (1997, 2000), winter rainfall in the project area can produce floods. Flood control channels were constructed to convey runoff from Livermore Valley toward Alameda Creek starting in the 1960s. During the 1980s and 1990s, Arroyo Mocho was channelized along East Stanley Boulevard from Murrieta Boulevard to Isabel Avenue. At the Isabel Avenue crossing, Arroyo Mocho was also realigned as part of the Isabel Avenue Extension Project. In 1968, Del Valle Dam was built in the upstream Arroyo del Valle to regulate flood releases and reduce downstream flooding in Arroyo del Valle.

FEMA Flood Insurance Rate Maps (FIRMs) delineate special flood hazard areas in communities. FIRMs use Flood Zone A and AE designations for areas subject to inundation by the 1-percent-annual-chance flood event, also known as the 100-year flood or base flood. Flood Zone AE is an area for which base flood elevations have been determined.

The FIRM for the project area shows that Arroyo Mocho and Arroyo del Valle cross SR 84 in an area mapped as Flood Zone AE, and the water surface elevation during the 100-year flood is 415 feet. The 100-year flood is contained in the trapezoidal concrete channel section of Arroyo Mocho where it crosses SR 84. The flows in Arroyo del Valle are controlled releases from Lake Del Valle, which is owned and operated by the Department of Water Resources. The FIRM does not identify the unnamed creek located on the eastern side of SR 84 south of the Isabel Avenue/Vallecitos Road intersection. Therefore, the unnamed creek is not mapped within a special flood hazard area.

According to the FIRMs and Flood Insurance Studies, the 100-year flood would not result in upstream flooding at creek crossings in the project area. In 1997, the City of Livermore reconstructed the Arroyo Mocho Flood Control Channel. The water level during the base flood in this channel is not expected to overtop the roadway and affect traffic movements.

The Zone 7 Water Agency was consulted during the preparation of technical studies for this project and participated in project development.

### **2.10.3. Environmental Consequences**

The existing arroyo channel and banks and the freeboard (the distance between the water level and the structure) of the existing SR 84 bridge crossings would remain unchanged. The project would not encroach into the floodplains of Arroyo del Valle and Arroyo Mocho. The 100-year flood elevation would not be affected.

Downstream of Lake Del Valle, which has highly regulated releases, the project would not affect the 100-year flood elevation. The 100-year flood elevation reaches 415 feet at the Arroyo del Valle Bridge. After construction, the roadway elevation would be 420.3 feet; thus, no overtopping of SR 84 is anticipated. North of Vineyard Avenue, stormwater from the Ruby Hill development, SR 84, and the City of Livermore outfall to Arroyo del Valle on the west side of the SR 84 bridge crossing. No modification to these outfalls is proposed, and additional flows from the widened roadway would not impact the hydraulic capacity of the Arroyo del Valle channel during a 100-year flood event.

A 36-inch-diameter outfall pipe discharges highway runoff from the section of SR 84 just north of Concannon Boulevard to the Arroyo Mocho Bridge through the Isabel Pumping Station. The pumping station was designed to accommodate additional flows from the widened SR 84 facility. The additional pump discharge flows would have an insignificant impact to the hydraulic capacity of the Arroyo Mocho channel during a 100-year flood event.

Because the project crosses mapped floodplains (see Section 2.10.2), specific findings are required, which are summarized in the following subsections.

#### **2.10.3.1. Longitudinal Encroachment**

As defined by FHWA, a longitudinal encroachment is an action within the limits of the base floodplain that is longitudinal to the normal direction of the floodplain. At the south end of the project, a small tributary of Arroyo del Valle flows along the southeastern side of SR 84 from Ruby Hill Drive to the Vallecitos Road/Isabel Avenue intersection. This creek is a tributary of Arroyo del Valle and drains into Del Valle upstream of the Arroyo del Valle Bridge. The proposed project would include retaining walls and would avoid a longitudinal encroachment of this watercourse.

#### **2.10.3.2. Incompatible Floodplain Development**

Incompatible floodplain development is defined as development that is not consistent with a community floodplain development plan. This project would not support any incompatible floodplain development.

### **2.10.3.3. Significant Floodplain Encroachment and Project-Created Flooding Risks**

A significant<sup>20</sup> encroachment is defined in the FHPM (FHWA 1979) as a highway encroachment that would cause one or more of the following impacts during construction or flooding: (1) interruption of emergency vehicles or evacuation routes, (2) creation of a significant risk, and (3) creation of a significant adverse impact on natural and beneficial values. The risk would be an increase in the elevation of the base flood levels.

The project would not change the flood control facilities of Arroyo Mocho and Arroyo del Valle. Widening of the existing bridges over these water bodies would not significantly impact flood elevations, and no significant fill would be placed into the defined floodplain. Neither emergency vehicle access nor natural or beneficial floodplain values would be affected. The project would not create a significant floodplain encroachment or significantly increase the existing depth or limits of flooding.

### **2.10.3.4. Natural and Beneficial Floodplain Values**

Natural and beneficial floodplain values include but are not limited to fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, forestry, natural moderation of floods, water quality maintenance, and groundwater recharge. No significant impacts to the natural and beneficial floodplain values have been identified. Any environmental impacts would be a result of construction activities and would be mitigated with standard measures such as revegetation and best management practices (BMPs).

### **2.10.3.5. Encroachment of a Regulatory Floodway<sup>21</sup>**

The two flood channels crossed by SR 84 – Arroyo Mocho and Arroyo del Valle – are within regulatory floodways. The project would not substantially change flood heights where base flood elevations have been established, based on the preliminary definition of the project and the anticipated structure types. The impacts to water surface elevations would be no more than 1 foot.

---

<sup>20</sup> The use of “significant” in this section is consistent with the FHPM definition for floodplain encroachment and is not used with regard to CEQA or NEPA.

<sup>21</sup> A regulatory floodway is a floodplain area designated and reserved by a Federal, State, or local authority to allow or maintain unobstructed flood flows within 0.3 meter (1 foot) of the designated flood elevations.

### **2.10.3.6. Construction and Other Temporary Impacts**

No substantial impacts to floodplains are expected during construction. The project would conform to Department standards, grading permit requirements, and erosion control requirements.

### **2.10.4. Avoidance, Minimization, and/or Mitigation Measures**

No mitigation is required.

## **2.11. Water Quality and Stormwater Runoff**

This section is based on the Water Quality Study Report (WRECO 2007b) and Location Hydraulic Study Report (WRECO 2006). Floodplains are discussed in Section 2.10.

### **2.11.1. Regulatory Setting**

#### **2.11.1.1. Federal and State**

Section 401 of the Clean Water Act (CWA) requires water quality certification from the State Water Resources Control Board (SWRCB) or from a RWQCB when the project requires a CWA Section 404 permit. Section 404 of the CWA requires a permit from the U.S. Army Corps of Engineers (USACE) to discharge dredged or fill material into waters of the United States.

Along with CWA Section 401, CWA Section 402 establishes the National Pollutant Discharge Elimination System (NPDES) permit for the discharge of any pollutant into waters of the United States. The U.S. Environmental Protection Agency has delegated administration of the NPDES program to the SWRCB and nine RWQCBs. The SWRCB and RWQCB also regulate other waste discharges to land within California through the issuance of waste discharge requirements under authority of the Porter-Cologne Water Quality Act.

The SWRCB has developed and issued a statewide NPDES permit to regulate storm water discharges from all Department activities on its highways and facilities. Department construction projects are regulated under the Statewide permit, and projects performed by other entities on Department right-of-way (encroachments) are regulated by the SWRCB's Statewide General Construction Permit. All construction projects over 1 acre require a Storm Water Pollution Prevention Plan (SWPPP) to be

prepared and implemented during construction. Department activities less than 1 acre require a Water Pollution Control Program.

#### **2.11.1.2. Local**

The City of Livermore has implemented several environmental programs to address the impacts of development, including storm drainage and water quality requirements. The City's Storm Drainage Master Plan recommended continuous capital improvement programs to correct existing and further storm drainage deficiencies.

### **2.11.2. Affected Environment**

#### **2.11.2.1. Surface Water Resources**

The proposed project corridor is located in the floodplain of the Alameda Creek watershed, which encompasses almost 700 square miles and extends from Altamont Pass in the east to San Francisco Bay in the west, and from Mount Diablo in the north to Mount Hamilton in the south. Major streams in the area include Arroyo del Valle, Arroyo Mocho, Arroyo las Positas, Alamo Canal, and San Ramon and Tassajara creeks.

Surface water in the general vicinity of the project consists of Arroyo las Positas, Arroyo Mocho, and Arroyo del Valle (from north to south). The location of SR 84 in relation to these channels is shown in Figure 1-2. SR 84 bridges cross Arroyo Mocho and Arroyo del Valle. Arroyo las Positas mainly flows westerly along I-580, approximately 0.6 miles north of the project area. Arroyo del Valle is the major receiving water body at the southern end of the project limits.

#### ***Water Supply***

The Zone 7 Water Agency serves approximately 190,000 residents of Pleasanton, Livermore, and Dublin, and unincorporated areas in eastern Alameda County; sells untreated water directly to agricultural customers; and manages flood control. The agency's water sources are the State Water Project, Lake Del Valle Reservoir, and the local groundwater basin.

#### ***Existing Surface Water Quality***

Water from the project area may flow into Arroyo Mocho, Arroyo las Positas, and Arroyo Mocho. According to the San Francisco Bay RWQCB, these three channels contain the pollutant/stressor diazinon, potentially from urban runoff and storm sewers.

### **2.11.2.2. Groundwater Resources**

The part of the Livermore-Amador Valley Groundwater Basin that lies beneath most of Pleasanton and the westernmost portion of Livermore is known as the Main Basin. The groundwater basin is used as a water supply source for the cities of Livermore and Pleasanton as well as surrounding unincorporated areas. Groundwater is used the most during the summer months, when water demand increases dramatically. In the summer, groundwater can account for over 50 percent of the water in the distribution system.

The Zone 7 Water Agency administers oversight of the local groundwater basin. It monitors groundwater extractions and imports water to artificially recharge the Main Basin or provide supplemental potable water.

#### ***Wellhead Protection***

Wellhead protection is designed to protect public water supply wells from becoming polluted by managing potential sources of contamination in the area that contributes water to the wells. Because SR-84 is in an area that does not have a public water supply from groundwater wells, planning for wellhead protection is not necessary.

#### ***Groundwater Quality***

According to the Zone 7 Water Agency, the Main Basin contains water of good quality. Water quality is measured in total dissolved solids (the amount of dissolved salts in water), which is 500 milligrams per liter for many municipal wells in the Livermore Valley. According to the City of Livermore's General Plan, excessive salt loading can result in degraded water quality, and a Salt Management Plan has been prepared by the Zone 7 Water Agency to offset salt loading in the Main Basin.

### **2.11.3. Environmental Consequences**

The following summarizes potential project impacts.

#### **2.11.3.1. Permanent Impacts**

##### ***Surface Water***

The existing roadway of SR 84 would be widened to accommodate additional lanes, but the widening would maintain existing drainage patterns. For example, at Arroyo Mocho and Arroyo del Valle, the existing bridges would be widened and new piers may be added, but the drainage channels would be maintained in their same locations. Floodplain impacts are discussed in Section 2.10.

### **Stormwater Runoff Volume and Quality**

FHWA has found that street and highway stormwater runoff can, in some instances, adversely affect receiving water quality. The nature of these impacts would depend on the use and flow rate or volume of the receiving water, rainfall characteristics, and street or highway characteristics. In general, heavy metals associated with vehicle tire and brake wear, air emissions, oil, and grease are the primary toxic pollutants associated with transportation corridors. Stormwater from the proposed project would drain to Arroyo Mocho and Arroyo del Valle and could drain into Arroyo las Positas.

Stormwater runoff volumes from the project are expected to increase due to the increase in impervious surfaces. However, this additional runoff is not anticipated to exceed the capacity of drainage systems in the area. The flow might run across some vegetated slopes and vegetated swales before releasing into the creek system. The project would include new roadside treatments designed to effectively remove sediments and the associated nonpoint-source pollutants from runoff in the project right-of-way.

#### **2.11.3.2. Construction and Other Temporary Impacts**

During construction, there is the risk of temporary adverse impacts due to increased erosion that could eventually be transported into nearby creeks and storm drains with stormwater runoff. The runoff would drain into Arroyo Mocho and Arroyo del Valle, and could drain into Arroyo las Positas and eventually be transported to San Francisco Bay. Soil erosion could increase suspended solids, dissolved solids, and organic pollutants in nearby creeks, especially during heavy rainfall. These conditions could persist until completion of construction activities and implementation of landscaping and other long-term erosion control measures (described in Section 2.11.4.2).

Fueling or maintenance of construction vehicles would occur in the project area during construction. Accidental spills or releases of fuels, oils, or other potentially toxic materials and possibly sanitary wastes could be a concern during construction activities. An accidental release of these materials may pose a threat to water quality if contaminants enter storm drains, Arroyo Mocho, or Arroyo del Valle.

The project would not involve substantial excavations that could affect groundwater resources.

#### **2.11.4. Avoidance, Minimization, and/or Mitigation Measures**

The Caltrans Storm Water Management Plan identifies permanent and temporary BMPs for Statewide application. BMPs are technology-based requirements from the Federal stormwater regulations. The BMPs fall into four categories: Design Pollution Prevention, Treatment, Construction Site, and Maintenance.

##### **2.11.4.1. Construction**

Construction activities could increase suspended solids, dissolved solids, and organic pollutants in nearby creeks. These conditions could persist until construction activities are completed and long-term erosion control measures have been implemented. Since this project would disturb 1 acre or more of soil, the project will adhere to the conditions of the NPDES Permit for Construction Activities (Order No. 9-08-DWQ, NPDES No. CAS000002), which is incorporated by reference to the Caltrans NPDES Permit, Storm Water Discharges from Caltrans Properties, Facilities, and Activities (Order No. 99-06-DWQ, NPDES No. CAS000003). Filing of a Notice of Intent is not required, as a Notification of Construction under Caltrans NPDES Permit has replaced it. To comply with the conditions of the Caltrans NPDES Permit and to address the temporary water quality impacts resulting from the construction activities of this project, Standard Special Provision 07-345 will be included in the project's plans, specifications, and estimates. This Standard Special Provision will address water pollution control work and the implementation of a SWPPP during construction.

Construction BMPs are temporary BMPs that the construction contractors would implement to meet Best Available Technology/Best Conventional Technology for construction projects. The selected construction site BMPs would be consistent with those practices to achieve compliance with requirements of the State of California NPDES General Permit for Storm Water Discharges Associated with Construction Activities.

Construction BMPs are identified in the project's Stormwater Data Report (WRECO 2007a). The BMPs include the use of vegetated swales to minimize velocity and erosive conditions and revegetation of slopes to reduce erosion and sediment loads. Other construction BMPs that may be set forth in the SWPPP include using temporary mulching, seeding, or other suitable stabilization measures to protect uncovered soils; storing materials and equipment to ensure that spills or leaks cannot enter storm drain systems or surface water; developing and implementing a spill prevention and cleanup plan; installing traps, filters, or other devices at drop inlets to

prevent contaminants from entering storm drains; and using barriers such as straw bales or plastic to minimize the amount of uncontrolled runoff that could enter drains or surface water.

Erosion control measures would be developed as part of the SWPPP and applied to exposed areas during construction. Erosion control measures may include the trapping of sediments within the construction area by placing barriers such as straw bales, sandbags, or gravel barriers at the perimeter of downstream drainage points. Other methods of minimizing erosion impacts include limiting the amount and length of exposure of graded soil, hydromulching and hydroseeding (applying a mixture of mulch, seed, and fertilizer), and other soil protection measures such as straw mulch or compaction.

The overall mitigation structure for water quality impacts is a condition of the NPDES permit, other planning agreements, and the expected need for county stormwater management programs. Implementation details for all BMPs would be developed and incorporated into the SWPPP, project design, and operations before project construction. With proper implementation of these measures and compliance with the new NPDES permit, short-term construction-related water quality impacts would be avoided or minimized.

#### **2.11.4.2. Long Term**

Additional runoff from the increase in impervious area would be handled by a series of roadside ditches and drainage systems. These ditches and drainage systems would be mostly sized to account for on-site runoff and not off-site runoff. Peak runoff volumes would be calculated for the new drainage systems with proposed discharge locations at several outlets

The project design will incorporate Design Pollution Prevention BMPs intended to stabilize soil and prevent contaminants and soil from entering stormwater runoff. Another category of BMPs called Permanent Treatment BMPs are intended to treat stormwater runoff and remove contaminants and sediments that have already entered the runoff. The project's NPDES permit will likely stipulate that Permanent Treatment BMPs to control pollutant discharges be considered and implemented for all new or reconstructed facilities. Permanent Treatment BMPs that are generally considered are infiltration basins, detention basins, and biofiltration swales/strips.

The use of existing biofiltration swales and strips will be the primary Permanent Treatment BMP. The swales will be designed to also minimize velocity and erosive

conditions. In addition, nonapproved treatment BMPs will be proposed for a project if warranted by the type of project and the potential for impacts to water quality. The following have been proposed for this project: two infiltration basins, one detention basin, one biofiltration swale, and one or two biofiltration strips.

## **2.12. Geology, Soils, and Seismicity**

The following discussion is based on the Geotechnical Impact Assessment report (AGS, June 2006) for the proposed project.

### **2.12.1. Regulatory Setting**

For geologic and topographic features, the key Federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects "...outstanding examples of major geological features." Topographic and geologic features are also protected under CEQA.

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. The Department's Office of Earthquake Engineering is responsible for assessing the seismic hazard for Department projects. The current policy is to use the anticipated Maximum Credible Earthquake from young faults in and near California. The Maximum Credible Earthquake is defined as the largest earthquake that can be expected to occur on a fault over a particular period of time.

### **2.12.2. Affected Environment**

#### **2.12.2.1. Regional Setting**

The project area is in the Livermore Valley and the northern Diablo Range of the northern Coast Ranges geomorphic province. The region is located on the boundary between the North American and Pacific tectonic plates. The Pacific plate is moving northwest relative to North America across a plate boundary oriented in a north-northwest direction that is approximately 60 miles wide. This zone encompasses all of the major active faults in Northern California. The average relative motion across this plate boundary amounts to 1.4 to 1.5 inches per year, the majority of which occurs during large earthquakes (Working Group on California Earthquake Probabilities 2003). Geologically, this region is one of the most active in the world, highlighted by the number of large, damaging earthquakes that have occurred during historical time.

### **2.12.2.2. Site Geology**

The project is located on a flat, low-lying alluvial plain situated at approximately 410 feet above mean sea level that rises to an elevation of approximately 600 feet in the Ruby Hill area to the south. To the north, east, and south is the undulating topography of the Diablo Range.

The project site is underlain by a sequence of marine and estuarine sediments of Tertiary and Cretaceous age mantled by surficial alluvial sediments of Quaternary age (Helley and Graymer 1997). In the project area, the surficial soil materials are sand, silt, and clay consisting of alluvial fan, alluvial terrace, and floodplain deposits. These materials are underlain by moderately consolidated conglomerate, conglomeratic sandstone, and coarse-grained sandstone with minor siltstone and claystone belonging to the Pliocene to Pleistocene-age Livermore Gravels.

Sand and gravel mining have extensively modified landforms and surface soils in parts of the Livermore Valley. The construction of SR 84 included excavation to allow the roadway to cross under Stanley Boulevard and the adjacent Union Pacific Railroad tracks, as well as a realignment of the Arroyo Mocho channel to its current location. Native soils no longer exist along much of the project alignment.

Mining operations up to depths of 240 feet are planned on the west side of SR 84 between Vineyard Avenue and Stanley Boulevard and on the east side of SR 84 between Vineyard Avenue and Alden Lane. In approximately 25 years, after mining is completed, an adopted Reclamation Plan will establish basins to create groundwater storage, conveyance, and recharge facilities (collectively referred to as the Chain of Lakes). The Zone 7 Water Agency will operate and maintain these facilities. As part of the Reclamation Plan, Arroyo del Valle will be converted to basins on either side of SR 84, and the crossing will become a concrete spillway between the two lakes.

### ***Soils***

SR 84 is located on 13 soil types along the project alignment (USDA 1966). The Farmlands of Statewide Importance described in Section 2.3.2 have soils classified as Livermore very gravelly coarse sandy loam and Pleasanton gravelly loam with 3 to 12 percent slopes. The soil types classified as Prime Farmland are Livermore gravelly loam, Pleasanton gravelly loam (with 0 to 3 percent slopes), Yolo loam, Yolo gravelly loam, and Zamora silt loam. Zamora silt loam has a very high erosion hazard when disturbed. The other soils have low to moderate shrink-swell potential, and the hazard from erosion is considered low to moderate.

Another soil that underlies the project area in the hills to the south, Positas gravelly loam (with 2 to 40 percent slopes), is classified as having high shrink-swell potential and has high erosion hazard when disturbed. San Ysidro loam, which has a moderate shrink-swell potential, occurs along portions of the east side of Vallecitos Road just south of the intersection with Isabel Avenue (USDA 1966).

### **2.12.2.3. Geologic Hazards**

This section summarizes the potential geologic hazards in the project area.

#### ***Surface Fault Rupture***

Surface fault rupture is a slip on a fault plane that has propagated upward to, and offset or disturbed, the earth's surface. There is no evidence indicating that the project is located on identified active faults. The Livermore fault lies approximately 110 yards north of the project, with two secondary faults located east and west of the main trace (Sawyer 1998). The western trace of the Livermore fault underlies the project alignment at an oblique angle approximately 0.3 mile south of Jack London Boulevard. The central trace of the Livermore fault is recognized by the CGS and the City of Livermore as potentially active (Jennings 1994); however, it is poorly characterized and has no surface expression at the site. The central and eastern traces of the fault cross Isabel Avenue at approximately 110 yards and 0.5 mile north of Jack London Boulevard (Sawyer 1998), respectively, north of the project boundary.

The Livermore fault is not zoned as an Alquist-Priolo fault hazard. Although the Livermore fault has not experienced surface rupture in historic time, geologic evidence suggests that the fault can rupture during moderate earthquakes, causing lateral displacements of about 1.5 to 3 feet based on empirical relations of Wells and Coppersmith (1994), with possible coseismic displacement across the secondary faults of 0.5 to 2 feet. Secondary faults could rupture during a seismic event on the main fault; however, the probability of an earthquake on the Livermore fault is considered very low. The potential for surface fault rupture from the three mapped traces of the Livermore fault would not affect the project's two existing bridge structures. Displacements for previous events on the faults have not been quantified, but rupture of the Livermore fault alone is expected to produce a moment magnitude (**M**) 5.5 earthquake.

#### ***Earthquake Shaking***

Strong earthquake ground shaking is likely the most important seismic hazard that can be expected anywhere in the Bay Area. A deterministic seismic hazard map

indicates that this area may experience ground motions of 0.6 g (acceleration equivalent to 60 percent of the force of gravity) or higher (Mualchin 1996).

### ***Liquefaction and Lateral Spreading***

Liquefaction is the phenomenon during which loose, saturated, cohesionless soils temporarily lose shear strength during strong ground shaking. Lateral spreading occurs when soil liquefies and flows out of a cut face. The entire project corridor is considered to have low to moderate susceptibility to liquefaction due to the density of the granular materials or the presence of stiff cohesive soils (Knudsen et al. 2000).

The southern portion of the project area is located on elevated terrain without shallow groundwater and therefore has a very low liquefaction potential. The planned reclamation of the gravel mining property, which would establish the Chain of Lakes, may increase groundwater levels in the vicinity of the Arroyo Mocho and Arroyo del Valle stream crossings and affect the liquefaction potential in these two project areas.

### ***Subsidence***

Land surface subsidence can result from both natural and human-made phenomena, including tectonic deformations, seismically induced liquefaction, soil consolidation, and dewatering (e.g., lowered groundwater table). Sections of developed areas east of the project along Arroyo del Valle have had major settlement problems due to continuing gravel-mining operations. No site-specific information or observations of subsidence within the project limits exist; however, gravel-mining operations are planned to resume immediately adjacent to the project.

### ***Landslides***

Much of the project area, from Jack London Boulevard to Vallecitos Road along Isabel Avenue, has relatively flat topography; therefore, the hazard from slope movement is negligible. Several small landslides exist in the southern portion of the project area. The project segment that cuts through the undulating topography to the south of Isabel Avenue may be subject to minor stone fall or slumping as the exposed conglomeratic deposits are weakened by weathering.

## **2.12.3. Environmental Consequences**

### **2.12.3.1. Fault Rupture**

The project could potentially be exposed to minor surface faulting. The western strand of the Livermore fault crosses SR 84 near the northern end of the project. A moderate earthquake on the Livermore fault could result in surface rupture involving a 0.5 to 2 feet or more lateral or oblique displacement at the ground surface, possibly

disrupting the roadway along SR 84 in the vicinity of the Jack London Boulevard intersection.

#### **2.12.3.2. Earthquake Shaking**

The Bay Area is seismically active, and all sites in the region have a reasonably high potential of experiencing strong earthquake shaking in the future (Working Group on California Earthquake Probabilities 2003). Elements of the project such as the bridges at stream crossings could be exposed to strong ground shaking. A potential exists for substantial damage to engineered structures and risk of injury or loss of life at incorrectly designed or constructed facilities.

#### **2.12.3.3. Liquefaction and Lateral Spreading**

The potential for liquefaction at the project site is considered low because the project is in an area of stiff cohesive soils. A potential exists for bridge structure damage at stream crossings after completion of the reclamation plan for the gravel mining property.

#### **2.12.3.4. Subsidence**

Although subsidence is ongoing in areas near the project due to gravel mining operations, it does not appear to pose a substantial hazard during the lifetime of the project.

#### **2.12.3.5. Expansive Soils**

Expansive soils can cause roadway damage. Highly expansive soils in the southern part of the project area may require replacement or treatment during construction. Proper roadway design and construction techniques should be implemented to minimize the risk of damage from expansive soils.

#### **2.12.3.6. Landsliding**

The majority of the project is on flat topography, and landslides do not appear to pose a substantial hazard during the lifetime of the project.

#### **2.12.3.7. Temporary and Construction-Phase Impacts**

Exposure of native and engineered soils during construction activities would increase the potential for erosion due to rainfall runoff, even on gentle and moderate slopes.

#### **2.12.4. Avoidance, Minimization, and/or Mitigation Measures**

The following measures are recommended for the design and construction of the proposed project. These recommendations are based on the preliminary studies conducted to identify geologic conditions and impacts of the project.

##### *Fault Rupture and Subsidence*

- Any proposed engineering design will be carried out in accordance with Department Seismic Design Criteria and the regulations detailed in the Alquist-Priolo Earthquake Fault Zoning Act.
- Potential surface deformation resulting from subsidence due to continuing gravel mining operations may be mitigated by periodic repair to the road surface, curbs, and other engineered facilities. Annual inspections will be carried out to assess ongoing subsidence damage.

##### *Earthquake Shaking*

- Roadways and bridges will be designed and constructed at a minimum to the seismic design requirements for ground shaking specified in the Uniform Building Code for Seismic Zone 4.
- To satisfy the provisions of the 1998 California Building Code, the proposed facilities will be designed to withstand ground motions equating to approximately a 500-year return period (10 percent probability of exceedance in 50 years). Bridges will be designed in accordance with the latest Department Seismic Design Criteria.

##### *Liquefaction and Lateral Spreading*

- Site-specific exploratory borings and accompanying laboratory testing during final design of the project bridge structures will be required to delineate any potentially liquefiable materials. Potentially liquefiable deposits will be removed or engineered (dewatered or densified) to reduce their liquefaction potential, or the engineering design will incorporate pile foundations that extend beyond potentially liquefiable deposits.

##### *Expansive Soils*

- Site-specific borings and testing will include investigation for subsurface materials that might contribute to heaving. To prevent heaving, highly expansive soils should be overexcavated and replaced with fill or treated with appropriate soil amendments.

### *Landsliding*

- Site-specific geologic and geotechnical investigations and laboratory testing will be conducted as needed during the final design/plans, specifications, and estimates phase to determine the stability of slopes and their parent material. Using these data, appropriate slope-strengthening and stabilizing designs will be developed if deemed necessary. Retaining walls are included in the preliminary design at specific locations of new roadway cut and fill.

### *Erosion*

- Soil and slope stability measures will be implemented to prevent or reduce erosion. These may include temporary hydroseeding to provide a vegetation cover with straw bales, placement of temporary plastic slope covers, and use of temporary drainage measures to divert runoff from exposed slopes or soils. These measures are addressed in more detail in the Geotechnical Impact Assessment (AGS 2006).

## **2.13. Hazardous Waste and Materials**

An Initial Site Assessment (ISA) (Baseline Environmental Consulting, December 2005) was conducted for the proposed project right-of-way and adjacent properties within a 0.25-mile radius. The assessment consisted of a review of previous investigations and documentation, a review of historical land use information, a visual site reconnaissance, a review of regulatory lists and databases, and the development of recommendations for further actions to evaluate whether current or historical releases of hazardous materials may have the potential to affect the project.

### **2.13.1. Regulatory Setting**

Hazardous materials and hazardous wastes are regulated by many State and Federal laws. These laws include not only specific statutes governing hazardous waste but also a variety of laws regulating air and water quality, human health, and land use.

The primary Federal laws regulating hazardous wastes/materials are the Resource Conservation and Recovery Act of 1976 and the Comprehensive Environmental Response, Compensation and Liability Act of 1980. The purpose of the latter act, often referred to as Superfund, is to clean up contaminated sites so that public health and welfare are not compromised. The Resource Conservation and Recovery Act

provides for “cradle to grave” regulation of hazardous wastes. Other Federal laws include:

- Community Environmental Response Facilitation Act of 1992;
- Clean Water Act (CWA);
- Clean Air Act;
- Safe Drinking Water Act;
- Occupational Safety and Health Act;
- Atomic Energy Act;
- Toxic Substances Control Act; and
- Federal Insecticide, Fungicide, and Rodenticide Act.

In addition to the acts listed above, Executive Order 12088, Federal Compliance with Pollution Control, mandates that necessary actions be taken to prevent and control environmental pollution when Federal activities or Federal facilities are involved.

Hazardous waste in California is regulated primarily under the authority of the Federal Resource Conservation and Recovery Act of 1976 and the California Health and Safety Code. Other California laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup and emergency planning.

Worker health and safety and public safety are key issues when dealing with hazardous materials that may affect human health and the environment. Proper disposal of hazardous material is vital if it is disturbed during project construction.

### **2.13.2. Affected Environment**

Previous environmental investigations and documentation for projects located at and near the study area identified several sites of potential concern related to hazardous materials. These sites had potential contamination from agricultural chemical residues, aerially deposited lead from vehicle exhaust, and dumping of household refuse near the intersection of Isabel Avenue and Jack London Boulevard.

Historical land uses at and adjacent to the study area have included a variety of agricultural, residential, commercial, and industrial uses. SR 84 was extensively redeveloped in the 1990s with the construction of the current roadway between Vallecitos Road and Vineyard Avenue in the southern portion of the project and between Stanley Boulevard and Jack London Boulevard in the northern portion of the

project. Current land uses potentially associated with hazardous materials adjacent to SR 84 in the study area include agricultural fields, a gravel quarry, railroad tracks, and a City Water Reclamation Plant. No evidence of hazardous materials releases from these land uses was noted during site reconnaissance. Two sites of potential concern were identified during the background review, but no evidence of these sites was detected during the field reconnaissance. These sites were a former gasoline storage tank (shown on historic topographic maps) and a refuse dumping near Jack London Boulevard (identified in a previous site reconnaissance).

A review of records obtained from regulatory agency databases identified 22 sites that use, store, or dispose of hazardous materials in the study area. Five sites within the study area have reported releases of hazardous materials. These hazardous materials releases are described in Table 2.13-1. None of the releases are currently under regulatory oversight. The releases are not expected to affect development of the project.

**Table 2.13-1 Hazardous Material Release Sites**

No.	Site Name/Address	Regulatory Agency List	Status
1	291 Rickenbacker Circle	CHMIRS	Release of chlorine gas to the air reported in February 1997 due to a faulty valve.
2	Mocho Creek at 173 Summertree Drive	CHMIRS; ERNS	Release of approximately 15 gallons of surplus paint and paint supplies to storm drain leading to a creek reported in 1994. Cleanup by City of Livermore.
3	415 Covellite Lane	CHMIRS, ERNS	Approximately 1 gallon of household paint released to ground at this location in August 2003.
4	Associated Concrete Products 1901 Isabel Avenue	LUST; ERNS; CS; Notify 65	Release of gasoline affecting soil only reported in April 1991. Contaminated soil was excavated and treated and/or disposed of off-site. Site closed in August 1993. Hazardous materials incident involving former underground storage tank and an unknown quantity of gasoline reported in November 1990.
5	Vineyard Ave West of SR 84	ERNS	Release of 4 gallons of paint and 2 quarts of an unknown substance reported in January 1994.

Notes:

CHMIRS = California Hazardous Materials Incident Reporting System Database

CS = Alameda County Contaminated Site List

ERNS = Federal Emergency Response Notification System database of hazardous material incidents

LUST = State database of leaking underground storage tank sites

Notify 65 = List of hazardous materials sites compiled in 1993 in accordance with California Proposition 65.

Contamination could be encountered near the northwestern corner of Isabel Avenue and Vineyard Avenue due to a release from a former gasoline storage tank that may

have been associated with the gravel quarry in that area (the former Associated Concrete Products underground storage tank).

Aerially deposited lead from vehicle exhaust could be present in shallow soils near roadways in the study area. If aerially deposited lead is found, soils near the roadways could require special handling and disposal conditions.

California Department of Mines and Geology (now the CGS) mapping does not indicate any naturally occurring asbestos hazards in the study area. However, concrete in the Arroyo del Valle Bridge structure may potentially contain asbestos if the aggregate used to make it contained naturally occurring asbestos. Buildings at the former Orchid Ranch have the potential to contain asbestos and/or lead-based paint due to their age, but the buildings may be removed by the property owner/developer independent of the proposed project.

### **2.13.3. Environmental Consequences**

Agricultural land uses, which likely included the use of agricultural chemicals, and a former gasoline tank near the Isabel Avenue/Vineyard Avenue intersection may have the potential to affect the soils at the project. A potential also exists for aerially deposited lead from vehicle exhaust to be present in shallow soils near roadway shoulders along SR 84 as a result of the historical use of leaded gasoline. Improper handling or disposal of contaminated materials could result in an adverse impact to the environment or public health and safety.

As SR 84 is an existing roadway, the project would not create any additional hazards related to the transport, use, or disposal of hazardous materials.

### **2.13.4. Avoidance, Minimization, and/or Mitigation Measures**

The following are proposed to avoid or minimize contact with hazardous materials:

- **Shallow Soil Investigation.** Prior to project construction, a shallow soil investigation will be performed in the study area to determine if lead from vehicle exhausts and/or residues of organic or inorganic agricultural chemicals have affected shallow soils that could be encountered during project development. Depending on the findings of the investigation, special soil management and disposal procedures may be required and/or additional construction worker health and safety procedures may be implemented during project construction.

- **Investigation and Abatement of Potential Asbestos and Lead-Based Paint.** Prior to project construction, an asbestos and lead-based paint survey will be performed for all structures constructed prior to 1980 that may be demolished during project development. Concrete from the Arroyo del Valle Bridge structure and other concrete structures that could be affected by the project will be tested for asbestos. If asbestos or lead is present in the buildings or concrete structures, abatement and construction worker health and safety measures may be required for demolition activities.
- **Development of Construction Risk Management Plan (CRMP).** Prior to project construction, a CRMP will be prepared to address potential hazardous material issues during construction of the project. The CRMP should include available data from sampling conducted in the study area and all health, safety, and soil management and disposal procedures that are determined to be necessary for the project, based on the findings of the soil investigation. The CRMP will also address the possibility of encountering unknown contamination or buried hazards, such as previously unreported underground storage tanks. The CRMP will include emergency procedures for accidental releases of hazardous materials used or stored during construction activities.

## 2.14. Air Quality

The following discussion is based on the Air Quality Analysis (Baseline Environmental Consulting, June 2008).

### 2.14.1. Regulatory Setting

The Clean Air Act as amended in 1990 is the Federal law that governs air quality. Its counterpart in California is the California Clean Air Act of 1988. These laws set standards for the quantity of pollutants that can be in the air. At the Federal level, these standards are called National Ambient Air Quality Standards (NAAQS). Standards have been established for six criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), particulate matter, lead, and sulfur dioxide (SO<sub>2</sub>).

Under the 1990 Clean Air Act Amendments, the U.S. Department of Transportation cannot fund, authorize, or approve Federal actions to support programs or projects that are not first found to conform to the State Implementation Plan (SIP) for achieving the goals of the Clean Air Act requirements. Conformity with the Clean Air

Act takes place on two levels—first, at the regional level, and second, at the project level. The proposed project must conform at both levels to be approved.

Regional-level conformity in California is based on how well the region is meeting the standards set for CO, NO<sub>2</sub>, O<sub>3</sub>, and particulate matter. California is in attainment for the other criteria pollutants. At the regional level, Regional Transportation Plans (RTPs) are developed that include all of the transportation projects planned for a region over a period of years, usually at least 20. Based on the projects included in the RTP, an air quality model is run to determine whether the implementation of those projects would conform to emission budgets or other tests showing that attainment requirements of the Clean Air Act are met. If the conformity analysis is successful, the regional planning organization, such as the MTC for the Bay Area, and the appropriate Federal agencies, such as FHWA, make the determination that the RTP is in conformity with the SIP for achieving the goals of the Clean Air Act. Otherwise, the projects in the RTP must be modified until conformity is attained. If the design and scope of the proposed transportation project are the same as described in the RTP, then the proposed project is deemed to meet regional conformity requirements for purposes of project-level analysis.

Conformity at the project level also requires “hot spot” analysis if an area is “nonattainment” or “maintenance” for CO and/or particulate matter. A region is a nonattainment area if one or more monitoring stations in the region fail to attain the relevant standard. Areas that were previously designated as nonattainment areas but have recently met the standard are called maintenance areas. Hot spot analysis is essentially the same, for technical purposes, as CO or particulate matter analysis performed for NEPA and CEQA purposes. Conformity includes some specific standards for projects that require a hot spot analysis. In general, projects must not cause the CO standard to be violated, and in nonattainment areas, the project must not cause any increase in the number and severity of violations. If a known CO or particulate matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

## **2.14.2. Affected Environment**

### **2.14.2.1. Climate, Meteorology, and Topography**

The Livermore Valley is a sheltered inland valley near the eastern border of the Bay Area Air District. Air pollution potential is high in the Livermore Valley, especially for photochemical pollutants during the summer and fall months. High temperatures

increase the potential for O<sub>3</sub> to build up in the atmosphere. The valley not only traps locally generated pollutants but can also be the receptor of O<sub>3</sub> and O<sub>3</sub> precursors from San Francisco, Alameda, Contra Costa, and Santa Clara counties. The sheltering effect of the valley, its distance from moderating water bodies, and the presence of a strong high-pressure system contribute to the development of strong, surface-based temperature inversions during the winter. Pollutants such as CO and particulate matter generated by motor vehicles, fireplaces, and agricultural burning can become concentrated.

#### **2.14.2.2. Air Quality Pollutants of Concern in the Bay Area**

National and State air quality standards have been established for six ambient air pollutants (referred to as criteria pollutants), which are listed in Table 2.14-1.

The major criteria pollutants of concern in the Bay Area air basin are described below.

- O<sub>3</sub> is a secondary pollutant that forms in the atmosphere as a result of the interaction between ultraviolet light, reactive organic gases (ROGs), and nitrogen oxides (NO<sub>x</sub>). ROGs and NO<sub>x</sub> are generated by motor vehicle exhaust and stationary sources. Air quality programs for O<sub>3</sub> focus on reductions of mobile source emissions. The Bay Area does not attain the national or State 8-hour or State 1-hour ambient standards for this pollutant. The Bay Area Air Quality Management District (BAAQMD) has an approved O<sub>3</sub> attainment plan to reduce O<sub>3</sub> concentrations.
- ROGs are important components of O<sub>3</sub> formation, and their emissions contain gases that are toxic compounds. The primary sources of ROGs are petroleum transfer and storage, mobile sources, and organic solvents. Though no ambient standards exist for ROGs, the regional air quality attainment plan contains many control measures to reduce these gases because they are O<sub>3</sub> precursors.
- NO<sub>x</sub> is created during the combustion of fossil fuels under high temperature and pressure, and contributes to O<sub>3</sub> formation. The Bay Area is in attainment of the national and State ambient NO<sub>2</sub> standards.
- Particulate matter less than 10 micrometers in diameter (PM<sub>10</sub>) and less than 2.5 micrometers in diameter (PM<sub>2.5</sub>) consist of atmospheric particles from sources including industrial and agricultural operations, motor vehicle tire wear, combustion, atmospheric photochemical reactions, burned agriculture waste, construction activities, and wind-raised dust. PM<sub>10</sub> may generally be referred to as “coarse particles” and PM<sub>2.5</sub> as “fine particles,” relative to their aerodynamic

**Table 2.14-1 Bay Area Air Quality Attainment Status**

Pollutant	Averaging Time	California Standards <sup>1</sup>		National Standards <sup>2</sup>	
		Concentration	Attainment Status	Concentration <sup>3</sup>	Attainment Status
Ozone (O <sub>3</sub> )	8 Hour	0.070 ppm (137 µg/m <sup>3</sup> )	N <sup>9</sup>	0.075 ppm	N <sup>4</sup>
	1 Hour	0.09 ppm (180 µg/m <sup>3</sup> )	N		<sup>5</sup>
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m <sup>3</sup> )	A	9 ppm (10 mg/m <sup>3</sup> )	A <sup>6</sup>
	1 Hour	20 ppm (23 mg/m <sup>3</sup> )	A	35 ppm (40 mg/m <sup>3</sup> )	A
Nitrogen Dioxide (NO <sub>2</sub> )	1 Hour	0.18 ppm (338 µg/m <sup>3</sup> )	A		
	Annual Arithmetic Mean	0.030 ppm (56 µg/m <sup>3</sup> )		0.053 ppm (100 µg/m <sup>3</sup> )	A
Sulfur Dioxide (SO <sub>2</sub> )	24 Hour	0.04 ppm (105 µg/m <sup>3</sup> )	A	0.14 ppm (365 µg/m <sup>3</sup> )	A
	1 Hour	0.25 ppm (655 µg/m <sup>3</sup> )	A		
	Annual Arithmetic Mean			0.030 ppm (80 µg/m <sup>3</sup> )	A
Particulate Matter (PM <sub>10</sub> )	Annual Arithmetic Mean	20 µg/m <sup>3</sup>	N <sup>7</sup>		
	24 Hour	50 µg/m <sup>3</sup>	N	150 µg/m <sup>3</sup>	U
Particulate Matter - Fine (PM <sub>2.5</sub> )	Annual Arithmetic Mean	12 µg/m <sup>3</sup>	N <sup>7</sup>	15 µg/m <sup>3</sup>	A
	24 Hour			35 µg/m <sup>3</sup> See Footnote 10	U
Sulfates	24 Hour	25 µg/m <sup>3</sup>	A		
Lead	Calendar Quarter			1.5 µg/m <sup>3</sup>	A
	30 Day Average	1.5 µg/m <sup>3</sup>	A		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m <sup>3</sup> )	U		
Vinyl Chloride (chloroethene)	24 Hour	0.010 ppm (26 µg/m <sup>3</sup> )	No information available		
Visibility Reducing particles	8 Hour (10:00 to 18:00 PST)	See Footnote 8	U		

**Source:** BAAQMD, updated January 4, 2007.

**Notes:** A=Attainment, N=Nonattainment, U=Unclassified; mg/m<sup>3</sup>=milligrams per cubic meter; ppm=parts per million; µg/m<sup>3</sup>=micrograms per cubic meter

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, suspended particulate matter - PM<sub>10</sub>, and visibility reducing particles are values that are not to be exceeded. The standards for sulfates, Lake Tahoe carbon monoxide, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour or 24-hour average (i.e., all standards except for lead and the PM<sub>10</sub> annual standard), then some measurements may be excluded. In particular, measurements are excluded that CARB determines would occur less than once per year on the average.
2. National standards other than for ozone, particulates and those based on annual averages are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the 3-year average of the 4th-highest daily concentrations is 0.075 ppm or less. The 24-hour PM<sub>10</sub> standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 µg/m<sup>3</sup>. The 24-hour PM<sub>2.5</sub> standard is attained when the 3-year average of 98th percentiles is less than 65 µg/m<sup>3</sup>. Except for the national particulate standards, annual standards are met if the annual average falls below the standard at every site.

**Notes from Table 2.14-1, continued**

The national annual standard for PM<sub>10</sub> is met if the 3-year average falls below the standard at every site. The annual PM<sub>2.5</sub> standard is met if the 3-year average of annual averages spatially-averaged across officially designed clusters of sites falls below the standard.

3. National air quality standards are set at levels to be protective of public health with an adequate margin of safety.
  4. In June 2004, the Bay Area was designated as a marginal nonattainment area of the national 8-hour ozone standard.
  5. The national 1-hour ozone standard was revoked by USEPA on June 15, 2005.
  6. In April 1998, the Bay Area was redesignated to attainment for the national 8-hour carbon monoxide standard.
  7. In June 2002, CARB established new annual standards for PM<sub>2.5</sub> and PM<sub>10</sub>.
  8. Statewide VRP Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.
  9. The 8-hour State ozone standard was approved by CARB on April 28, 2005, and became effective on May 17, 2006.
  10. USEPA lowered the 24-hour PM<sub>2.5</sub> standard from 65 µg/m<sup>3</sup> to 35 µg/m<sup>3</sup> in 2006. USEPA is required to designate the attainment status of BAAQMD for the new standard by December 2009.
- 

diameter. The Bay Area is designated as unclassified for the national ambient standard for PM<sub>10</sub> and in nonattainment of the State ambient standard. The Bay Area is designated as attainment for the national annual arithmetic mean PM<sub>2.5</sub> standard and nonattainment for the State standard. The USEPA lowered the national 24-hour PM<sub>2.5</sub> standard in 2006. As attainment of the PM<sub>2.5</sub> standard is based on a three-year average, the USEPA is required to designate the Bay Area's attainment status by December 2009.

- CO is an odorless, invisible gas usually formed as the result of incomplete combustion of organic substances. Motor vehicles are a primary source of CO. CO tends to dissipate rapidly into the atmosphere. Consequently, violations of the CO standard are generally limited to major intersections during peak-hour traffic conditions. The Bay Area is in attainment of the national and State ambient standards for this pollutant.
- Sulfur oxides (SO<sub>x</sub>) can damage and irritate lung tissue, accelerate the corrosion of exposed materials, and harm vegetation. SO<sub>2</sub> is a colorless gas created by the combustion of sulfur-containing fossil fuels. The Bay Area is in attainment of the national and State ambient standards for this pollutant.
- Lead is a metal that was used to increase the octane rating in auto fuel, a practice that is no longer allowed. The Bay Area is in attainment of the national and State standards for this pollutant.

### **2.14.2.3. Existing Air Quality**

The BAAQMD operates a network of air monitoring sites throughout the Bay Area Air Basin. The Air Quality Analysis (Baseline Environmental Consulting 2008) summarizes air quality monitoring data with respect to State and Federal standards measured at the closest monitoring station to the project site, approximately 1 mile to the east at 793 Rincon Avenue in Livermore. Monitoring of O<sub>3</sub> showed exceedances of the State 1-hour standard for every year since 2000, and no exceedances of the

national 1-hour standard for 2001, 2004, and 2005 (however, exceedances were recorded in 2000, 2002, and 2003). No exceedances of the CO, PM<sub>10</sub>, or PM<sub>2.5</sub> standards were recorded between 2002 and 2005.

#### **2.14.2.4. Transportation Conformity with Air Quality Plans** ***Transportation Conformity Process and Requirements***

The proposed project is programmed for Federal transportation project funding. Transportation projects receiving Federal funding must demonstrate that they do not exceed the emissions inventory allowance in the SIP and, therefore, conform to the current SIP. The SIP describes how a state will maintain or meet the NAAQS. Each region in the state submits its emissions allowances and strategies for reducing emissions of air pollutants that are above the NAAQS to the California Air Resources Board (CARB), which prepares the SIP. SIPs are compilations of new and previously submitted plans, programs (such as monitoring, modeling, permitting, etc.), district rules, State regulations, and Federal controls. Many of California's SIPs rely on the same core set of control strategies, including emission standards for cars and heavy trucks, fuel regulations and limits on emissions from consumer products. State law makes the CARB the lead agency for all purposes related to the SIP.

Transportation planning is coordinated with this conformity process. The RTP contains a long-range plan for transportation projects and estimated costs of each project. The Transportation Improvement Program (TIP) also contains planned transportation projects but is more restrictive: the projects in the TIP must be funded or partially funded within a three-year planning period. The RTP and TIP are consequently updated on a regular basis to reflect changes in priorities, project costs, and timing. The air quality evaluations for updated RTPs and TIPs include emissions allowances for designated or planned projects within the jurisdiction of a local regional transportation agency (i.e., the MTC). All projects included in the TIP must be derived from or be consistent with the RTP. The TIP must conform to the SIP by having emissions allowances for the planned projects that do not exceed the emissions allowance in the SIP. For an individual project to conform to the SIP, it must be contained in a "conforming" TIP that meets this criterion. Conformity of the project to this established process is summarized in "Regional Air Quality Conformity" below and in Section 2.14.3.

#### ***Applicable Air Quality Plans***

The BAAQMD periodically prepares and updates plans (which are elements of the SIP) to achieve the goal of healthy air. Typically, a plan will analyze emissions

inventories (estimates of current and future emissions from industry, motor vehicles, and other sources) and combine that information with air monitoring data (used to assess progress in improving air quality) and computer modeling simulations to test future strategies to reduce emissions to achieve air quality standards. Air quality plans usually include measures to reduce air pollutant emissions from industrial facilities, commercial processes, motor vehicles, and other sources. Bay Area plans are prepared with the cooperation of the MTC and the ABAG.

Applicable regulatory air quality plans are listed and explained below. The CO plan was adopted to maintain levels below the Federal standard. The 2001 O<sub>3</sub> plan was adopted in response to monitored pollutant levels that did not meet the Federal standard, and the 2005 plan was adopted to achieve attainment of the State 1-hour standard.

Pollutant	Applicable Implementation Plan or SIP
CO	2004 Revision to the California State Implementation Plan for CO, Updated Maintenance Plan for Ten Federal Planning Areas (updates the 1996 CO Maintenance Plan). Effective on January 30, 2006.
O <sub>3</sub>	Bay Area 2005 Ozone Strategy, adopted January 4, 2006, and 2001 Ozone Attainment Plan, San Francisco Bay Area (amends the San Francisco Bay Area Ozone Attainment Plan for the 1-hour National Ozone Standard, adopted June 1999).

For CO, the SIP was revised and adopted in 1996 to document that the Bay Area was one of 10 areas in the State that had attained the Federal 8-hour CO standard and had demonstrated measures to maintain compliance with the standard. In 2003, monitored ambient CO levels reported by CARB for the Bay Area were 4.9 parts per million, or approximately 50 percent of the Federal standard. In 2005, the CARB proposed to extend the existing CO maintenance plan to 2018, which was adopted by the USEPA in January 2006.

In 1998, the Bay Area Air Basin was designated as a nonattainment area for the national 1-hour O<sub>3</sub> standard. By 2004, air monitoring data demonstrated that the Basin had achieved the national standard, but the USEPA revoked the Federal 1-hour O<sub>3</sub> ambient air quality standard in 2005, including associated designations and classifications, in favor of the new 8-hour O<sub>3</sub> ambient air quality standard. On April 15, 2004, the USEPA designated 15 areas in California, including the Basin, in violation of the new standard. Each nonattainment area was classified as marginal, moderate, serious, or severe, and assigned attainment deadlines based on the severity of its O<sub>3</sub> problem. The BAAQMD is classified as a marginal nonattainment area with respect to the 8-hour O<sub>3</sub> standard. SIPs demonstrating attainment of the new Federal

O<sub>3</sub> standard must be adopted by the local air districts and the CARB and submitted to the USEPA by June 15, 2007. In March 2008, the USEPA revised the national 8-hour primary ozone standard to 0.075 ppm.

The BAAQMD prepared the Bay Area 2005 Ozone Strategy and adopted the plan on January 4, 2006. The plan defines measures for the Bay Area to comply with the State 1-hour air quality standard for ozone and to reduce transport of ozone and ozone precursors to neighboring air basins. The BAAQMD must also determine whether the strategies designed to achieve the 1-hour State standard will also be effective in meeting the 8-hour State standard and modify proposed regulations or identify new, additional rules that will be needed to achieve the 8-hour standard. Marginal areas were not required to prepare attainment demonstrations for the 8-hour Federal standard. The BAAQMD plans to address all requirements of the Federal 8-hour standard in subsequent documents. An update of the Bay Area 2005 Ozone Strategy is in progress.

### ***Regional Air Quality Conformity***

The proposed project has been funded and is included in the Transportation 2030 Plan.<sup>22</sup> The project is also included in the MTC financially constrained 2007 TIP (TIP ID ALA050014). On July 26, 2007, the MTC found that the Transportation 2030 Plan and the 2007 TIP are in conformity with the SIP (Resolution No. 3756). The 2007 TIP and MTC's air quality conformity finding was also found to conform by FHWA and the Federal Transit Administration. The design concept, scope, and opening year of the proposed project has not changed significantly since its inclusion in the 2007 TIP; therefore, the project is consistent with the Transportation 2030 Plan, the 2007 TIP, and the assumptions in the MTC's regional emissions analysis.

## **2.14.3. Environmental Consequences**

The evaluation of air quality impacts addressed in this section focuses on the project's conformity with the regional air quality framework and the project's potential to result in an adverse impact to the region's compliance with the relevant standards.

### **2.14.3.1. Evaluation of Traffic-Related CO Impacts**

One pollutant, CO, is of primary concern at a localized level, especially where people are closest to congested traffic. Changes in localized CO concentrations were

---

<sup>22</sup> The San Francisco Bay Area's current Regional Transportation Plan (RTP) is known as the "Transportation 2030 Plan" (Reference No. 22776).

estimated using CALINE4 Version 1.31, a dispersion model for predicting air pollutant concentrations near roadways; methods for this analysis are reported in detail in the Air Quality Analysis (Baseline Environmental Consulting 2008). The CO analysis performed for the project followed the procedures outlined in the *Transportation Project-Level Carbon Monoxide Protocol* (Caltrans 1997). Vehicle CO emission rates were based on CARB's Emission Factor Emission Inventory Model (EMFAC-2002) for Alameda County. Use of the EMFAC-2002 model is consistent with the regional modeling methods performed by MTC for the 2007 TIP.

Highly congested traffic conditions are the primary cause of localized CO "hot spots." Carbon monoxide concentrations approximately 9.8 feet from the edge of the roadway were estimated at the following major intersections: Isabel Avenue and Airway Boulevard, Isabel Avenue and Jack London Boulevard, Stanley Boulevard and Stanley Connector, Isabel Avenue and Stanley Connector, Isabel Avenue and Concannon Boulevard, Isabel Avenue and Vineyard Avenue, Isabel Avenue and Vallecitos Road, Vallecitos Road and Ruby Hill Drive, and Discovery Drive and Isabel Avenue. The CO concentrations were estimated for baseline conditions in 2005 and cumulative conditions in 2030, with and without the project.

The highest CO concentration measured at the nearest CARB air monitoring station (793 Rincon Avenue, Livermore) in 2005 was used in the model as the background CO concentration. With or without the project, localized CO concentrations are predicted to decrease (improve) between 2005 and 2030. This benefit would occur because the CARB expects continued future improvements in fuel formulations and vehicle emission controls, and older, higher polluting vehicles would continue to be retired from use as California drivers replace them with newer, more efficient cars. Future CO concentrations would increase slightly with the proposed project (between 0 to 0.7 parts per million depending on location for a 1-hour period) in comparison to the No Build modeling results for the AM and PM peak periods. This increase is expected, as the project adds an additional lane of traffic in both directions. However, the modeling results showed that the project would not result in localized CO "hot spots" at intersections exceeding either NAAQS or State Ambient Air Quality Standards for CO and would therefore not have an adverse impact in terms of causing an exceedance of an air quality standard.

#### **2.14.3.2. Particulate Matter "Hot Spot" Analysis**

The project is in an area that meets the Federal particulate matter or PM<sub>10</sub> standards but does not meet the more stringent State standards. A qualitative review was

performed against several established criteria to assess the project's potential to cause a violation of the Federal PM<sub>10</sub> standard. These criteria include that the proposed project is not expected to have any adverse effects on microscale particulate levels or contribute to a PM<sub>10</sub> hot spot that would cause or contribute to violations of the PM<sub>10</sub> NAAQS. The project does not involve unpaved shoulders or roads, is not in an area with an unusually high concentration of diesel vehicles such as truck/bus terminals or rail yards, and is not in an area with heavy wintertime sanding operations for snow control.

The particulate hot spot determination is summarized as follows:

- The SR 84 project is included in the MTC's Transportation 2030 Plan, which was adopted on July 28, 2004, and found to conform to the SIP. The project has therefore been accounted for and assessed in regional air quality planning.
- Monitoring at the nearest air quality station to the project (793 Rincon Avenue, Livermore) shows no exceedances of Federal standards in recent years.

PM<sub>10</sub> control measures are included in the attainment plan for PM<sub>10</sub> in air basins that do not meet Federal PM<sub>10</sub> standards. The Bay Area Air Basin currently attains the Federal standard, and the attainment plan is not currently applicable to this project.

#### **2.14.4. Construction Impacts**

Construction is a source of dust emissions that can have temporary impacts on local air quality, including the potential to cause exceedances of the State air quality standards for PM<sub>10</sub>. Construction emissions would result from earthmoving and heavy equipment use involved in land clearing, ground excavation, cut and fill operations, and construction of the project facilities. Dust emissions would vary from day to day depending on the level of activity, the specific operations, and the prevailing weather.

In addition to particulate emissions from earth moving, combustion emissions (CO, NO<sub>x</sub>, PM<sub>10</sub>, and ROG) from construction equipment may create a temporary impact on local air quality. Such equipment is typically diesel fueled and can contribute NO<sub>x</sub> and PM<sub>10</sub> emissions during the construction period.

#### **2.14.5. Mobile Source Air Toxics**

In addition to the criteria air pollutants for which standards exist, the USEPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources. Mobile Source Air Toxics (MSATs) are a subset of the air

toxics defined by the Clean Air Act. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

According to FHWA air toxic analysis guidance, roadways with an annual average daily traffic (AADT) of less than 140,000 to 150,000 vehicles per day are considered likely to have low potential for MSAT effects.<sup>23</sup> The AADT on SR 84 is 27,000 vehicles at the southern project limits (near Ruby Hill Drive) and 16,300 vehicles at the northern limits (Jack London Boulevard), well below the threshold established in the FHWA guidance. Accordingly, this document includes a basic analysis of the likely MSAT emission impacts of the proposed project. Available technical tools do not enable prediction of project-specific health impacts of the emission changes associated with this project. Due to these limitations, the following discussion is included in accordance with CEQ regulations (40 CFR 1502.22[b]).

Evaluating the environmental and health impacts from MSATs on a proposed highway project requires several key elements, including emissions modeling; dispersion modeling to estimate ambient concentrations resulting from the estimated emissions; exposure modeling to estimate human exposure to the estimated concentrations; and final determination of health impacts based on the estimated exposure. Each of these steps is encumbered by technical shortcomings or uncertain science that prevents a more complete determination of the MSAT health impacts of this project. Detail on these limitations is provided in the FHWA air toxic analysis guidance.

As discussed above, technical shortcomings of emissions and dispersion models and uncertain science with respect to health effects prevent meaningful or reliable estimates of MSAT emissions and effects of this project. However, even though no reliable methods exist to accurately estimate the health impacts of MSATs at the project level, it is possible to qualitatively assess the levels of future MSAT emissions under the project. Although a qualitative analysis cannot identify and measure health impacts from MSATs, it can provide a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted

---

<sup>23</sup> FHWA Guidance on Air Toxic Analysis in NEPA Documents (2006), URL: [www.fhwa.dot.gov/environment/airtoxic/020306guidmem.htm](http://www.fhwa.dot.gov/environment/airtoxic/020306guidmem.htm)

by the FHWA entitled “A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives.”<sup>24</sup>

For the proposed project and No Build Alternative, the amount of MSATs emitted would be proportional to the vehicle miles traveled (VMT), assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for the proposed project is slightly higher than that for the No Build Alternative, because the additional capacity increases the efficiency of the roadway and attracts rerouted trips from elsewhere in the transportation network. In 2030, peak VMT would increase from 181,460 to 190,860 VMT per hour in the AM, and 198,810 to 209,060 in the PM. This increase in VMT would lead to higher MSAT emissions for the Build Alternative along the highway corridor, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to the USEPA’s MOBILE6 emissions model, emissions of all of the priority MSATs except for diesel particulate matter decrease as speed increases. The extent to which these speed-related emissions decreases will offset VMT-related emissions increases cannot be reliably projected due to the inherent deficiencies of the technical models.

Because the estimated VMT varies by 5 percent or less between the proposed project and No Build Alternative, no appreciable difference in overall MSAT emissions is expected. Also, regardless of the alternative chosen, emissions will likely be lower than current levels in future years as a result of USEPA national programs that are projected to reduce MSAT emissions by 57 to 87 percent between 2000 and 2020. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the USEPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The additional travel lanes included in the proposed project will require minor widening and realignment of SR 84, but for the most part the roadway will remain in the same location within the existing right-of-way. When a highway is widened and, as a result, moves closer to homes or other receptors, the localized level of MSAT emissions could be higher relative to the No Build Alternative. However, this effect is considered negligible with the limited realignment and could be offset due to

---

<sup>24</sup> URL: [www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemiissions.htm](http://www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemiissions.htm)

increases in speeds and reductions in congestion, which are associated with lower MSAT emissions. Also, MSATs will be lower in other locations when traffic shifts away from them. The USEPA's vehicle and fuel regulations, combined with fleet turnover, will over time cause substantial reductions in regionwide MSAT levels.

#### **2.14.6. Avoidance, Minimization, and/or Mitigation Measures**

No substantial impacts to air quality would result from implementation of this project. Caltrans Special Provisions and Standard Specifications will include the requirement to minimize or eliminate dust through the application of water or dust palliatives. Implementation of dust control practices would minimize or avoid potential exceedances (violations) of the particulate matter air quality standards during construction. Avoidance and minimization measures to be considered during final design will include the following, in accordance with BAAQMD CEQA Guidelines:

- Water all active construction areas at least twice daily;
- Cover soil, sand, and other loose materials transported by trucks with tarpaulins or other effective covers;
- Sweep or otherwise remove dust and soils at least twice daily from roadways during truck transport activities;
- Hydroseed or apply nontoxic soil stabilizers to inactive construction areas (previously graded area inactive for 10 days or more);
- Enclose, cover, water at least twice daily, or apply nontoxic soil binders to exposed stockpiles (dirt, sand, etc.);
- Limit traffic speeds on unpaved roads to 15 miles per hour;
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways;
- Replant vegetation in disturbed areas as quickly as possible;
- Install temporary gravel pads at exits to minimize soil from adhering to construction equipment/truck tires or being tracked from the construction site;
- Terminate or restrict excavation and grading activities when winds result in fugitive dust emissions that are visible for a distance of at least 100 feet from the origin of such emissions, and/or where there is visible evidence of continuous wind-driven fugitive dust. Alternatively, implement or increase the application of the above measures to effectively reduce dust emissions;
- Include contractor specifications that limit construction equipment idling time to five minutes or less;
- Use the minimum practical engine size for construction equipment; and

- Equip gasoline-powered equipment with catalytic converters, where feasible.

## **2.15. Noise**

A Noise Study Report (Wilson, Ihrig and Associates, April 2007) was completed for this project to evaluate noise-sensitive land uses along SR 84 in the project limits.

### **2.15.1. Regulatory Setting**

NEPA and CEQA provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation, however, differ between NEPA and CEQA.

#### **2.15.1.1. California Environmental Quality Act**

CEQA requires a strictly no-build versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are not feasible.

#### **2.15.1.2. National Environmental Policy Act and 23 CFR 772**

For highway transportation projects with FHWA involvement, the Federal-Aid Highway Act of 1970 and the associated implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations contain noise abatement criteria (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 A-weighted decibels [dBA]) is lower than the NAC for commercial areas (72 dBA). Table 2.15-1 lists the NAC for use in the NEPA/23 CFR 772 analysis.

Table 2.15-2 lists the noise levels of common activities to enable readers to compare the actual and predicted highway noise levels discussed in this section with common activities.

**Table 2.15-1 Federal Noise Abatement Criteria**

Activity Category	Noise Abatement Criteria (dBA) $L_{eq}(h)$ <sup>1, 2</sup>	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to serve its intended purpose.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	--	Undeveloped lands.
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

<sup>1</sup> Noisiest hour expressed as the energy average of the A-weighted noise level occurring during a one-hour period, or  $L_{eq}(h)$ .  
<sup>2</sup> Note that criteria is applied as 'approach or exceed' the thresholds, which has been defined as 1 dBA. For Category B, the "approaching the NAC" is therefore 66 dBA, as applied in this study.

**Table 2.15-2 Noise Levels of Common Activities**

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Jet Fly-over at 300m (1000 ft)	110	Rock Band
Gas Lawn Mower at 1 m (3 ft)	100	
Diesel Truck at 15 m (50 ft), at 80 km (50 mph)	90	Food Blender at 1 m (3 ft)
Noisy Urban Area, Daytime	80	Garbage Disposal at 1 m (3 ft)
Gas Lawn Mower, 30 m (100 ft)	70	Vacuum Cleaner at 3 m (10 ft)
Commercial Area		Normal Speech at 1 m (3 ft)
Heavy Traffic at 90 m (300 ft)	60	Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime		Library
Quiet Rural Nighttime	30	Bedroom at Night, Concert Hall (Background)
	20	Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

In accordance with the Caltrans *Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects* (August 2006), a noise impact occurs when the future noise level with the project results in a substantial increase in noise level (defined as a 12 dBA or more increase) or when the future noise level with the project approaches or exceeds the NAC. Approaching the NAC is defined as coming within 1 dBA of the NAC.

If it is determined that the project will have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design are incorporated into the project plans and specifications. This document discusses noise abatement measures that would likely be incorporated in the project.

Caltrans' *Traffic Noise Analysis Protocol* sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is an engineering evaluation. A minimum 5 dBA reduction in the future noise level must be achieved for an abatement measure to be considered feasible. Other considerations include topography, access requirements, other noise sources and safety considerations. The reasonableness determination is a cost-benefit analysis. Factors used in determining whether a proposed noise abatement measure is reasonable include residents' acceptance, the absolute noise level, build versus existing noise, environmental impacts of abatement, public and local agencies input, newly constructed development versus development pre-dating 1978, and cost per benefited residence.

### **2.15.2. Affected Environment**

On the east side of SR 84, from Jack London Boulevard to just north of Arroyo del Valle, potentially noise-sensitive land uses consist of residences and recreational trails. South of Arroyo del Valle, residences are located at the Ruby Hill development west of SR 84, and vineyard estate homes are planned for construction on the east side of SR 84. The backyards or side yards of all residences face SR 84. A bicycle/pedestrian recreational trail parallels SR 84 between Jack London Boulevard and Alden Lane, and a private tennis court and recreation fields lie at the northeast end of the Ruby Hill development. Earthen berms, slopes, and walls along SR 84 provide varying separation, slopes, or barriers between SR 84 traffic and the residences and recreation facilities listed above.

### **2.15.2.1. Noise Measurements and Levels**

Long- and short-term field noise measurements were conducted in September and October 2005 to characterize existing noise levels at land uses in the project limits that could be affected by project-related noise. Long-term measurements were conducted at nine representative locations throughout the project area to identify peak traffic noise levels and when they occur. Short-term (20- to 30-minute) digital tape recordings were made simultaneously with traffic counts at 14 locations. The short-term measurements were used to develop calibration factors for the noise model based on actual traffic volumes and vehicle speeds during the noise samples. Measurements were taken at locations where noise from SR 84 clearly dominated the noise environment and other intermittent local noise sources (e.g., airplane flyovers, train horns, etc.) did not influence the energy average  $L_{eq}$  noise levels. The noise measurements and simultaneous traffic counts were used to calibrate the noise model, such that the model predicted noise levels at monitoring locations equal to the measured levels. Once the model was correctly calibrated, it was then used to predict future noise levels along the project corridor at various study locations, applying vehicle volumes and speeds that predict representative future worst-case traffic noise conditions. Details of this noise monitoring and measurement program are included in the Noise Study Report (Wilson, Ihrig and Associates 2007).

In December 2007, additional long-term, multiple-day noise measurements were collected to determine if noise levels changed since the relocation of the SR 84/Vallecitos Road intersection was completed in summer 2007. Measurements were conducted at three of the 2005 monitoring locations for at least two full days to develop a daily average descriptor.

In addition, a study was performed to determine the potential noise effects of an increase in the percentage of heavy truck traffic on receptors in different segments of the project limits for the year 2030, with the project in place. The study assumed that the total numbers of vehicles would remain constant, per the traffic study, but the percentage of heavy trucks would increase. Volumes for medium trucks such as delivery trucks (two axles, six wheels) were kept constant, at 2 percent of the traffic mix.

### **2.15.2.2. Noise Assessment Criteria**

The Federal and State standards, regulations, and policies relating to traffic noise are discussed in detail in the *Traffic Noise Analysis Protocol* (Caltrans 2006). The *Technical Noise Supplement* (Caltrans 1998) establishes guidelines for construction

of barriers along highways where noise-sensitive receptors such as residences are located. These policies fulfill the highway noise analysis and abatement/mitigation requirements for all relevant State and Federal environmental statutes, including those guidelines defined in 23 CFR Part 772.

Under FHWA regulations, noise abatement must be considered for “Type I” projects when the noise levels result in a substantial noise increase, or when the predicted noise levels approach or exceed the NAC. The NAC categories, shown in Table 2.15-1, are assigned to both exterior and interior activities. The Department has further defined the level of “approaching the NAC” to be 1 dBA below the NAC (e.g., 66 dBA is considered approaching the NAC for Category B activity levels, listed in the table as 67 dBA). When levels approach or exceed the applicable NAC categories, noise abatement measures that are reasonable and feasible and that are likely to be incorporated into a project as well as impacts for which no apparent solution is available, must be identified and incorporated into the plans and specifications. A noise increase is considered substantial when the predicted noise levels with the project exceed existing levels by 12 dBA  $L_{eq[h]}$ <sup>25</sup> or more. For noise barriers to be considered feasible, at least a 5-dBA reduction must be achieved. The criteria for judging whether a noise barrier is reasonable is more subjective and takes into account not just the cost of constructing the barrier but other criteria such as how effective the barrier is in terms of the number of homes or land uses it protects, the reduction in traffic noise levels achieved, date of construction of the highway, environmental impacts of installing the barriers (including visual impacts), and public input, among other factors.

### **2.15.3. Environmental Consequences**

#### **2.15.3.1. Permanent Impacts**

Modeling of future year (2030) traffic conditions indicates that highway noise levels are not expected to approach or exceed the NAC at nearby homes after project construction (Table 2.15-3). Most of the residences already benefit from traffic noise reduction provided by existing berms, fences, and walls, and none of the existing residential receivers exceeded the NAC of 67 dBA. Generally, the project is expected to increase noise levels in the study area over the existing condition by a perceptible amount ranging from 1 to 6 dBA, but this increase would not be considered

---

<sup>25</sup>  $L_{eq}$  is the equivalent steady state noise level in a stated period of time that would contain the same acoustic energy as the time varying noise level during the same period.

Table 2.15-3 Noise Model Results – Comparison of Existing to 2030 With Project and 2030 No Build

Study Area	Receiver ID / Position	Crit'n NAC	Existing	Method <sup>(1)</sup>	Peak Hour Noise Level (L <sub>eq</sub> ), dBA		Noise Level Increases		
					2030 No Build <sup>(3)</sup>	2030 w/ Project <sup>(3)</sup>	With Project		w/o Project
							No Build	Over Existing	Over Existing
W. Jack London Boulevard to Arroyo Mocho	1	10 Tamalpais Ave - yard w/ 10 ft wall	67	m	62	62	0	2	2
	2	Logan St - res backyard w/ ~6 ft wall	67	i/c	61	63	2	4	2
	3	Yosemite Dr open lot at PL behind berm <sup>(4)</sup>	67	i/c	51	53	2	3	1
	3A	Ped/Bike Path	--	i/c	71	72	1	4	3
	4	Yosemite Dr @ Cascade res backyard	67	i/c	51	53	2	3	1
	5	Yosemite Dr - res backyard opp. fut Discovery Rd (~120 ft east of berm)	67	i/c	52	53	1	2	1
	6	Rockrose St (near Daisyfield) - res backyard w/ 7.5 ft wall	67	i/c	54	55	1	2	1
	7	16 Rockrose St - res backyard w/ 7.5 ft wall	67	m	54	55	1	2	1
	8	Res opp Stanley Connector, w/ 5 ft wood fence	67	i/c	65	65	0	3	3
	9	367 Covellite Ln - res backyard w/ 6.5 ft wood fence	67	m	56	56	0	2	2
Arroyo Mocho to Crystal Circle	10	116 Amber Way - res backyard w/ 6 ft wood fence	67	i/c	51	51	0	4	4
	11	Crystal Circle - res backyard w/ 6 ft wood fence	67	i/c	52	52	0	4	4
	12	Holm Well Park ~30 ft east of fence line	67	i/c	57	61	4	6	2
	13	Ped/Bike Path btwn Holm Well Park and SR-84	--	i/c	70	72	2	5	3
	14	1625 Sardonyx Rd - res backyard with 7 ft wall <sup>(5)</sup>	67	m	62	64	2	4	2
	14A	Orchid Ranch (potential future res land use)	67	i/c	69	71	2	4	2
	15	1777 Tourmaline Ct - res backyard w/ 6 ft wall	67	m	64	65	1	4	3
	16	63 Tourmaline Ave - res backyard w/ 6 ft wall	67	m	63	65	2	5	3
Holm Well Park to Alden Lane	17	Aria Ct near Concannon - res backyard w/ 10 ft wall	67	i/c	60	62	2	5	3
	18	Cascata Ct - res backyard w/ 10 ft wall	67	i/c	58	60	2	5	3

**Table 2.15-3 Noise Model Results – Comparison of Existing to 2030 With Project and 2030 No Build**

Study Area	Receiver ID / Position	Crit'n NAC	Peak Hour Noise Level (L <sub>eq</sub> ), dBA				Noise Level Increases		
			Existing	Method <sup>(1)</sup>	2030 No Build <sup>(3)</sup>	2030 w/ Project <sup>(3)</sup>	With Project		w/o Project
							No Build	Over Existing	Over Existing
Vineyard Avenue to Ruby Hill Drive <sup>(2)</sup>	19 Tennis Courts	67	61	i/c	62	66	4	5	1
	20 Ruby Hill Park <sup>(5)</sup>	67	61	i/c	63	66	3	5	2
	21 566 Cento Ct - res backyard	67	55	i/c	56	61	5	6	1
	21A Future Vineyard Estate (3rd lot south of E. Vineyard Ave)	67	54	i/c	55	59	4	5	1
	22 491 Trebbiano Pl - res backyard	67	55	m	57	60	3	5	2
	23 583 Montori Ct - res backyard	67	53	i/c	54	58	4	5	1
	24 463 Cabonia Ct - res backyard <sup>(6)</sup>	67	51	m	51	56	5	5	0
	25 E. Ruby Hill Dr - res front yard btwn Sangro Ct & Norante Ct	67	54	i/c	54	58	4	4	0
	26 Norante Ct - res sideyard	67	48	c	52	54	2	6	4
	27 Donata Ct - res sideyard (higher pad elevation)	67	53	c	56	58	2	5	3
	28 E. Ruby Hill Dr - res btwn Donata Ct & Bricco Ct	67	55	c	57	57	0	2	2
	29 E. Ruby Hill Dr - res btwn Bricco Ct & Germano Way (area with 5ft wall)	67	53	c	55	57	2	4	2
	30 Campina Pl - res south of E. Ruby Hill Dr	67	51	c	55	55	0	4	4

(1) Method used to establish existing peak hour L<sub>eq</sub>.

(m) measured = based on linear average of typical peak hour L<sub>eq</sub> data measured at that location.

(i) interpolated = based on measured data at representative location(s).

(c) calculated = based on existing PM peak hour volumes provided by Fehr & Peers Associates.

(i/c) calculated and scaled based on difference between measured data vs. calculated data at nearby location.

(2) 2030 No Build condition includes modified grading around Vallecitos Road.

(3) Assumes 2% HT, 2% MT, 2% MC, 50 mph vehicle speed on SR 84.

(4) Due to the transitory use of the path, not considered a noise-sensitive receptor for purposes of this study.

(5) Additional noise data collected in December 2007 to confirm 2005 data.

substantial under the established criteria as it would not exceed 12 dBA over current levels.

The pedestrian/bicycle paths along the east side of SR 84 between approximately Jack London Boulevard and Alden Lane are currently exposed to exterior noise levels that approach and slightly exceed the NAC for recreation areas. However, future noise levels along the paths would also exceed the NAC with or without the project. The 1 to 2 dBA increase in noise levels from the project would not be a perceptible change and would not interfere with the continued use of the path by bicyclists and pedestrians.

The December 2007 noise measurements showed insignificant changes from the 2005 noise levels, ranging from a decrease of 1.4 dBA to an increase of 0.8 dBA. These differences are within the margin of measurement error due to slight variations in atmospheric conditions, seasonal traffic patterns and composition, and equipment calibration and setup. Therefore, any differences in traffic noise since the 2005 data collection or from the realignment of the SR 84/Vallecitos Road intersection were determined to not affect the conclusions of the original analysis.

The study of potential noise effects of increased truck traffic showed that the heavy truck (5 or more axle) percentage on SR 84 would have to increase substantially to approach or exceed the NAC at nearby homes after project construction. In general, a vehicle mix with 5 percent heavy trucks would produce a noise increase of 1 dBA, and a 10 percent heavy truck mix would produce a noise increase of 2 dBA. To reach the 66 dBA threshold at which noise abatement must be considered:

- North of Concannon Boulevard, heavy trucks would have to make up 5 to 10 percent of total traffic;
- South of Concannon Boulevard, heavy trucks would have to make up more than 10 percent of total traffic; and
- For over 50 percent of the homes along the eastern property line of the Ruby Hill development, heavy trucks would have to make up 40 percent or more of total traffic.

As discussed in Section 2.7.3.3, in 2030 with the project in place, trucks would account for an average of 3.3 percent of all traffic throughout the project limits. In one segment, between Vallecitos Road and Vineyard Avenue, trucks would account for 5 percent, but 2030 noise levels for that segment would be below 60 dBA. At

these truck volume percentages, no segments of the project limits would have 2030 noise levels that approach or exceed the NAC.

### **2.15.3.2. Construction and Temporary Impacts**

Noise transmission from construction activities has the potential to temporarily affect nearby residences, depending on type of equipment and duration of operations. Near the source (measured at 49 feet), noise levels for equipment such as scrapers, bulldozers, trucks, backhoes, pneumatic tools, and pumps range from approximately 80 to 90 dBA. Pile driving might be necessary to install foundation supports, such as for widening the Arroyo del Valle Bridge, and could create the highest noise levels (up to 105 dBA). However, any use of pile driving equipment, if at all, would be for relatively short periods within the overall construction schedule. The clearing of vegetation prior to construction can also result in high noise levels. Construction activities that occur along the median would result in lower construction noise impacts since this noise is farther away and masked by traffic noise. These activities would be temporary, and measures are proposed to minimize the potential impacts.

### **2.15.4. Abatement Measures**

The analysis shows that highway noise levels are not expected to approach or exceed the NAC at nearby homes with the project in place. Therefore, no evaluation was performed for additional abatement measures for any residential uses.

At the Ruby Hill development, some recreation areas are exposed to SR 84 traffic noise levels that approach the NAC. The affected areas consist of the field south of the tennis courts and north of the northernmost residence fronting SR 84, two tennis courts, and a soccer field north of these tennis courts. A 6-foot-high soundwall at the SR 84 right-of-way fronting these facilities (see Layout Sheets L-6 and L-7 in Appendix A) would provide a minimum 5 dBA reduction that qualifies it as a feasible noise barrier from an acoustical standpoint. The Noise Study Report (Wilson, Ihrig and Associates 2007) also considered five “reasonableness” factors in determining a cost allowance for the barrier. These factors included the absolute noise level predicted in future years without any abatement in place, the increase in noise levels with the project, the noise reduction achieved and length of impacted land use protected by the barrier, date of construction of the land use affected and construction of the roadway, and the total cost of installing the barrier. The evaluation estimated that the cost of the abatement measure was within the calculated “reasonableness allowance,” indicating the barrier is feasible from a cost standpoint. Other factors

beside cost and feasibility must be considered before deciding whether to include this soundwall in the project design. The soundwall will block views from the affected recreation areas to the northeast, across the existing vineyard areas, the Arroyo del Valle drainage channel, and distant views. The Ruby Hill development, when originally constructed, included an open metal fence along the edge of the development above SR 84, presumably to allow for this view. Resident and public input on the soundwall received during the review phase of the DED was considered. After consideration of the “reasonableness” factors, this soundwall has been determined to be not reasonable and will not be included in the project.

The pedestrian/bicycle path in the study area along the east side of SR 84 (the Isabel Trail) is currently exposed to exterior noise levels that approach and slightly exceed the NAC for recreation areas. However, a barrier along this trail is not practicable to construct, and a pedestrian/bicycle path is not normally considered a noise-sensitive receiver for purposes of noise abatement evaluation. To be effective, a barrier along the trail would have to be high enough to effectively block the line of sight between users of the path and the expressway traffic. Given the space available, it would have to be a masonry wall and would have to stop well short of the intersection in order to maintain safe sight distance clearances for motorists turning at the intersections. Furthermore, a masonry wall built along the pedestrian/bike path would be aesthetically undesirable and would “wall in” the expressway and path.

At the former Orchid Ranch, peak noise levels from traffic on SR 84 currently exceed the residential NAC and would continue to do so with or without the project. The Orchid Ranch currently does not qualify for abatement because it is a commercial use. The property is planned for future conversion to residential use but has not received final discretionary approvals from the City of Livermore. The City of Livermore should require, and the property owner should include, mitigation for traffic noise levels in the design for any residential development plans for this location.

Roadway noise abatement measures such as the use of “quiet pavement” materials have received attention in recent years, and their effectiveness and application have been studied by the Department and others. At this time, the use of specific roadway surfaces is not yet supported as a noise abatement measure per policy established by FHWA and the Department.<sup>26</sup> Various studies have shown differences in noise levels

---

<sup>26</sup> FHWA Highway Traffic Noise Analysis and Abatement Policy and Guidance, June 1995, and Caltrans Pavement Advisory PSTPA-02, September 6, 2005.

on the order of 2 to 5 dBA between different types of pavement surfaces, but research is still ongoing to determine the extent to which pavement types contribute to the overall traffic noise levels, and the nature of any performance benefit throughout the surface life of the roadway. For instance, noise reduction benefits can be lost when roadway surface voids fill and aggregate becomes “polished” from wear. Pavement referred to as “open graded” can typically provide 3 to 5 dBA reductions compared with conventional dense-graded asphalt pavements. However, tests have found no significant differences between conventional and rubberized open-graded asphalt pavements. Although not considered an abatement measure for purposes of this study, the possibility of applying pavement surfaces that have a noise-reduction benefit, are cost-effective, and meet safety and maintenance requirements, can be considered at the time of final project design and development of contract specifications.

#### **2.15.4.1. Construction Noise Abatement**

To abate potential noise transmission from construction activities, the following measures will be implemented through requirements set for the construction contractors:

- The local noise ordinance for the City of Livermore allows weekday operation of construction equipment from 7:00 AM to 8:00 PM. The City of Pleasanton allows weekday operation of construction equipment from 8:00 AM to 8:00 PM. The noisiest construction activities near residences will be limited to the hours of 8:00 AM to 5:00 PM. Construction will not be permitted during weekends or holidays;
- Temporary walled enclosures may be constructed around especially noisy activities or clusters of noisy equipment. For example, shields made out of plywood can be used as temporary sound barriers and placed between pavement breakers and the nearby homes;
- Noisy operations will be combined to occur at the same time period, as the total noise level produced would not be significantly greater than the level produced if the operations were performed separately, while the total length of time for which neighbors are exposed to high noise levels would be reduced;
- Impact pile driving would be required for bridge foundation construction and will be monitored in noise-sensitive areas. Work will be performed under restricted hours of operation;
- Mufflers will be used on all internal combustion engines, and the engines and mufflers will be properly maintained;

- A disturbance coordinator will be designated to manage construction noise complaints. The name and phone number of this person will be posted conspicuously. The disturbance coordinator will contact residents adjacent to the site whenever noisy operations are programmed;
- Flag persons will be used instead of back alarms on trucks, whenever possible; and
- Vehicles and other gas or diesel-powered equipment will be prohibited from unnecessary warming-up, idling, or engine revving in areas near residential use.

## ***Biological Environment***

### **2.16. Natural Communities**

This section discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Wetlands and other waters of the United States are discussed in Section 2.17. Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed in Section 2.19.

#### **2.16.1. Affected Environment**

Two natural communities of special concern were observed within the project limits or immediate vicinity: purple needlegrass grassland and valley oak woodland.

##### ***Purple Needlegrass Grassland***

Stands of native grasses occur in openings along edges of valley oak woodlands and coastal scrub and also on open grassland slopes in the southern project area. The largest stand dominated by purple needlegrass (*Nassella pulchra*) occurs in the Ruby Hill area on slopes beneath the cultivated vineyards.

##### ***Valley Oak Woodland***

This riparian woodland vegetation type has valley oak (*Quercus lobata*) as the dominant or important tree in the canopy. Other species that comprise a lesser

proportion of the canopy include blue oak (*Quercus douglasii*) and California buckeye (*Aesculus californica*). Shrub species associated with this woodland community are sparse and include poison oak (*Toxicodendron diversilobum*), toyon, blue elderberry (*Sambucus mexicana*), and California sagebrush (*Artemisia californica*). Valley oak woodland occurs along the riparian corridor and slopes adjacent to the Ruby Hill Vineyard.

### ***Other Natural Communities***

In addition to special-status wildlife and plants, the following uncommon natural communities were listed in the California Natural Diversity Database (CNDDDB) (CDFG 2005) records for the regional quadrangles listed for the project area: sycamore alluvial woodland and valley sink scrub.

## **2.16.2. Environmental Consequences**

The proposed project would remove blue oaks and interior live oaks in the southern portion of the project alignment in the vicinity of the Vallecitos Road/Isabel Avenue intersection. Direct impacts to valley oak woodland were estimated based on the area of this vegetation type in the project area. Approximately 1.66 acres occur within the project footprint as defined by the limits of cut and fill. In the project area, approximately 93 oaks have a diameter at breast height (DBH) between 6 and 30 inches, and approximately 12 oaks have a DBH between 30 and 60 inches. Of these, the proposed alignment would affect up to 26 oaks within the following size classes: 24 oaks with a DBH between 1 and 30 inches, and up to two oaks with a DBH between 30 and 60 inches. Additional oaks just outside of the right-of-way could be affected by soil compaction or excavation during construction or by changes in hydrology after construction is completed.

The project alignment avoids areas containing purple needlegrass grassland, sycamore alluvial woodland, and valley sink scrub.

## **2.16.3. Avoidance, Minimization, and/or Mitigation Measures**

Based on the size distribution and recommended mitigation ratios for the 26 oaks, approximately 58 oak trees would need to be planted.<sup>27</sup> Replacement tree plantings could be located in the adjacent environmental conservation area or within the right-

---

<sup>27</sup> Oaks would be replaced at a planned mitigation ratio of two trees for every tree removed with a DBH between 1 and 30 inches, and five trees for every one tree removed with a DBH between 30 and 60 inches.

of-way of the SR 84 corridor. A planting plan would be developed to replace these trees based on criteria including site conditions along the route and adequate clearance from the highway.

## **2.17. Wetlands and Other Waters of the United States**

This section is based on the Jurisdictional Delineation Report (URS, June 2008) and Natural Environment Study (URS, March 2007a).

### **2.17.1. Regulatory Setting**

Wetlands and other waters are protected under a number of laws and regulations. At the Federal level, the CWA (33 USC 1344) is the primary law regulating wetlands and waters. The CWA regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Other waters of the United States include navigable waters, interstate waters, territorial seas and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the CWA, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils subject to saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the CWA.

Section 404 of the CWA establishes a regulatory program that provides that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the USACE with oversight by the USEPA.

Executive Order 11990 also regulates the activities of Federal agencies with regard to wetlands. Essentially, this executive order states that a Federal agency such as FHWA cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: (1) that there is no practicable alternative to the construction and (2) the proposed project includes all practicable measures to minimize harm.

At the State level, wetlands and waters are regulated primarily by the CDFG and the RWQCBs. In certain circumstances, the California Coastal Commission (or Bay Conservation and Development Commission) may also be involved. Sections 1600–

1607 of the California Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify the CDFG before beginning construction. If the CDFG determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFG jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFG.

The RWQCBs were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCBs also issues water quality certifications in compliance with Section 401 of the CWA. See Section 2.11 for additional details.

### **2.17.2. Affected Environment**

For purposes of this section, the project area is defined as the area that may be disturbed during project construction. The project area includes existing State right-of-way along SR 84 from Ruby Hill Drive north to Jack London Boulevard, as well as proposed right-of-way for roadway widening and intersection improvements within the project limits. A broader area surrounding the project area, called the Environmental Study Limit (ESL), was included in the delineation to identify potentially jurisdictional features adjacent to the project area.

The majority of wetlands in the ESL are nonjurisdictional seasonal wetlands located on the Vulcan Materials property on the west side of SR 84 south of Jack London Boulevard. A potentially jurisdictional freshwater marsh wetland occurs in an existing mitigation area along the margin of a side channel of the intermittent stream Arroyo Mocho. Seasonal marshes occur where drainage from small watersheds collects or temporarily ponds, either in swales or adjacent to seasonal streams. Freshwater marshes occur in strips along perennial streams or permanently ponded areas. Potentially jurisdictional waters in the ESL are shown in the figures in Appendix C.

Arroyo Mocho and Arroyo del Valle both flow into the Arroyo de la Laguna and confluence with the Alameda River before entering San Francisco Bay. Arroyo Mocho has been realigned and channelized in the area around SR 84 to control high water flows. Floodplains exist for both drainage features.

### 2.17.2.1. Methods

Potential jurisdictional wetlands in the ESL were delineated on May 3, 9, and 10, 2005, and December 6, 2007, using the routine on-site method described in the USACE *Wetlands Delineation Manual* (Environmental Laboratory 1987). Delineation methods were consistent with the minimum requirements for delineations within the area of the USACE's Sacramento District (USACE 2001). All potential jurisdictional wetland features (creeks and emergent marsh) were inspected in the field for wetland characteristics. Wetland data were collected at representative locations along the ESL. The Jurisdictional Delineation Report (URS 2008) and Natural Environment Study (URS 2007a) detail the wetland surveys performed for the project and are available under separate cover.

### 2.17.2.2. Results

Six potentially jurisdictional waters comprising a total of 3.11 acres were identified in the ESL: Arroyo Mocho, Arroyo del Valle, and four unnamed drainages. The channel of Arroyo del Valle and three of the unnamed drainages function as wetlands. Potentially jurisdictional wetlands and waters of the U.S. are shown in the figures in Appendix C.

#### ***Potentially Jurisdictional Wetlands***

The following were delineated as potentially jurisdictional wetlands based on the presence of emergent vegetation in the channel within the ordinary high water mark:

- Arroyo del Valle (WL-2): This perennial drainage (1.2 acres) has perennial emergent vegetation in the active channel. Wetland vegetation includes arroyo willow (*Salix lasiolepis*), cattail (*Typha latifolia*), and giant reed (*Arundo donax*) within the ordinary high-water mark of the streambed;
- Intermittent Drainage (WL-4): This incised intermittent drainage (0.14 acre) emerges from a 4-foot box culvert on the southwest side of SR 84 before flowing into Arroyo del Valle. The channel bed contains stands of willow. This drainage is the downstream outflow of OW-6, which begins on the south side of the project area;
- Ephemeral Drainage (WL-5): This seasonal drainage (0.12 acre) collects seepage and oversurface flow originating from the Ruby Hill development near Ruby Hill Drive. The drainage flows down a narrow channel with cattail in the bed before cutting a deeper channel and flowing under SR 84 (at Vallecitos Road) through a 4-foot culvert and into a larger intermittent drainage (WL-6), which ultimately flows to Arroyo del Valle; and

- Intermittent Drainage (WL-6): This intermittent drainage (0.76 acre) parallels Vallecitos Road (at SR 84) for a substantial distance under a canopy of valley oak woodland before entering the southern project area. The channel bed is often vegetated with mulefat (*Baccharis salicifolia*) or willow.

### ***Potentially Jurisdictional Other Waters of the United States***

The following were delineated as potentially jurisdictional non-wetland waters of the U.S. based on indicators of ordinary high water elevations such as debris lines, bank incision, and sediment deposits:

- Arroyo Mocho (OW-1): This intermittent stream (0.868 acre) is in a man-made channel composed of cement and riprap. The stream has an earthen bottom with annual ruderal herbaceous plants and bare soil.
- Ephemeral Drainage (OW-3): A seasonal drainage (0.01 acre) emerges from a culvert on the north bank of Arroyo del Valle on the western edge of SR 84. The drainage pools in a small natural basin along a dirt road owned and maintained by Cemex before flowing into the Arroyo del Valle through a small culvert. When runoff is heavy, the culvert is overpowered and surface flow extends across the surface of the dirt road and flows downhill toward the overpass and into a break in the low-flow levee and back into Arroyo del Valle.

## **2.17.3. Environmental Consequences**

### **2.17.3.1. Permanent Impacts**

The proposed alignment minimizes impacts to potentially jurisdictional wetlands and waters of the United States. Total permanent impacts are estimated at 0.165 acre, as shown in Table 2.17-1.

### **2.17.3.2. Temporary and Construction Impacts**

Widening the existing bridges at Arroyo del Valle and Arroyo Mocho and constructing the new bicycle and pedestrian trail crossing bridge over Arroyo del Valle would involve unavoidable temporary construction impacts to waters of the U.S. that function as wetlands. The work at these bridges has not been designed to the extent necessary to identify specific support structures or their locations, but any new piers would be located outside of the perennial water channel. The areas of temporary impact are estimated at 0.017 acre for Arroyo del Valle and 0.024 acre for Arroyo Mocho.

**Table 2.17-1 Potentially Jurisdictional Waters in the ESL and Potential Permanent Impact Areas**

<b>Feature Type and Label*</b>	<b>Delineated Acres</b>	<b>Potentially Impacted Acres</b>
<i>Wetlands</i>		
Perennial Drainage WL-2 (Arroyo del Valle)	1.206	0.015
Intermittent Drainage WL-4 (Tributary to Arroyo del Valle)	0.142	0.000
Ephemeral Drainage WL-5	0.121	0.121
Intermittent Drainage WL-6	0.763	0.000
<i>Wetlands subtotal</i>	<i>2.232</i>	<i>0.136</i>
<i>Other Waters of the U.S.</i>		
Intermittent Stream OW-1 (Arroyo Mocho)	0.868	0.029
Ephemeral Drainage OW-3 (Tributary to Arroyo del Valle)	0.010	0.000
<i>Other waters of the U.S. subtotal</i>	<i>0.878</i>	<i>0.029</i>
<b>Total</b>	<b>3.11</b>	<b>0.165</b>

Source: URS 2008

\* Potentially jurisdictional waters are shown in the figures in Appendix C.

### **2.17.3.3. Impacts on Functions and Values**

Jurisdictional waters in the project area consist of perennial, intermittent, and ephemeral channels, some of which function as wetlands, as described in Section 2.17.2.2. The project would not change the function or affect the flood control capacity values of jurisdictional waters within the project limits.

### **2.17.3.4. Wetlands Only Practicable Alternative Finding**

Executive Order 11990 requires all federal agencies to avoid adverse impacts to wetlands unless there is no practicable alternative and to minimize those impacts where unavoidable. Appendix J includes the Wetlands Only Practicable Alternative Finding.

### **2.17.3.5. Least Environmentally Damaging Practicable Alternative**

CWA Section 404(b)(1) (Alternatives Analysis) is a specific evaluation to determine the Least Environmentally Damaging Practicable Alternative (LEDPA) to wetlands and waters of the U.S. while meeting the project purpose. A Section 404 Permit can only be issued for the LEDPA.

The No Build Alternative would avoid impacts to wetlands and waters of the U.S. but would not satisfy the project's purpose and need. As described in Appendix J, the Build Alternative minimizes potential impacts to these resources; avoids the safety

concerns, right-of-way conflicts, and unacceptable environmental impacts of other alternatives considered and eliminated; and satisfies the project's purpose and need. The Build Alternative has been identified as the LEDPA.

## **2.17.4. Avoidance, Minimization, and/or Mitigation Measures**

### **2.17.4.1. Construction Impact Avoidance and Minimization**

The project appears to qualify for a Section 404 Nationwide Permit authorization, potentially Nationwide Permit 14, which applies to stream crossings. A 401 Water Quality Certification from the RWQCB and a 1602 Streambed Alteration Agreement from the CDFG would be required for the project. Impacts to wetlands and waters of the U.S. will be minimized by designating work area restrictions on the contractor and seasonal restrictions on timing of the work.

Temporary construction impacts will be minimized through restrictions on the contractor's allowable work area, which will also minimize impacts to waters of the U.S. Measures to avoid or minimize these impacts are discussed below.

In general, disturbance to existing grades and vegetation will be limited to the actual project site and necessary access routes. Placement of all roads, staging areas, and other facilities will avoid and limit disturbance to wetland habitat. Existing ingress or egress points will be used. Following completion of the work, the area will be re-contoured and returned to preconstruction condition or better.

Erosion control and sediment detention devices (e.g., well-anchored sandbag cofferdams, straw bales, or silt fences) will be incorporated into the project design and implemented during construction and afterward if necessary to minimize sediment impacts to wetlands and waters of the United States. These devices will be placed at all locations where there is a likelihood of sedimentation. Erosion control materials will be available for small sites that may become bare and for sediment emergencies.

All disturbed soils at each site will undergo erosion control treatment prior to the rainy season and after construction is terminated. Treatment includes hydroseeding and sterile straw mulch, and erosion control blankets for disturbed soils on gradients of over 30 percent.

Work within the arroyos or the unnamed creeks will be restricted and scheduled accordingly by season. It is expected that regulatory permits will specify no work within the channels between mid-October and mid-April.

#### **2.17.4.2. Compensatory Mitigation**

Under Federal and State guidance and rules, adverse, unavoidable impacts to wetlands and other aquatic resources require offsetting or compensatory mitigation. Generally, impacts should be offset by enhancement of the affected site. The USACE may not require mitigation for impacts to waters of the U.S., but the RWQCB normally does. One or more of the following options will be implemented to compensate for potential project impacts to wetlands and other waters of the U.S.:

- In accordance with the February 2008 Biological Opinion for the project, 34.17 acres of habitat will be purchased at a local USFWS-approved mitigation bank to benefit endangered species (Section 2.19.4). Creation of new wetlands within the mitigation acreage will be investigated;
- An opportunity for on-site wetland enhancement exists at Arroyo Mocho, where a mitigation site was developed to offset the impacts associated with the original construction of Isabel Avenue. The existing channel could be widened or recontoured to allow for expansion of the existing wetland area to offset the proposed project;
- If on-site mitigation is not practicable or feasible, credits could be purchased at an approved mitigation bank; and
- If a mitigation bank is not available or feasible at the permit stage prior to project construction, the USACE may allow use of an in-lieu fee arrangement where payments fund other restoration projects or programs.

Mitigation for wetland impacts must be approved by the USACE and RWQCB.

## **2.18. Plant and Animal Species**

This section discusses the project corridor's vegetation and habitat as described in the Natural Environment Study (URS, March 2007).

### **2.18.1. Regulatory Setting**

#### **2.18.1.1. Plant Species**

The USFWS and CDFG share regulatory responsibility for the protection of special-status plant species. Special-status species are selected for protection because they are

rare and/or subject to population and habitat declines. Special status is a general term for species that are afforded varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). Section 2.19 presents detailed information about threatened and endangered species.

This section discusses all the other special-status plant species, including CDFG fully protected species and species of special concern, USFWS candidate species, and nonlisted California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at 16 USC Section 1531, et seq. See also 50 CFR Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et seq. Department projects are also subject to the Native Plant Protection Act (California Fish and Game Code Sections 1900–1913) and CEQA (PRC Sections 2100–21177).

#### **2.18.1.2. Animal Species**

Many State and Federal laws regulate impacts to wildlife. The USFWS, the National Marine Fisheries Service (NOAA Fisheries), and the CDFG are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with wildlife not listed or proposed for listing under CESA or FESA. Species listed or proposed for listing as threatened or endangered are discussed in Section 2.19. All other special-status animal species are discussed here, including CDFG fully protected species and species of special concern, and USFWS or NOAA Fisheries candidate species.

Federal laws and regulations pertaining to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

State laws and regulations pertaining to wildlife include the following:

- California Environmental Quality Act
- Sections 1600–1603 of the Fish and Game Code
- Section 4150 and 4152 of the Fish and Game Code

## **2.18.2. Affected Environment**

The project corridor is dominated by the existing right-of-way of SR 84. Nondeveloped areas are characterized by nonnative grasslands, disturbed fields with ruderal (weedy) vegetation, some wetland and/or riparian zones along perennial and intermittent streams (arroyos), and areas that have been disturbed by aggregate mining activities. SR 84 crosses two creeks within the site: Arroyo del Valle and Arroyo Mocho. A small tributary of Arroyo del Valle parallels Vallecitos Road northeast of Ruby Hill Drive. The most abundant vegetation communities in the project area are nonnative annual grasslands.

### **2.18.2.1. Plant Species**

#### ***Grassland***

Habitats that can be classified as California annual grasslands dominate the uplands and woodland understories within the study area. The dominant species within this community are relatively common locally and regionally. The grasslands in the study area are heterogeneous, typically composed of such species as soft chess (*Bromus hordeaceus*), wild oat (*Avena barbata*), ripgut (*Bromus diandrus*), and filaree (*Erodium* spp.) with a significant component of native and nonnative forbs. This community is locally and regionally common. This community occurs on open slopes, maintained roadsides, previously mined parcels, and adjacent to oak woodlands in the project area.

#### ***Shrubland/Scrub***

Commonly found coyote brush (*Baccharis pilularis*) dominates stands bordering grasslands and riparian woodland habitats in the project site. These stands range from open to fairly closed canopy stands in the project area and are well represented on the Vulcan Materials property on the west side of SR 84 north of Arroyo del Valle.

#### ***Riparian Forests and Woodland***

Riparian forests along either side of SR 84 within Arroyo del Valle have stands dominated by willow (*Salix* spp.) canopy. Portions of the western project area just north of Arroyo del Valle are dominated by Fremont cottonwood (*Populus fremontii*) riparian woodland. These stands are fairly open with moderate canopy cover and are intermixed with coyote brush shrublands.

#### ***Emergent and Seasonal Wetland, and Other Waters of the United States***

Other waters of the United States are present in defined areas along and adjacent to the SR 84 corridor. These resources are discussed in Section 2.17.

### 2.18.2.2. Animal Species

The project area provides nesting, foraging, and resting habitat for a variety of reptile, bird, and mammal species. Most of the species in the project area were observed within more than one habitat type. Many were commonly observed within all of the major habitats found in the project area, except developed areas.

Project area grasslands attract reptiles, amphibians, and a variety of common bird species. Common rodents and small mammals are typical grassland and woodland inhabitants. The presence of rodents in this habitat type also supports predators including raptors and foraging bat species.

Migration corridors were identified in three areas. Because of the urban nature of this project, the historical migration corridors have been greatly disturbed due to road construction, residential development, and tree clearing. One relatively undisturbed corridor is located along the southern extent of the project area. This corridor is associated with a small seasonal stream system that winds through riparian oak trees. This system is disrupted by the presence of Vallecitos Road within 300 feet; however, riparian woodland areas provide valuable resources to a variety of birds, mammals, reptiles, and amphibians. The other two migration corridors, Arroyo del Valle and Arroyo Mocho, are significantly disturbed due to gravel mining, flood control and channelization projects. Both arroyos contain wide, fast-flowing water and steep-sided slopes that provide significant cover and aquatic resources for a variety of fish and wildlife species.

The presence of the existing SR 84 and Vallecitos Road within the project area has almost certainly restricted wildlife movement. The existing roadway restricts most reptiles, amphibians, and mammals from safely crossing. The adjacent upland areas provide relatively poor habitat as the majority of the land has been affected by residential, commercial, or mining activities.

Neither Arroyo del Valle or Arroyo Mocho support anadromous fisheries because of downstream impediments, including a concrete-lined channel within the project area where Arroyo Mocho crosses Isabel Avenue. However, landlocked steelhead (*Oncorhynchus mykiss*) populations are present in both drainage systems outside of the project area.

### **2.18.3. Environmental Consequences**

Project construction would primarily disturb grassland within the existing right-of-way of SR 84. Common wildlife species that inhabit grassland and shrub cover would be affected. These vegetation types are common throughout the regional area, and the widening of the existing roadway along its present alignment is not considered a substantial loss of this habitat type. Construction at the arroyo crossings would be temporary and would widen the bridges, but would have minimal long-term impact to the arroyos. The project alignment would not introduce any new barriers to wildlife movement.

At the small seasonal stream between Ruby Hill Drive and Vallecitos Road, a project alignment has been selected that follows the existing roadway and incorporates retaining walls to minimize impacts within the drainage area. However, some oak trees are unavoidable and would require removal and mitigation (see Section 2.16).

### **2.18.4. Avoidance, Minimization, and/or Mitigation Measures**

BMPs and other measures will be implemented during construction activities to avoid impacts to biological resources at the project site and minimize the possibility of spreading invasive species. These measures include scheduling minimal activities during the rainy season, using temporary erosion control devices on slopes where erosion or sedimentation could degrade sensitive biological resources, and removing all temporary fill and construction debris from the site after completion of construction.

## **2.19. Threatened and Endangered Species**

This section summarizes the Biological Evaluation and Natural Environment Study (URS, April and March, 2007, respectively) regarding the special-status species that occur or are likely to occur within the project area. For each species category, the resources present are described and survey results, project impacts, and avoidance and minimization measures are presented.

Plants or animals may be considered to have “special status” due to declining populations, vulnerability to habitat change, or restricted distributions. For the purpose of this document, special-status species include plant and animal species that have varying degrees of legal protection (as threatened or endangered) under the FESA, CESA, and CEQA. The USFWS and the CDFG are the primary agencies

responsible for coordination and review involving special-status species. No fisheries habitat would be affected by this project, and hence NOAA Fisheries would not be involved.

Plants and animals identified as Federal “species of concern” do not yet have legal protection, nor have they been listed or proposed for listing as a candidate species. Species of concern is an informal term that is used for species that have suffered extensive habitat loss and declining population trends. Study methods for special-status species consist of a review of current databases, inventories, agency lists, documentation of existing habitats, and focused surveys.

### **2.19.1. Regulatory Setting**

The primary Federal law protecting threatened and endangered species is the FESA (16 USC Section 1531, et seq.; see also 50 CFR Part 402). This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of the FESA, Federal agencies such as FHWA are required to consult with the USFWS and NOAA Fisheries to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 is a Biological Opinion or an incidental take permit. Section 3 of the FESA defines take as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct.”

California has enacted a similar law at the state level, the CESA (California Fish and Game Code, Section 2050 et seq.). The CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. The CDFG is the agency responsible for implementing CESA. Section 2081 of the California Fish and Game Code prohibits take of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the California Fish and Game Code as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” The CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by CDFG. For projects requiring a Biological Opinion under Section 7 of the FESA, the CDFG may also authorize impacts to CESA species by

issuing a Consistency Determination under Section 2080.1 of the California Fish and Game Code.

## **2.19.2. Affected Environment**

### **2.19.2.1. Methods**

The findings summarized in this section were based on extensive research and field surveys for special-status species in the vicinity. All surveys were conducted according to the USFWS, CDFG, and CNPS (CNPS 2001) guidelines. Prior to the surveys, record searches of the USFWS species lists, CNDDDB, and CNPS lists of the area were conducted. The lists and databases searched for species occurrence summaries included all records from the Livermore, Diablo, Tassajara, Altamont, Mendenhall Springs, Byron Hot Springs, Dublin, Niles, and La Costa Valley U.S. Geological Survey 7.5-minute quadrangles.

### **2.19.2.2. Plant Species**

Focused surveys were conducted in July 2005 for special-status plants with the potential to occur in the project area. The surveys were conducted on foot, and all areas within the project site were evaluated for the potential to support regionally occurring special-status plant species and for the presence of any biologically sensitive resources. The surveys were conducted following established CNPS protocols (CNPS 2001), and all vascular plants were identified using the Jepson Manual (Hickman 1993) and other relevant botanical sources. A survey for oak trees was conducted in the field in June 2005. All oaks were mapped in the study area.

One Federally and State-listed plant species, San Francisco popcornflower, and six nonlisted plant species of concern were listed in records as having the potential to occur in the project's regional area. Botanical surveys were performed, and none of these plants were identified within the project area.

### **2.19.2.3. Fish and Wildlife Species**

The following special-status species were listed as having the potential to occur in the project area.

#### ***California Red-legged Frog***

California red-legged frog (*Rana aurora draytonii*) is listed as a threatened species under the FESA and is also a CDFG species of special concern. This species is generally found along marshes, streams, ponds, and other permanent sources of water where dense scrubby vegetation such as willows, cattails, and bulrushes dominate,

and water quality is good. California red-legged frog is present in ponds within the Ruby Hill California tiger salamander habitat reserve, northwest of SR 84 and also south of the Ruby Hill development. The species is also present in Detjen Pond in the Vineyard Estates portion of the Ruby Hill development approximately 0.1 mile northeast of the current SR 84 alignment (LSA 2004a) and in an ephemeral tributary to the unnamed seasonal stream that parallels SR 84 north and south of Ruby Hill Drive. These areas are all outside of the project right-of-way.

California red-legged frog is not considered present north of Arroyo del Valle because the area has been developed for residential or commercial uses, and does not provide suitable habitat for the species. Protocol-level surveys were conducted for California red-legged frog at the Vulcan Materials aggregate mining site in 2003. No red-legged frogs were observed, and bullfrogs (*Rana catesbeiana*) and Pacific treefrogs (*Pseudacris regilla*) were observed in suitable red-legged frog habitat throughout most of the study area. Several of the ponds also supported warmwater fish including bass (*Micropterus* sp.) and bluegill (*Lepomis macrochirus*) (LSA 2004b). Bullfrogs, bass, and bluegill are known to prey on red-legged frogs and their tadpoles. California red-legged frogs were documented in 1995 in Arroyo del Valle where it intersects SR 84 (CNDDDB 2007). No recent surveys for this species have been conducted in Arroyo del Valle; however, bullfrogs were recently observed there (pers. comm. Malcolm Sproul). As bullfrogs are known to prey on California red-legged frogs, their presence provides some evidence that Arroyo del Valle is not high-quality habitat for the species, if still present. The bullfrogs in Arroyo del Valle and the aggregate mining area along with the residential and commercial development are all considered to act as a barrier for the dispersal of California red-legged frog north of the arroyo.

### ***California Tiger Salamander***

The California tiger salamander (*Ambystoma californiense*) is Federally listed as threatened and a CDFG species of special concern. This species ranges from Sonoma County south to Santa Barbara County and east to the foothills of the Sierra Nevada (Stebbins 1985). Appropriate breeding habitat for this species is generally found in seasonal pools, low-gradient streams, and stock ponds that retain water long enough for larvae to metamorphose. A significant inverse association of California tiger salamanders with predatory fishes and bullfrogs has been found (Shaffer et al. 1993).

California tiger salamander are present in ponds within the Ruby Hill California tiger salamander habitat reserve (LSA 2004a). These ponds are located about 0.25 mile

from the southern boundary of the project area, where suitable habitat is present. This species is present south of SR 84 and in the Ruby Hill development, outside of the project right-of-way.

Protocol-level surveys were conducted for California tiger salamander at the Vulcan Materials aggregate mining site from May 2003 through May 2004, and no California tiger salamanders were observed (LSA 2004a). The Vulcan Materials aggregate mining site is adjacent to the west side of SR 84, approximately 4 miles from the Ruby Hill California tiger salamander habitat reserve. The east side of SR 84, north of Arroyo del Valle, has undergone residential development, and no California tiger salamander habitat is present.

California tiger salamander has been recorded directly adjacent to the project limits south of Arroyo del Valle. Due to the presence of predatory bullfrogs in the arroyo, the absence of California tiger salamander at the aggregate mining site, and the residential development on the east side of SR 84, this species was determined to be present south of Arroyo del Valle only.

### ***San Joaquin Kit Fox***

The San Joaquin kit fox (*Vulpes macrotis mutica*) is State listed as threatened and Federally listed as endangered. It occurs primarily in San Joaquin Valley, with satellite populations in the southern Salinas Valley and possibly the eastern Pajaro River Valley. It inhabits valley and foothill grasslands, sparsely vegetated shrubby habitats (O'Farrell 1983), and some agricultural and urban areas (Jensen 1972; Morrell 1972).

In 1992, the CNDDB recorded a general region for kit fox in the northwest San Joaquin Valley. This area is mapped on the north and east sides of Livermore (CDFG 2005). The last recorded sighting of a kit fox in the area was observed in 2002, 7 miles northeast of Livermore (CDFG 2005). This area is physically divided from the project area by I-580 and the City of Livermore.

The kit fox is unlikely to occur in the project area because the habitat quality is low and the site is cut off from previously known occurrences by the cities of Livermore and Dublin to the east and west and I-580 to the north. Additionally, a study conducted for the SR 84 Pigeon Pass Curve Realignment Project south of the project area concluded that there is “virtually no potential for occurrence of the San Joaquin kit fox in proximity to the Pigeon Pass Curve Realignment Project” (Caltrans 2005).

### **Western Pond Turtle**

Western pond turtles, including both the northwestern (*Emys marmorata* ssp. *marmorata*) and southwestern (*E. marmorata* ssp. *pallida*) subspecies, are Federal and CDFG species of special concern. Western pond turtles occur in a variety of permanent and intermittent aquatic habitats. Western pond turtles were recorded in the CNDDDB in three locations in the vicinity of the project area, the closest being 3.4 miles to the southwest. Western pond turtle may occasionally be present in the arroyos in the project area; however, they were not observed in the site during previous surveys.

### **Special-Status Nesting Birds**

Informal habitat assessments were previously conducted for nesting raptors within the project area during other surveys (LSA 2004b), including recording visible nests and evaluating the habitat characteristics that may affect the use of the project area for nesting or breeding raptors. With the exception of Cooper's hawk, no occurrences have been documented in the CNDDDB for the project area, but potential habitat for these species exists. Additional detail on these species is provided in the Natural Environment Study (URS 2007a). These species have the potential to occur in the project area while foraging and nesting. Pre-construction surveys for the following species are recommended.

- **Cooper's hawk** (*Accipiter cooperii*) is a State species of concern, and **white tailed kite** (*Elanus leucurus*) is a Federal species of special concern and a State fully protected species. These species were previously observed foraging but not nesting within the Vulcan Materials aggregate mining facility in the project area (LSA 2004b).
- **Loggerhead shrike** (*Lanius ludovicianus*) is a Federal species of concern that occurs in highest density in open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua tree habitats.
- **Oak titmouse** (*Baeolophus inornatus*) is a Federal species of local concern that prefers open mixed oak woodlands including oak woodlands, streamside cottonwoods, forest edges, and oak-juniper woodlands. It has adapted to urban and suburban environments in wooded areas.
- **Lawrence's goldfinch** (*Carduelis lawrencei*) is a Federal species of concern that breeds in open oak or other arid woodland and chaparral habitats including valley foothill hardwood and valley foothill hardwood-conifer, near water. It uses trees, preferably oak, and shrubs for nesting, resting, escape, and other cover.

- **Lewis' woodpecker** (*Melanerpes lewis*) is a Federal species of concern. This bird is an uncommon, local winter resident occurring in open oak savannahs, broken deciduous, and coniferous habitats. It can be found along the eastern slopes of the Coast Range and requires open habitats with scattered trees and snags with cavities.

### ***Special-Status Birds (Nonbreeding)***

The following bird species might occur in the project area but are not expected to use it for breeding.

- **Sharp-shinned hawk** (*Accipiter striatus*) is a State species of concern that inhabits mixed woodlands.
- **Allen's hummingbird** (*Selasphorus sasin*) is a Federal species of concern that lives in mixed evergreen, riparian woodlands, eucalyptus and cypress groves, oak woodlands, and coastal scrub areas.
- **Red-breasted sapsucker** (*Sphyrapicus ruber*) is a Federal species of concern. It is found in riparian habitats with large cottonwoods as well as in deciduous forests such as mixed and conifer forests.

### ***Western Burrowing Owl***

The western burrowing owl (*Athene cunicularia hypugea*) is designated as a CDFG and USFWS species of concern. Burrowing owls prefer annual and perennial grasslands, typically with sparse or nonexistent tree or shrub canopies. Several occurrences of this species have been recorded within 10 miles of the project area. No burrows were observed during previous burrow surveys. Additionally, western burrowing owls were not observed during any of the field surveys and very few ground squirrel burrows (their prey) were found in the project area. Although some potential exists for this species to pass through the project area, this species is not expected to nest within the project site.

### **2.19.3. Environmental Consequences**

No permanent impacts should occur to the following species, which are listed in the records as having the potential to occur in the regional area but were determined to not be present or affected by the project: San Francisco popcornflower, six nonlisted plant species of concern, Cooper's hawk, loggerhead shrike, oak titmouse, Lawrence's goldfinch, Lewis' woodpecker, white-tailed kite, sharp-shinned hawk, Allen's hummingbird, red-breasted sapsucker, and western burrowing owl. Purple

needlegrass grassland is present in the immediate project vicinity but would be avoided by the proposed roadway alignment.

Habitat for the California red-legged frog and California tiger salamander occurs in the vicinity of the project and would be avoided by the proposed roadway alignment. There is a potential for temporary construction in or near upland refugia habitat. San Joaquin kit fox has a low potential to occur in the area and should not be affected by the project. These three species are the only species that are listed as threatened or endangered under the FESA or CESA with any potential to occur in the project area. The project may affect, but is not likely to adversely affect, these species. To ensure that construction activities do not otherwise affect these species, avoidance measures are listed in the following section.

The western pond turtle, a State and Federal species of concern, could potentially use the aquatic areas within the areas of project construction.

#### **2.19.4. Avoidance, Minimization, and/or Mitigation Measures**

Endangered species habitat for the California red-legged frog and California tiger salamander has been identified off-site but near the project and should be avoided during construction. San Joaquin kit fox has a low potential to occur in the project area, but measures can be incorporated into construction contracts to further ensure that no impacts to this species would occur. These measures are listed below.

- During construction, temporary fencing will be installed around the perimeter of the project site, with special attention to fencing off waters of the U.S., the lands to the east of the project, and the unnamed creek between Ruby Hill Road and Vallecitos Road that roughly parallels the east side of the SR 84 right-of-way.
- Erosion control measures will be implemented during construction to minimize degradation of the creek water quality.
- All construction debris will be removed from the construction site after completion.
- Speed restrictions (20 mph limit) will be applied to all construction areas and staging that takes place off the existing public roads to minimize conflicts with wildlife. Nighttime work should be restricted to the extent feasible. Travel within or along the project construction areas will be restricted to existing, established roadbeds.
- Necessary trenching more than 2 feet deep will be covered by the end of each working day. Pipes, culverts, or similar structures temporarily stored or staged on

site will be sealed from possible use by animals. Discovery that pipes, culverts or similar facilities are being used by a potential endangered species will require notification and possible involvement of the USFWS.

- No firearms or other weapons will be allowed on-site.

The USFWS stated in its February 2008 Biological Opinion that the project, as proposed, is not likely to jeopardize the continued existence of the California red-legged frog, California tiger salamander, and San Joaquin kit fox. The Department will implement measures to avoid or minimize potential impacts, including pre-construction surveys for the three species; biological monitoring for activities that may result in take of listed species; purchase of 34.17 acres of habitat that will benefit California red-legged frog, California tiger salamander, and San Joaquin kit fox; and other conservation measures outlined in the Biological Opinion.

## **2.20. Invasive Species**

### **2.20.1. Regulatory Setting**

On February 3, 1999, President Clinton signed Executive Order 13112 requiring Federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as “any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health.” FHWA guidance issued August 10, 1999, directs the use of the state’s noxious weed list to define the invasive plants that must be considered as part of the NEPA analysis for a proposed project.

### **2.20.2. Affected Environment**

A list of invasive species was obtained from the California Invasive Plant Council Invasive Plant Inventory ([http://www.cal-ipc.org/list\\_revision/completed\\_pafs.html](http://www.cal-ipc.org/list_revision/completed_pafs.html)) and compared to the plant species observed in the project area. The plants listed by the Council are categorized as high, moderate or low impacts based on their documented impacts, potential for spread, and the range of habitats they tolerate. The species found in the project area that are considered threats, based on these ratings, are as follows:

- High – Yellow star thistle

- Moderate – Barley (*Hordeum marinum*, *Hordeum murinum*), ripgut grass, slender wild oat, shortpod mustard (*Hirschfeldia incana*)
- Low – Bellardia, bird’s foot trefoil, bristly ox-tongue (*Picnis echiodes*), bur clover, curly dock, European plantain (*Alisma plantago-aquatica*), filaree, hyssop loosestrife, orchard grass, rabbitsfoot grass, smooth catsear (*Hypochaeris glabra*), soft brome (*Bromus hordeaceus*), wild radish (*Raphanus raphanistrum*)

### **2.20.3. Environmental Consequences**

None of the species on the California list of noxious weeds is currently used by the Department for erosion control or landscaping. However, project construction activities could have the potential to inadvertently spread these species if they are present.

### **2.20.4. Avoidance, Minimization, and/or Mitigation Measures**

The landscaping and erosion control included in the project will not use species listed as noxious weeds. In areas of particular sensitivity, extra precautions will be taken if invasive species are found in or adjacent to the construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur.

## **Cumulative Impacts**

### **2.21. Cumulative Impacts**

The following discusses the planned growth and projects in the regional area that were evaluated for cumulative impacts in the City of Livermore’s Environmental Impact Report for their General Plan update in 2004, summarized from the I-580/Isabel Avenue Interchange Project environmental document (Caltrans 2005). An assessment of cumulative effects of specific projects near the SR 84 Expressway Widening Project is also provided.

#### **2.21.1. Regulatory Setting**

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of this project. A

cumulative effect assessment considers the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive types of agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

Section 15130 of the CEQA Guidelines describes when a cumulative impact analysis is warranted and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts under CEQA appears in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts under NEPA appears in 40 CFR Section 1508.7 of the Council on Environmental Quality Regulations.

### **2.21.2. City of Livermore General Plan and Arroyo las Positas Watershed Area**

In 2005, as part of the I-580/Isabel Avenue Interchange Project, a review of plans and developments that are pertinent to the proposed project was completed for the regional area (Caltrans 2005). The City of Livermore's latest General Plan update was adopted in 2004 and is considered to include past, present, and reasonably foreseeable future projects both in Livermore and the regional area. Major regional developments including Camino Tassajara (Contra Costa County), Bernal Property Specific Plan (Pleasanton), Dublin Area Transit Center/Transit Oriented Development (Dublin), Mountain House (Tracy/San Joaquin County), Dougherty Valley (San Ramon), and East Dublin General Plan Amendment are among the land use development plans in the region that were addressed for cumulative impacts. Within Livermore city limits, areas of development or changes identified included the parcels located at the southwest quadrant of the SR 84/Jack London Boulevard intersection, the Cayetano Corporate Campus north of I-580, the reclamation of

existing quarry lands by the Zone 7 Water Agency, and planned improvements to the city’s transportation system and infrastructure. The General Plan identified areas of greatest impact as traffic and circulation, utilities, infrastructure and energy, public services, air quality, noise, and biological resources.

The Arroyo las Positas watershed represents a nearly 80-square-mile area that drains portions of the I-580 corridor within Livermore. This watershed has substantial open space and large parcel agriculture use, but increasing development has added impervious surfaces that have the potential to affect drainage, erosion, and flood levels. Urban infill within the City of Livermore boundaries in this watershed may add a reported 900 residential units and 2,150 acres of other urban uses (industrial, business park, or commercial). Planned or proposed development has the identified potential to affect biological resource habitat (Caltrans 2005).

Additional development plans were proposed after environmental analyses were conducted for the SR 84 Expressway Widening Project. In January 2007, the City of Livermore introduced the Draft El Charro Specific Plan, a 250-acre retail and services development that would include a 42-acre outlet center. In March 2007, the City of Pleasanton filed a Notice of Preparation of a Draft Environmental Impact Report for the Stoneridge Drive Specific Plan Amendment/Staples Ranch Project, a 124-acre development that would include retail, commercial, services, senior housing, and a community park.

### 2.21.3. Nearby Projects Considered for Cumulative Impacts

Other nearby projects were also considered for cumulative impacts. Table 2.21-1 summarizes known projects and plans.

**Table 2.21-1 Other Nearby Improvements Considered for Cumulative Impacts**

Project	Location	Description	Anticipated Schedule
I-580 Isabel Avenue Interchange Project	At Isabel Avenue and I-580, between Jack London Boulevard and Portola Avenue, directly north of the SR 84 Expressway Widening Project.	Constructing a new modified partial cloverleaf interchange, including a new bridge crossing I-580, roadway improvements on Isabel Avenue to Jack London Boulevard and local street improvements.	Begin construction 2009
SR 84 Pigeon Pass Safety Project	On SR 84 between Ruby Hill Drive intersection and the Vallecitos Hills/Pigeon Pass area, directly south of the SR 84 Expressway Widening Project.	Upgrade SR 84 within the project limits to expressway design standards, involving realignment of horizontal and vertical curves, and addition of climbing lanes in the Pigeon Pass area.	Under construction; scheduled for completion in 2009

**Table 2.21-1 Other Nearby Improvements Considered for Cumulative Impacts**

<b>Project</b>	<b>Location</b>	<b>Description</b>	<b>Anticipated Schedule</b>
I-580 Eastbound HOV Lane	Along eastbound I-580 between Santa Rita Road and Greenville Road	Create an eastbound High Occupancy Vehicle (HOV) lane from west of Santa Rita Road to east of Greenville Road; create eastbound auxiliary lanes between El Charro Road and Airway Boulevard and between First Street and Vasco Road; make median barrier and drainage improvements.	Begin construction summer 2008; scheduled for completion in 2010
I-580 Westbound HOV Lane	Along westbound I-580 between Greenville Road and San Ramon Road/Foothill Road	Create a westbound HOV lane from Greenville Road to San Ramon Road/Foothill Road; create westbound auxiliary lanes between First Street and (future) Isabel Avenue Interchanges; add an express bus ramp from the westbound HOV lane to the East Dublin/Pleasanton BART Station	Begin construction summer 2009
Gravel Mining Operations (Vulcan Materials Quarry)	Adjacent to the west side of SR 84 Isabel Avenue, between approximately Stanley Boulevard and Arroyo del Valle	Vulcan Materials has mining rights to extract gravel deposits up to 50 feet from existing right-of-way line to depths up to 240 feet.	Ongoing for next 25 years
Gravel Mining Operations (Cemex Quarry)	Both sides of SR 84 between Vineyard Avenue and Alden Lane	Cemex has mining rights to extract gravel deposits up to 50 feet from existing right-of-way line to depths up to 240 feet.	Ongoing for next 25 years
Isabel Avenue/Vallecitos Road Intersection Project	SR 84 at Vallecitos Road	Realign Isabel Avenue at Vallecitos Road and relocate signalized intersection.	Completed late 2006
Oaks Business Park Development	West side of SR 84, between Jack London Boulevard and Arroyo Mocho	178-acre site was already graded prior to 2006. Subdivided into 35 parcels that are zoned for technical/light industrial development. New access on Discovery Drive will connect to SR 84 at a signalized intersection.	Under construction; Phase 1 (including Discovery Drive) completed late 2007
Orchid Ranch Redevelopment	East side of SR 84, north of Concannon Boulevard	Former business was sold and will be redeveloped as residential units. New access via local streets will replace existing access from SR 84.	Construction planned for summer 2008; on hold
Casa Real at Ruby Hill Winery	West side of SR 84 at Vineyard Avenue near Ruby Hill Blvd.	19,872-square-foot event center and 4,800-square-foot wine-tasting building on a 55-acre site	Under construction; scheduled for completion in spring 2008

### 2.21.3.1. Assessment of Cumulative Impacts

Traffic projections used for preliminary design and environmental assessment of the proposed project include future growth in land use through the study year of 2030, based on regional development planning and approved or planned transportation network improvements. The evaluation of impacts for this project incorporates projections of cumulative growth in traffic as well as planned or proposed changes in

the local and regional roadway network. The projections for regional development and roadway network changes were developed in close coordination with the Cities of Livermore, Pleasanton, and Dublin.

The traffic modeling for the SR 84 Expressway Widening Project assumed that Jack London Boulevard would be widened to four lanes and extended west to El Charro Road, which is an option under the El Charro Specific Plan. An extension of Stoneridge Drive to El Charro Road being considered under the Staples Ranch Project was not included in the traffic modeling on the direction of the City of Pleasanton; at the time, the extension of Stoneridge Drive was planned for removal from the Pleasanton General Plan update. Other future development and roadway projects that were not specifically considered as part of the traffic modeling for the SR 84 project would be accounted for in city-planned land uses and General Plan buildout. The proposed project is not designed to accommodate every development that occurs in the future, only those approved by the Cities of Livermore, Pleasanton, and Dublin at the time the traffic modeling was conducted. Any future development that has since been approved will be responsible for providing mitigation for its traffic impacts as a condition of obtaining environmental approval.

The future year traffic volumes and circulation patterns were used for the technical studies (such as air quality and noise assessment). Traffic would increase along SR 84 as a result of the cumulative projects and growth considered in these analyses. No exceedances of an air quality standard are predicted, and future noise levels would increase but remain within the thresholds established by FHWA and the Department.

For biological resources, known impacts from other nearby projects are listed in Table 2.21-2. Cumulative total impacts to wetlands are relatively low for all combined projects and must be mitigated in accordance with Federal and State regulations. The combined projects would primarily impact grassland habitat, which is relatively common within the regional area. The proposed project would remove trees at the southern extent of the alignment, which would contribute to any oak woodland impacts from the SR 84 Pigeon Pass Safety Project. Oak avoidance and replanting will be included in these projects to mitigate removal of trees. With required avoidance measures and replanting/landscaping, cumulative impacts to biological resources would be offset or mitigated.

The highway projects and development of the Oaks Business Park will add new surfaces and runoff within the proposed project vicinity. The planned SR 84 Pigeon

Pass Safety Project will discharge stormwater, along with the proposed SR 84 Expressway Widening Project, into Arroyo del Valle. However, the cumulated volume of runoff would have a minor impact on Arroyo del Valle flows, as these flows are regulated. Stormwater runoff from the planned I-580/Isabel Avenue Interchange Project, the I-580 Eastbound HOV Lane Project, and the Oaks Business Park Development would primarily flow into Arroyo las Positas. Each project will be required to comply with stormwater runoff permitting requirements, which would minimize impacts to the two arroyos.

**Table 2.21-2 Summary of Cumulative Development Project Impacts to Wetlands and Waters of the United States and Vegetation Communities**

Project	Potentially Affected Wetlands and Waters of the U.S.	Potentially Affected Vegetation/Habitat Communities
<b>I-580 Isabel Avenue Interchange Construction Project</b>	Waters of the U.S.: 0.03 acre Wetlands: 0.20 acre	Grassland: 28.97 acres Valley Oak Woodland: 0.03 acre Willow-scrub Riparian: 0.34 acre
<b>SR 84 Pigeon Pass Safety Project</b>	Wetlands: 1.0 acre	Not available
<b>I-580 Eastbound HOV Lane</b>	Wetland impacts expected to be minimal	Habitat impacts expected to be minimal
<b>Gravel Mining Operations (Vulcan Materials Quarry)</b>	None	None
<b>Gravel Mining Operations (Cemex Quarry)</b>	None	None
<b>Isabel Avenue/Vallecitos Road Intersection Project</b>	Wetlands are not present in the immediate vicinity of this intersection	Grassland and vineyards are adjacent to this intersection
<b>Oaks Business Park Development</b>	None	None

Within the viewshed of the SR 84 alignment, the cumulative projects identified would be in areas that are already developed or serve as transportation corridors and have been previously altered. There would not be any substantial change or adverse cumulative impact on visual characteristics of the area. The project area along SR 84 is highly disturbed north of Vallecitos Road. South of Vallecitos Road, the primary impacts would be from the proposed project and the SR 84 Pigeon Pass project, both of which are limited to improvements along an existing roadway corridor. The overall changes to the roads from these various projects would remain consistent with the current setting.

## 2.22. Climate Change

While climate change has been a concern since at least 1988 as evidenced by the establishment of the United Nations and World Meteorological Organization's Intergovernmental Panel on Climate Change (IPCC), the efforts devoted to greenhouse gas<sup>28</sup> (GHG) emissions reduction and climate change research and policy has increased dramatically in recent years. In 2002, with the passage of Assembly Bill (AB) 1493, California launched an innovative and proactive approach to dealing with GHG emissions and climate change at the state level. AB 1493 requires the California Air Resources Board (CARB) to develop and implement regulations to reduce automobile and light truck GHG emissions. These regulations will apply to automobiles and light trucks beginning with the 2009 model year.

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's GHG emissions to: 1) 2000 levels by 2010; 2) 1990 levels by the 2020; and 3) 80 percent below the 1990 levels by the year 2050. In 2006, this goal was reinforced with the passage of AB 32, the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals and mandates that CARB create a plan that includes market mechanisms and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team.

With Executive Order S-01-07, Governor Schwarzenegger set forth the low-carbon fuel standard for California. Under this executive order, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.

Climate change and GHG emissions reduction are also a concern at the federal level; however, at this time, no legislation or regulations have been enacted that specifically address these issues. However, California, in conjunction with several environmental organizations and other states, sued to force the USEPA to regulate GHGs as a pollutant under the Clean Air Act (Massachusetts vs. Environmental Protection Agency et al., U.S. Supreme Court No. 05-1120. 549 U.S. \_\_\_\_\_; argued November 29, 2006, decided April 2, 2007). The court ruled that GHGs do fit within

---

<sup>28</sup> Greenhouse gases related to human activity, as identified in AB 32, include carbon dioxide, methane, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, trifluoromethane (HFC-23), 1,1,1,2-tetrafluoroethane (HFC-134a), and 1,1-difluoroethane (HFC-152a).

the Clean Air Act's definition of a pollutant, and that USEPA does have the authority to regulate GHGs. Despite the U.S. Supreme Court ruling, there are no promulgated federal regulations to date limiting GHG emissions.

According to a recent white paper by the Association of Environmental Professionals (Hendrix and Cori 2007), "An individual project does not generate enough greenhouse gas emissions to significantly influence global climate change. Global climate change is a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of greenhouse gases."

The Department and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing GHG emission reduction and climate change. Recognizing that 98 percent of California's GHG emissions are from the burning of fossil fuels and 40 percent of all human made GHG emissions are from transportation, the Department has created and is implementing the Climate Action Program at Caltrans (Caltrans 2006b). Transportation's contribution to GHG emissions is dependent on three factors: the types of vehicles on the road, the type of fuel the vehicles use, and the time/distance the vehicles travel.

One of the main strategies in the Department's Climate Action Program to reduce GHG emissions is to make California's transportation system more efficient. The highest levels of carbon dioxide from mobile sources, such as automobiles, occur at stop-and-go speeds (0 to 25 miles per hour) and speeds over 55 miles per hour. Relieving congestion by enhancing operations and improving travel times in high-congestion travel corridors will lead to an overall reduction in GHG emissions.

The proposed project is intended to improve local traffic circulation and reduce delays. The project would improve the overall capacity of SR 84 by adding a lane in each direction and improve levels of service (reduce delay) for at least four local intersections (see Section 2.7.3.1). The project is also included in the San Francisco Bay Area's transportation planning and funding, including the RTP (MTC 2005). The RTP findings included that implementation of all proposed improvements on a regional basis would decrease passenger hours of delay by 10 percent, reduce travel time for work-related auto trips by more than 0.5 minute on average, and reduce travel time for work-related carpool trips by more than 1 minute on average. Due to the reduction in average travel time and improved traffic flow, carbon dioxide emissions should be reduced on average within the overall regional area.

The Department recognizes the concern that carbon dioxide emissions raise for climate change. However, modeling and gauging the impacts associated with an increase in GHG emissions levels, including carbon dioxide, at the project level is not currently possible. No federal, state or regional regulatory agency has provided methodology or criteria for GHG emission and climate change impact analysis. Therefore, the Department is unable to provide a scientific or regulatory based conclusion regarding whether the project's contribution to climate change is cumulatively considerable.

The Department continues to be actively involved on the Governor's Climate Action Team as CARB works to implement AB 1493 and AB 32. As part of the Climate Action Program at Caltrans (December 2006), the Department is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high-density housing along transit corridors. The Department is working closely with local jurisdictions on planning activities; however, the Department does not have local land use planning authority. The Department is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars and light- and heavy-duty trucks. However, it is important to note that the control of the fuel economy standards is held by the USEPA and CARB. Lastly, the use of alternative fuels is also being considered; the Department is participating in funding for alternative fuel research at the University of California Davis.

## **Chapter 3. Comments and Coordination**

---

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts and mitigation measures and related environmental requirements. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including Project Development Team (PDT) meetings, a public workshop, and meetings with specific landowners. This chapter summarizes the results of that coordination.

### **3.1. Early Community and Landowner Coordination**

ACTIA, ACCMA, and the City of Livermore jointly conducted a public open house/scoping meeting at Smith Elementary School, 391 Ontario Drive, in Livermore on July 28, 2005, for the SR 84 Expressway Widening Project, I-580 Eastbound HOV Lane Project, and I-580/Isabel Avenue Interchange Project. The meeting was advertised in local newspapers, and notices were posted on the ACTIA and City of Livermore websites. In addition, notices were sent to 4,750 property owners/residents, and over 100 elected officials were invited. Displays illustrating the SR 84 alignment, project schedule, funding, and environmental subject areas that would be studied were provided at the meeting. A presentation summarized the project and the planned environmental and design process/steps, including future opportunities to provide comment and input during the circulation of the environmental document for public review and comment. Approximately 50 residents attended the meeting, as well as representatives and elected officials from Alameda County and the cities of Livermore and Dublin. Topics raised and covered at the meeting included the design of the road, the schedule, and concerns pertaining to air quality, noise, and landscaping.

Individual coordination meetings and consultation were held with major landowners that would be affected by the design. Many of the design options considered for the project were a result of this coordination, which included the following.

- Vulcan Materials Company was consulted regarding design options for the Stanley Boulevard interchange. This coordination resulted in the development and evaluation of several design options to avoid or minimize impacts to the

quarry mining operations. Options that substantially affected the quarry mining operations west of the existing SR 84 alignment were ultimately dropped.

- The Zone 7 Water Agency, City of Livermore, and Alameda County were consulted regarding utility locations and property owner access requirements. This coordination resulted in the inclusion of the driveway access roads for two quarry operators, PG&E, Zone 7 Water Agency, and other landowners that would be affected by the change in access to SR 84 because of its expressway status.
- The Tri-Valley Conservancy and City of Livermore were consulted regarding potential impacts to Conservancy easements. Between Ruby Hill Drive and Vallecitos Road, an option was identified that closely follows the existing alignment of the highway, instead of the realignment of the roadway proposed in the Project Study Report. This option was ultimately included in the project to avoid impacts to the Conservancy lands and natural resources present within this area. The DED proposed to realign the SR 84/Vallecitos Road intersection 450 feet to the north, requiring the acquisition of 3.2 acres of land under a Tri-Valley Conservancy agricultural easement. In February 2008, in response to comments from the Conservancy and others, the Department revised the project design to maintain the Vallecitos Road intersection in its current location and construct additional design and traffic operation modifications (see Section 1.5.2).
- The City of Livermore was consulted regarding impacts to the Isabel Trail, which parallels SR 84. Temporary closure of the trail may be necessary at times during construction. Notification and signage will be provided when it is necessary to close the trail, and the trail will be reopened following project completion.

### **3.2. Public Coordination on the Draft Environment Document**

The DED was circulated for public review on October 15, 2007. A public notice announcing the availability of the IS/EA and the October 30, 2007, public meeting was distributed two weeks before the meeting to the project mailing list, which included more than 8,500 property owners, elected officials, city staff, special interest organizations, libraries, and neighborhood groups. In addition, a public notice announcing the availability of the DED and the public meeting was published in the following media:

- *Livermore Independent* (October 18, 2007)
- *Tri-Valley Herald* (October 15, 2007)

- *Pleasanton Weekly* (October 19, 2007)
- *Valley Times* (October 15, 2007)

The document was also available for review at the following locations:

- Caltrans District 4, 111 Grand Avenue, Oakland, CA
- ACTIA, 1333 Broadway, Suite 300, Oakland, CA
- Livermore Main Library, 1188 South Livermore Avenue, Livermore, CA
- Online at [www.actia2022.com](http://www.actia2022.com) and [www.dot.ca.gov/dist4/](http://www.dot.ca.gov/dist4/)

The public meeting for the SR 84 Expressway Widening Project was held from 6:00 p.m. to 8:30 p.m. on October 30, 2007, at Smith Elementary School, 391 Ontario Drive, Livermore, CA. Caltrans and ACTIA held the public meeting to provide an opportunity for the public and other agencies to learn more about the project and comment on the document. The meeting consisted of an open house, a brief presentation about the project and the DED, and a question-and-answer period. Project information stations were available to describe the project background, proposed project alignment, project description and purpose and need, environmental studies conducted, overview of the project schedule, anticipated project costs and funding sources, and guidance for submittal of comments. Project Development Team members were available at the stations to discuss the project. Attendees were invited to fill out comment cards and submit them at the meeting or by fax or mail until close of business on Wednesday, November 15, 2007. In response to public comments, the comment deadline was subsequently extended to Friday, December 28, 2007.

Approximately 86 people attended the public meeting. Twenty-nine comment cards were submitted at the meeting, and approximately 120 other comments were submitted during the extended comment period. The comments addressed a wide range of topics, including:

- Concerns that the DED findings indicate that the project would have no significant impacts, and whether an IS/EA was the appropriate type of environmental document
- Concerns about relocation of SR 84/Vallecitos Road intersection and related impacts, considering that the intersection was reconstructed in 2007
- Concerns about existing noise levels and future increases from the project, and requests for noise abatement for nearby residences

- Requests for full landscaping, including in the median, to improve the visual quality of the corridor
- Concerns about air pollution (particularly from diesel trucks) related to increased traffic from the project
- Concerns about increased truck traffic and associated noise, pollution, traffic congestion, and safety
- Concerns that project funding is being used to address regional traffic congestion while other bottleneck locations such as the I-580/I-680 interchange remain unchanged
- Requests to reduce the speed limit and limit truck access on SR 84
- Concerns about increased noise and traffic related to the consolidated quarry access at SR 84 and Concannon Boulevard
- Concerns that the project will affect property values and quality of life in the project area
- Concerns about level of public notification given for the project
- Concerns over segmentation of SR 84 projects, including the I-580/Isabel Avenue Interchange Project and the Pigeon Pass Safety Project

All comments received on the DED and the responses to each comment are presented in Appendix I.

After the public review and comment period, additional noise and traffic studies were conducted to address related comments, coordination meetings were held with local agencies and members of the public in an effort to address their concerns, and other SR 84/Vallecitos Road intersection design options were reconsidered. The Department subsequently determined that the intersection could remain at its current location if skewed to reduce the potential for high-sided vehicles to overturn. Additional modifications were also made to further improve safety and enhance traffic operations. As a result, the project design was changed to maintain the SR 84/Vallecitos Road intersection in its current location.

Additional public outreach will be conducted during the final design and construction phases to share updated project information with the public.

### **3.3. Permits and Approvals**

A number of public agencies are involved in the review and oversight of the proposed SR 84 Expressway Widening Project.

Because the proposed project has Federal funding and is on a segment of the State Highway System, FHWA and the Department oversee the development of the project, and approval of the environmental document has been assigned to the Department. In addition, other regulatory authorities are involved in the review of the DED and in some cases have regulatory jurisdiction that requires a separate permit or approval for the proposed project. These agencies and their roles are briefly summarized below. Relevant copies of agency consultation are included in Appendix G.

- **U.S. Fish and Wildlife Service.** The USFWS reviews projects consistent with Section 7 of the FESA, focusing on identified or potential impacts to protected plant and wildlife species. Consultation with USFWS is also required under the Federal Fish and Wildlife Coordination Act for any impacts to a stream or water body. Coordination on this project began with a request for, and review of, any information on endangered and threatened species in the project region. The Department subsequently requested formal consultation on the California red-legged frog, California tiger salamander, and San Joaquin kit fox. The USFWS issued a Biological Opinion in February 2008.
- **U.S. Army Corps of Engineers.** Any filling of wetlands or impacts to the waters of the United States or navigable waters requires permit review and approval by the USACE consistent with Section 404 of the CWA and Section 10 of the Rivers and Harbors Act. Based on the small quantity of nonwetland waters of the United States that would be affected, the project could qualify for a Nationwide Permit authorization. An application to the USACE would be completed and submitted during final design of the project.
- **Section 106, National Historic Preservation Act.** Federally funded transportation projects must follow FHWA and Department procedures for historic preservation. A Programmatic Agreement for compliance with Section 106 of the National Historic Preservation Act would apply to this project. No eligible or potentially eligible properties to the NRHP were identified.
- **California Department of Fish and Game.** Sections 1600–1606 of the California Fish and Game Code give CDFG regulatory permit authority over construction or fill activities proposed within the bed, channel, and banks of all streams, rivers, and lakes. Alteration of these features may require submission of a Streambed Alteration Notification and approval by CDFG depending on the nature of the work within a creek or arroyo bed. If needed, CDFG review or permit approval would be completed during final design of the project.

- **Regional Water Quality Control Board and State Water Resources Control Board.** Any permit issued by the USACE will stipulate that the State must provide a certification or waiver of water quality consistent with Section 401 of the Federal CWA. The RWQCB and State Water Resources Control Board will review the USACE's proposed permit and the project when considering approval of this water quality certification. In addition, the 1992 amendments to the CWA require that a project that involves the disturbance of 1 acre or more must be covered by an NPDES stormwater permit. Applications for these permits/approvals would be completed during final design of the project.
- **Alameda County.** If necessary, the County may be involved making findings on partial property takes pursuant to the Surface Mining and Reclamation Act.
- **Tri-Valley Conservancy.** The Conservancy would be involved in removing the conservation easement from a 0.04-acre uncultivated agricultural parcel that would be acquired for the project.
- **Livermore Area Recreation and Park District.** The District would be involved in coordinating work on the multiuse trails.
- **Union Pacific Railroad.** Union Pacific is a highly interested party in the project. Caltrans will require access control rights for the segment of Union Pacific right-of-way fronting the intersection of Stanley Boulevard and the Stanley connector ramp to SR 84. The project will be fully coordinated with Union Pacific during the final design phase.

## **Chapter 4. List of Preparers**

---

This document and its related technical studies were prepared under the supervision of Department of Transportation District 4. The Project Development Team (PDT) was responsible for oversight of the project, consisting of members from the Department, FHWA, and ACTIA.

### ***Key PDT Members***

- Issa Bouri, Project Manager, Department of Transportation District 4
- John Uozumi, Senior Transportation Engineer, Department of Transportation District 4
- Ed Pang, Environmental, Department of Transportation District 4
- Art Dao, Alameda County Transportation Improvement Authority
- Michele Bellows, Alameda County Transportation Improvement Authority
- Ken Ross, City of Livermore
- Mike Tassano, City of Pleasanton
- Jean Hart, Alameda County Congestion Management Agency
- Dennis Gambs, Zone 7 Water Agency of the Alameda County Flood Control and Water Conservation District
- Tim Lee, Consultant Project Manager, URS Corporation
- Jeff Zimmerman, URS Corporation (Environmental)

### ***Individuals Involved in Department Oversight and Environmental Study Review***

- Ed Pang – Environmental Document and Community Impact Assessment
- Glen Kinoshita – Noise and Air Quality
- Jennifer Darcangelo and Elizabeth Krase – Cultural Resources
- Margaret Gabil and Debbie Green – Natural Environment, Wetlands, and Endangered Species
- Initial Site Assessment – Chris Wilson
- Visual Resources – Keith Suzuki and Bryan Walker
- Peter Lau – Traffic
- Geology and Geotechnical – Grant Wilcox

### ***Individuals Involved in Environmental Document Preparation***

The following key consulting team staff members were responsible for the preparation of the environmental document, and/or its supporting studies and reports:

#### ***URS Corporation***

Christine Hacking, M.A. Anthropology. Experience in CEQA/NEPA documentation.  
Contribution: Environmental document coordination.

Désirée Joseph, M. Eng., Environmental Pollution Control. Experience in NEPA documentation. Contribution: Environmental document coordination.

Steve Leach, M.A., Vegetation Ecology. Experience in conducting biological impact assessments. Contribution: Biological resources studies and reports.

Corinna Lu, M.A., Geography. Experience in conducting biological surveys and research. Contribution: Natural Environment Study and Wetlands Study.

Lynn McIntyre, B.A., Journalism. Experience in CEQA/NEPA documentation.  
Contribution: Editorial review and document coordination.

Jeff Zimmerman, B.S., Conservation of Natural Resources. Experience in environmental documentation and CEQA/NEPA process. Contribution: Document Project Manager.

#### ***AGS, Inc.***

Doug Herold, specialist in geotechnical studies. Contribution: Geotechnical Impact Assessment.

#### ***Baseline Environmental Consulting***

Jim McCarty, specialist in air quality studies. Contribution: Air Quality Report.

Todd Taylor, specialist in hazardous waste. Contribution: Initial Site Assessment.

#### ***Basin Research***

Colin Busby, specialist in cultural resources. Contribution: Historic Architectural Survey Report / Historic Resource Evaluation Report.

#### ***Donaldson Associates***

Doug Donaldson, Section 4(f) properties. Contribution: Section 4(f) evaluation.

*Fehr and Peers*

Chris Mitchell, specialist in traffic studies. Contribution: Traffic Report.

*Haygood and Associates*

Leah Haygood, specialist in landscape architecture and visual impact assessment.

Contribution: Visual Impact Assessment Report.

*Vernazza Wolfe Associates, Inc.*

Marian Wolfe, Ph.D., specialist in land use and economic impact studies.

Contribution: Community Impacts Technical Study.

*Wilson, Ihrig & Associates*

Pablo Daroux, specialist in noise assessment. Contribution: Noise Study Report.

*WRECO*

Han-Bin Liang, P.E. (WRECO). Specialist in hydrology and water quality

Contribution: Location Hydraulic Report and Water Quality Report.



## **Chapter 5. Distribution List**

---

The following agencies, organizations, and individuals received copies of this document or were notified of its availability.

### ***Federal Agencies***

National Marine Fisheries Service  
Bay Area Office  
777 Sonoma Avenue, Room 325  
Santa Rosa, CA 94502

U.S. Army Corp of Engineers  
Regulatory Branch  
San Francisco District  
Attention: CESP-N-CO-R  
333 Market Street, 8th Floor  
San Francisco, CA 94105

U.S. Department of Agriculture  
Natural Resources Conservation  
Service  
430 G Street, #4164  
Davis, CA 95616

U.S. Fish and Wildlife Service  
U.S. Department of Interior  
2800 Cottage Way, Room W-2605  
Sacramento, CA 95825

### ***State Agencies***

Executive Director  
Office of Planning and Research  
State Clearinghouse  
1400 Tenth Street  
Sacramento, CA 95814

California Department of  
Conservation\*  
801 K Street, MS 24-01  
Sacramento, CA 95814

California Department of Fish and  
Game\*  
Fisheries, Wildlife, and Environmental  
Programs  
P.O. Box 47  
Yountville, CA 94599

Office of Historic Preservation\*  
1416 Ninth Street, Room 1442  
Sacramento, CA 95814

California Department of Parks and  
Recreation\*  
Resources Management Division  
P.O. Box 942896  
Sacramento, CA 94296

California Department of Water  
Resources\*  
Reclamation Board  
1416 Ninth Street, Room 1601  
Sacramento, CA 95814

California Department of Water  
Resources\*  
Environmental Services Office  
3251 S Street, Room 111  
Sacramento, CA 95816

California Highway Patrol\*  
Office of Special Projects  
2555 1st Avenue  
Sacramento, CA 95818

California Resources Agency\*  
1416 Ninth Street, Suite 1311  
Sacramento, CA 95814

\* Agency received document through State  
Clearinghouse

California Department of General Services\*  
Environmental Services Section  
1325 J Street, Suite 1910  
Sacramento, CA 95814

California Air Resources Board\*  
Transportation Projects  
1102 Q Street  
Sacramento, CA 95812

Integrated Waste Management Board  
P.O. Box 4025  
Sacramento, CA 95812

California State Water Resources Control Board\*  
Division of Water Quality  
P.O. Box 100  
Sacramento, CA 95812

California Department of Toxic Substances Control\*  
700 Heinz Avenue, Suite 200  
Berkeley, CA 94710

California Energy Commission  
1516 Ninth Street, MS-29  
Sacramento, CA 95814

Native American Heritage Commission\*  
915 Capitol Mall, Room 364  
Sacramento, CA 95814

Public Utilities Commission\*  
505 Van Ness Avenue  
San Francisco, CA 94102

California State Lands Commission  
100 Howe Avenue, Suite 100 South  
Sacramento, CA 95825

**Regional**

Executive Office, Bruce Wolfe\*  
Regional Water Quality Control Board  
1515 Clay Street, Suite 1400  
Oakland, CA 94612

Executive Director, Eugene Leong  
Association of Bay Area Governments  
101 8th Street  
Oakland, CA 94604

Executive Director, Steve Heminger  
Metropolitan Transportation Commission  
101 8th Street  
Oakland, CA 94604

Bay Area Air Quality Management District\*  
939 Ellis Street  
San Francisco, CA 94109

Frank Furger  
Alameda County Congestion Management Agency  
1333 Broadway, Suite 220  
Oakland, CA 94612

**Local**

Bruce Jensen  
Alameda County Planning Department  
224 West Winton Avenue, Room 111  
Hayward, CA 94544

Public Services Department  
City of Livermore  
3500 Robertson Park Road  
Livermore, CA 94550

Community Development  
City of Livermore  
1052 S. Livermore Avenue  
Livermore, CA 94550

\* Agency received document through State Clearinghouse

Ken Ross  
Senior Civil Engineer  
City of Livermore  
1052 S. Livermore Avenue  
Livermore, CA 94550

Barbara Duffy, General Manager  
Livermore-Amador Valley Transit  
Authority  
1362 Rutan Court, Suite 100  
Livermore, California 94551

Barbara Miller, Superintendent  
Livermore Valley Joint Unified School  
District  
685 East Jack London Boulevard  
Livermore, CA 94550

Susan A. Cota, Chancellor  
Chabot-Las Positas Community  
College District Office  
5020 Franklin Drive  
Pleasanton, CA 94588

Melissa Morton  
Public Works Director  
City of Dublin  
100 Civic Plaza  
Dublin, CA 94568

Michael Tassano  
Deputy Director of Public Works—  
Transportation  
City of Pleasanton  
123 Main Street, P.O. Box 520  
Pleasanton, CA 94566

Randy Burton  
Land Agent  
Pacific Gas & Electric  
3480 Buskirk Avenue, Suite 150  
Pleasant Hill, CA 94523

Dennis Gambs  
Real Property Services Manager  
Zone 7 Water Agency  
100 North Canyons Parkway  
Livermore, CA 94551

Union Pacific Railroad  
1201 Carden Street  
San Leandro, CA 94577

Tri-Valley Conservancy  
1736 Holmes Street, Bldg. B  
Livermore, CA 94550

Doug Reynolds  
Vulcan Materials  
365 North Canyons Parkway,  
Suite 209  
Livermore, CA 94551

***Federal Elected Officials***

Honorable Barbara Boxer  
United States Senator  
1700 Montgomery Street, Suite 240  
San Francisco, CA 94111

Honorable Dianne Feinstein  
United States Senator  
One Post Street, Suite 2450  
San Francisco, CA 94104

Honorable Ellen Tauscher  
Representative in Congress, 10th  
District  
2121 North California Blvd, Suite 555  
Walnut Creek, CA 94596

Honorable Jerry McNerney  
Representative in Congress, 11th  
District  
5776 Stoneridge Mall Road, Suite 175  
Pleasanton, CA 94566

***State Elected Officials***

Honorable Don Perata  
California Senator, 9th District  
1515 Clay Street #2202  
Oakland, CA 94612

Ellen Corbett  
California Senator, 10th District  
43801 Mission Blvd. No.103  
Fremont, CA 94539

Honorable Guy Houston  
California Assembly, 15th District  
1635 Chestnut Street, Suite A  
Livermore, CA 94551

***Local Elected Officials***

Mayor, Marshall Kamena  
City of Livermore  
1052 S. Livermore Avenue  
Livermore, CA 94550

City Council  
City of Livermore  
1052 S. Livermore Avenue  
Livermore, CA 94550

Scott Haggerty, County Supervisor  
1st District  
Alameda County Fairgrounds Heritage  
House  
4501 Pleasanton Ave.  
Pleasanton, CA 94566

## Chapter 6. References

---

- ABAG 2005 Association of Bay Area Governments. Projections of Demographic and Economic Characteristics.
- ACCMA 2001 Final Alameda Countywide Bicycle Plan. Alameda County Congestion Management Agency. Adopted October 26, 2006.
- AGS 2006 Final Geotechnical Impact Assessment, Route 84 Expressway Widening Project, Alameda County, CA. Prepared for Alameda County Transportation Improvement Authority, Oakland, CA. June.
- Alameda County 1981 Specific Plan for the Livermore-Amador Valley Quarry Area Reclamation (LAVQAR Plan). Adopted November 5, 1981, Alameda County Board of Supervisors. Amended by Alameda County Planning Commission via Surface Mining Permit 16, Vulcan Materials Company, May 16, 2005.
- Bakun, W.H. 1999 Seismic activity of the San Francisco Bay Region. *Bulletin of the Seismological Society of America* 89: 764-784.
- Baseline Environmental Consulting 2005 Initial Site Assessment (ISA). State Route 84 Expressway Widening Project. Prepared for Alameda County Transportation Improvement Authority, Oakland, CA. December.
- Baseline Environmental Consulting 2008 Air Quality Analysis, State Route 84 Expressway Widening Project. Issued March 2006, updated by URS Corporation June 2008.
- Basin Research Associates 2006a Archaeological Survey Report (ASR). State Route 84 Expressway Widening Project. Prepared for California

Department of Transportation, District 4, Oakland, CA, under contract to URS Corporation, San Jose, CA. August 21; Revised October 12.

Basin Research Associates 2006b

Historic Property Survey Report. State Route 84 Expressway Widening Project. Prepared for California Department of Transportation, District 4, Oakland, CA under contract to URS Corporation, San Jose, CA. October 12.

Bedrossian, T. L. 1980

The Livermore earthquake of January 1980, Contra Costa and Alameda Counties, California, California. *Geology*, 33(4).

Caltrans 1998

California Department of Transportation. Technical Noise Supplement, a Technical Supplement to the Traffic Noise Analysis Protocol. Environmental Program, Environmental Engineering – Noise, Air Quality, and Hazardous Waste Management Office, Sacramento, CA. October.

Caltrans 2001

*Isabel Avenue Extension Environmental Impact Report (2001)*

Caltrans 2003

California Department of Transportation. Project Study Report (Project Development Support). On Route 84 between Interstate 680 and Jack London Boulevard. July 25, 2003.

Caltrans 2005

California Department of Transportation. I-580 Isabel Interchange Construction Project. Initial Study (CEQA) with Proposed Mitigated Negative Declaration (CEQA)/Environmental Assessment (NEPA) and Programmatic Section 4(f) Evaluation. March.

Caltrans 2006

California Department of Transportation. Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects. Division of Environmental Analysis, Sacramento, CA. August 14.

CDFG 1995

Staff report on burrowing owl mitigation. California Department of Fish and Game, Sacramento, CA.

- CDFG 2003 California's Wildlife. Wildlife and Habitat Data Analysis Branch. <<http://www.dfg.ca.gov/whdab/html/cawildlife.html>>
- CDFG 2005 Rarefind 3 computer program. Natural Diversity Database Program. California Department of Fish and Game, Sacramento, CA.
- Census 2000 American Fact Finder. U.S. Census Bureau. [www.census.gov](http://www.census.gov).
- City of Livermore 2003  
2003-2025 General Plan. Community Development Department Planning Division. Adopted February 9, 2004.
- City of Pleasanton 1996  
The Pleasanton General Plan. A Guide to Community Resources, Future Trends, and Long-Range Plans. August 6, 1996. Updated 2003; update in progress.
- Claritas 2005 "Pop-facts: Demographic Snapshot Report," Claritas Projections obtained in 2005.
- CNPS 2001 California Native Plant Society Botanical Survey Guidelines. Sacramento, CA.
- Environmental Laboratory 1987  
Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
- Fehr and Peers 2005 AM and PM Peak Hour VISUM Model Calibration/Validation Report. Route 84 Expressway Widening Project. Prepared for URS, San Jose, CA, and Alameda County Congestion Management Agency, Oakland, CA. December 1.
- Fehr and Peers 2006 Final Traffic Operations Report. Route 84 Expressway Widening Project. Prepared for Alameda County Transportation Improvement Authority, Oakland, CA. October 26.
- Fehr and Peers 2008 SR 84 Widening Project – Truck Forecasts. Technical memo. January 7, 2008.

- FHWA 1979 Federal-Aid Highway Program Manual (FHPM) 6-7-3-2, "Location and Hydraulic Design of Encroachment on Floodplains." November 15.
- Galehouse, J. 1992 Creep rates and creep characteristics of eastern San Francisco Bay Area faults: 1979-1992. In Proceedings of the Second Conference on Earthquake Hazards in the Eastern San Francisco Bay Area, G. Borchardt, S.E. Hirschfeld, J.J. Lienkaemper, P. McClellan, P.L. Williams, and I.G. Wong, eds., pp. 45-53. California Department of Conservation, Division of Mines and Geology.
- Hayes, G.E., and M. Jennings 1988 Habitat correlates of distribution of the California red-legged frog (*Rana aurora draytonii*) and the foothill yellow-legged frog (*Rana boylei*): Implications for Management. *Management of Amphibians, Reptiles, and Small Mammals in North America: a Symposium*, Flagstaff, AZ, pp. 144-158.
- Haygood and Associates 2007 Visual Resources Impact Report. State Route 84 Expressway Widening Project, Livermore Area of Alameda County, CA. Prepared for Alameda County Transportation Improvement Authority, Oakland, CA under contract to URS Corporation, Oakland, CA. April.
- Helley, E.J. and Graymer, R.W. 1997 Quaternary geology of Contra Costa County, and surrounding parts of Alameda, Marin, Sonoma, Solano, Sacramento, and San Joaquin Counties, California: A digital database. U.S. Geological Survey, Open-File Report 97-98, 1:75,000.
- Hickman, J.C. 1993 *The Jepson Manual: Higher Plants of California*. Berkeley, CA: University of California Press.
- Jennings, C.W. 1994 Fault Activity Map of California and Adjacent Areas, with Locations and Ages of Recent Volcanic Eruptions. California Division of Mines and Geology Geologic Data Map No. 6.

- Jennings, M.R., and M.P. Hayes. 1994  
Amphibian and Reptile Species of Special Concern in California. Under Contract No. 8023 to the California Department of Fish and Game Inland Fisheries Division, Rancho Cordova, CA.
- Jensen, C. C. 1972 San Joaquin Kit Fox Distribution. U.S. Fish and Wildlife Service, Sacramento, CA.
- Jones and Stokes 2007 *Final Environmental Impact Report for the El Charro Specific Plan*. Prepared for the City of Livermore by Jones and Stokes, Sacramento, CA. State Clearinghouse #2006052112. April.
- Knudsen, K.L., Sowers, J.M., Witter, R.C., Wentworth, C.M., and Helley, E.J. 2000 Preliminary Maps of Quaternary Deposits and Liquefaction Susceptibility, Nine-County San Francisco Bay Region: A Digital Database. U.S. Geological Survey, Open-File Report 00-444.
- LSA Associates, Inc. 2004a  
Ruby Hill Tiger Salamander Habitat 2004 Monitoring Report. Signature Properties, Pleasanton, CA.
- LSA Associates, Inc. 2004b  
Special-Status Species Evaluation. Amendment to SMP-16 Reclamation Plan. Calmat Co. dba Vulcan Materials Company, Western Division, Pleasanton, CA.
- Milliken, R. 1995 A Time of Little Choice. *The Disintegration of Tribal Culture in the San Francisco Bay Area 1769-1810*. Menlo Park, CA: Ballena Press.
- Morrell, S. H. 1972 Life history of the San Joaquin kit fox. *California Fish and Game Journal* 58(3):162-174.
- MTC 2001  
Regional Bicycle Plan for the San Francisco Bay Area. Prepared for Metropolitan Transportation Commission by Alta Transportation Consulting, San Rafael, CA. December.

- MTC 2005                    Transportation 2030 Plan for the San Francisco Bay Area. Mobility for the Next Generation. Final Report. Metropolitan Transportation Commission. February.
- MTC 2006                    2007 Transportation Improvement Program (ALA050014). Metropolitan Transportation Commission. July 26. Adopted October 2.
- Mualchin, L. 1996        California seismic hazard map 1996 based on maximum credible earthquakes (MCE). California Department of Transportation.
- O'Farrell, T. P. 1983    San Joaquin Kit Fox Recovery Plan. U.S. Fish and Wildlife Service, Sacramento, CA.
- Orloff, S., L. Spiegel, and F. Hectarell. 1986  
Distribution and habitat requirements of the San Joaquin kit fox in the northern extreme of its range. *Western Section Wildlife Society (CAL-NEV) Conference Transactions* 22:60-70.
- Sawyer, T.L. 1998        Assessment of Contractional Deformation Rates of the Mt. Diablo Fold and Thrust Belt, Eastern San Francisco Bay Region, Northern California, Intermediate Report. U.S. Geological Survey National Earthquake Hazards Reduction Program (NEHRP) Award 98-HQ-GR-1006.
- Shaffer, H.B., R.N. Fisher, and S.E. Stanley. 1993  
Status Report: The California Tiger Salamander, *Ambystoma Californiense*. Final Report to the California Department of Fish and Game, Inland Fisheries Division.
- Stebbins, R.C. 1985    *A Field Guide to Western Reptiles and Amphibians*. Boston, MA: Houghton Mifflin Company.
- URS 2007a                Natural Environment Study, State Route 84 Expressway Widening Project. Prepared for Alameda County Transportation Improvement Authority, Oakland, CA, and California Department of Transportation, District 4, Oakland, CA, by URS Corporation, Oakland, CA. March.

- URS 2007b            Biological Evaluation, State Route 84 Expressway Widening Project. Prepared for Alameda County Transportation Improvement Authority, Oakland, CA, and California Department of Transportation, District 4, Oakland, CA, by URS Corporation, Oakland, CA. April.
- URS 2007c            Draft Project Report for Widening Route 84 in Alameda County in Livermore from Ruby Hill Drive to Jack London Boulevard. 04-Ala-84, PM 22.5/27.3. EA 04-297600. April.
- URS 2008            Route 84 Jurisdictional Delineation Report. Prepared for Alameda County Transportation Improvement Authority, Oakland, CA, and California Department of Transportation, District 4, Oakland, CA, by URS Corporation, Oakland, CA. June.
- USACE 2001        Minimum Standards for Acceptance of Preliminary Wetlands Delineations. U.S. Army Corps of Engineers, Sacramento District, Regulatory Branch. November 30.  
<<http://spk.usace.army.mil/cpk-co/regulatory.html>>
- USDA 1966           Soil Survey of Alameda County, California. U.S Department of Agriculture, Soil Conservation Service, Washington, DC.
- Vernazza Wolfe Associates 2006  
                          Community Impacts Technical Study. Route 84 Expressway Widening Project. Prepared for Alameda County Transportation Improvement Authority, Oakland, CA, in association with Donaldson Associates. June.
- Wells and Coppersmith 1994  
                          New empirical relationships among magnitude, rupture length, rupture width, rupture area, and surface displacement. Bulletin of the Seismological Society of America, 84:974–1002.
- Wilson, Ihrig and Associates 2007  
                          Final Noise Study Report. Route 84 Expressway Widening Project. Prepared for Alameda County Transportation

Improvement Authority, Oakland, CA, under contract to URS Corporation, San Jose, CA. April.

Wilson, Ihrig and Associates 2008

Noise Analysis at Second Stories and Long-Term Noise Comparisons, Route 84 Expansion Project. Technical Memo. February 2008.

Working Group on California Earthquake Probabilities 1996

Database of potential sources for earthquakes larger than magnitude 6 in northern California. U.S. Geological Survey Open-File Report 96-705, 53 p.

Working Group on California Earthquake Probabilities 1999

Earthquake Probabilities in the San Francisco Bay Region: 2000 to 2030 - A Summary of Findings. U.S. Geological Survey Open-File Report 99-517.

Working Group on California Earthquake Probabilities 2003

Earthquake Probabilities in the San Francisco Bay Region: 2002 to 2031. U.S. Geological Survey Open-File Report 99-517.

WRECO 2006

Location Hydraulic Study Report, Route 84 Expressway Widening Project, City of Livermore, Alameda County, CA. Prepared for Alameda County Transportation Improvement Authority, Oakland, CA, under contract to URS Corporation, Oakland, CA. June.

WRECO 2007a

Storm Water Data Report, Route 84 Expressway Widening Project, City of Livermore, Alameda County, CA. Prepared for Alameda County Transportation Improvement Authority, Oakland, CA, under contract to URS Corporation, Oakland, CA. April.

WRECO 2007b

Water Quality Study Report, Route 84 Expressway Widening Project, City of Livermore, Alameda County, CA. Prepared for Alameda County Transportation Improvement Authority,

Oakland, CA, under contract to URS Corporation, Oakland, CA. January.

Zeiner, D.C., W. F. Laudenslayer, Jr., and K. E. Mayer. 1988

*California's Wildlife*, Volume I: Amphibians and Reptiles.  
California Statewide Wildlife Habitat Relationships System,  
California Department of Fish and Game. Sacramento, CA.

Zone 7 Water Agency 2006

Estimated vehicular traffic from the quarry area to Isabel  
Avenue-Hwy 84. March 28, 2006.



## **Chapter 7. List of Technical Studies**

---

The following technical studies were prepared to support this environmental document:

- Air Quality Analysis, June 2008
- Archaeological Survey Report, October 2006
- Biological Evaluation, April 2007
- Community Impacts Technical Study, June 2006
- Geotechnical Impact Assessment, June 2006
- Historic Property Survey Report, October 2006
- Historic Resource Evaluation Report, October 2006
- Initial Site Assessment, December 2005
- Jurisdictional Delineation Report, June 2008
- Location Hydraulic Study Report, June 2006
- Natural Environment Study, March 2007
- Noise Study Report, April 2007
- Stormwater Data Report, April 2007
- Traffic Operations Report, October 2006
- Visual Resources Impact Report, April 2007
- Water Quality Study Report, January 2007

