CITY PLACE SANTA CLARA PROJECT
DRAFT ENVIRONMENTAL IMPACT REPORT

VOLUME II: SECTION 3.4 – CHAPTER 6

STATE CLEARINGHOUSE NO.

2014072078

PLANNING/CEQA FILE NO.

PLN2014-10554/CEQ2014-01180

PREPARED FOR:

City of Santa Clara
1500 Warburton Avenue
Santa Clara, CA 95050

PREPARED BY:

ICF International
620 Folsom Street
San Francisco, CA 94107

October 2015

ICF International. 2015. City Place Santa Clara Project Draft EIR. October 2015. ICF 00333.14. San Francisco, CA. Prepared for the City of Santa Clara, Santa Clara, CA.

Table of Contents

Page

VOLUME I

Executive Summary ES-1

Project Overview ES-1

Areas of Controversy ES-2

Chapter 1 Introduction 1-1

Purpose of This Environmental Impact Report 1-1

Project Overview 1-1

CEQA Process 1-3

Report Organization 1-6

Chapter 2 Project Description 2-1

Project Location and Setting 2-1

Project Objectives 2-6

Project Characteristics 2-6

Project Phasing and Construction 2-30

General Plan Amendment 2-34

Project Approvals 2-35

Chapter 3 Environmental Impact Analysis 3-1

3.1 Land Use and Planning 3.1-1

3.2 Aesthetics 3.2-1

3.3 Transportation 3.3-1

VOLUME II

3.4 Air Quality 3.4-1

3.5 Greenhouse Gas Emissions 3.5-1

3.6 Noise 3.6-1

3.7 Cultural Resources 3.7-1

3.8 Biological Resources 3.8-1

3.9 Geology and Soils 3.9-1

3.10 Hydrology and Water Quality 3.10-1

3.11 Hazards and Hazardous Materials 3.11-1

3.12 Population and Housing 3.12-1

3.13 Public Services and Recreation 3.13-1

3.14 Utilities and Service Systems 3.14-1

Please note that shaded items are contained in a separate volume.

Chapter 4 Other CEQA Considerations 4-1
4.1 Significant and Unavoidable Environmental Impacts 4-1
4.2 Significant and Irreversible Environmental Changes 4-3
4.3 Growth-Inducing Impacts 4-4
4.4 Cumulative Impacts 4-7
4.5 Urban Decay 4-8
Chapter 5 Alternatives Analysis 5-1
5.1 Introduction 5-1
5.2 Project Objectives and Environmental Impacts 5-1
5.3 Description of Alternatives Considered 5-5
5.4 Attainment of Project Objectives 5-10
5.5 Alternatives Considered but Rejected 5-12
5.6 Impact Assessment 5-16
5.7 Comparison of Impacts 5-92
5.8 Environmentally Superior Alternative 5-99
Chapter 6 List of Preparers 6-1

Appendices (Included on CD attached to Volume II)

Appendix 1: Notices of Preparation and Comments Received

Appendix 3.3: Transportation Data

Appendix 3.4: Air Quality and Greenhouse Gas Data

Appendix 3.6: Noise Data

Appendix 3.7: Native American Consultation

Appendix 3.8: Tree Assessment Report

Appendix 3.14: Water Supply Assessment

Appendix 4: Urban Decay Analysis

Please note that shaded items are contained in a separate volume.

List of Tables

Page

VOLUME I

Table ES-1. Summary of Impacts and Mitigation Measures ES-8
Table ES-2. Summary of Secondary Impacts and Mitigation Measures ES-90
Table 2-1. Existing Buildings at the Project Site 2-3
Table 2-2. Proposed Development at the Project Site by Scheme 2-7
Table 2-3. Development Comparison by Scheme 2-9
Table 2-4. FAR Breakdown by Development Parcel – Scheme A 2-10
Table 2-5. Development Summary by Parcel—Scheme A 2-11
Table 2-6. FAR Breakdown by Development Parcel–Scheme B 2-13
Table 2-7. Development Summary by Parcel – Scheme B 2-13
Table 2-8. Existing Trees that Could Be Affected by the Project 2-20
Table 2-9. Proposed On-site Residents and Employees—Scheme A 2-22
Table 2-10. Proposed On-site Residents and Employees—Scheme B 2-23
Table 2-11. Proposed Phasing—Schemes A and B 2-31
Table 3.0-1. Cumulative Projects 3-6
Table 3.0-2: Total and Net Cumulative Development 3-9
Table 3.1-1. Comparison of Number of Jobs to Housing in the City 3.1-3
Table 3.1-2. Comparison of Number of Jobs to Housing in the City (Plan Bay Area) 3.1-5
Table 3.1-3. Jobs and Housing in the City of through 2035 with Phases 1, 2, and 3 ..... 3.1-11
Table 3.1-4. Jobs and Housing in the City through 2040 with Phases 1, 2, and 3 ..... 3.1-12
Table 3.1-5. Jobs and Housing in the City through 2035 with Full Build-out 3.1-12
Table 3.1-6. Jobs and Housing in City through 2040 with Full Build-out 3.1-13
Table 3.1-7. Comparison of the Project to General Plan Goals and Policies 3.1-21
Table 3.1-8. Comparison of the Project to Airport Land Use Commission Comprehensive Land Use Plan Goals and Policies 3.1-67
Table 3.3-1. Analysis Scenarios 3.3-2
Table 3.3-2. Santa Clara General Plan Mobility and Transportation Goals and Policies 3.3-10
Table 3.3-3. Study Intersections 3.3-17
Table 3.3-4. Signalized Intersection Level of Service Definitions 3.3-21
Table 3.3-5. Unsignalized Intersection LOS Definitions 3.3-22
Table 3.3-6. Freeway Segment LOS Definitions (Santa Clara County) 3.3-23
Table 3.3-7. Freeway Segment LOS Definitions (San Mateo County) 3.3-23
Table 3.3-8. Freeway Segment LOS Definitions (Alameda County) 3.3-24
Table 3.3-9. Signalized Intersection LOS Standards 3.3-25
Table 3.3-10. Existing Transit Service in Focused Study Area 3.3-32
Table 3.3-11. Peak Load Factors for Light Rail (Route 902) 3.3-34
Table 3.3-12. Existing Signalized Intersection LOS Results 3.3-38
Table 3.3-13. Existing Unsignalized Intersection LOS 3.3-46
Table 3.3-14. Background Signalized Intersection LOS Results 3.3-49
Table 3.3-15. Background Unsignalized Intersection LOS Results 3.3-55
Table 3.3-16. Vehicle Trip Generation Estimates (Scheme B) 3.3-61

Please note that shaded items are contained in a separate volume.

Table 3.3-17. Existing with-Project Signalized Intersection LOS Results 3.3-63
Table 3.3-18. Background with-Project Signalized Intersection LOS Results 3.3-75
Table 3.3-19. City Place Vehicle Trip Thresholds at Build-out (Scheme B) 3.3-87
Table 3.3-20. Project-Specific (Existing with-Project/Background with-Project) Intersection Mitigation Measures 3.3-93
Table 3.3-21. Existing with-Project Unsignalized Intersection LOS Results 3.3-114
Table 3.3-22. Background with-Project Unsignalized Intersection LOS Results 3.3-115
Table 3.3-23. Trip Generation Estimates (Scheme B– Phases 1, 2, and 3).....3.3-117
Table 3.3-24. Existing with Project Phases 1, 2, and 3 Signalized Intersection LOS Results 3.3-118
Table 3.3-25. Existing with Project Phases 1, 2, and 3 Unsignalized Intersection LOS Results 3.3-128
Table 3.3-26. Existing with Project Phases 1, 2, and 3 Intersection Mitigation Measures 3.3-130
Table 3.3-27. On-Site Intersection LOS Results (Base Access Scheme) 3.3-143
Table 3.3-28. Off-Site Study Intersections for Variant Access Scheme 3.3-145
Table 3.3-29. Existing with-Project Signalized Intersection LOS Results for Variant Access Scheme 3.3-147
Table 3.3-30. Existing with-Project Unsignalized Intersection LOS Results for Variant Access Scheme 3.3-149
Table 3.3-31. Existing with Project Phases 1, 2, and 3 Signalized Intersection LOS Results for Variant Access Scheme 3.3-150
Table 3.3-32. Existing with Project Phases 1, 2, and 3 Unsignalized Intersection LOS Results for Variant Access Scheme 3.3-153
Table 3.3-33. Background with-Project Signalized Intersection LOS Results for Variant Access Scheme 3.3-154
Table 3.3-34. Background with-Project Unsignalized Intersection LOS Results for Variant Access Scheme 3.3-156
Table 3.3-35. Project-Specific (Existing with-Project/Background with-Project) Intersection Mitigation Measures –Variant Access Scheme.....3.3-159
Table 3.3-36. Phases 1, 2, and 3 Project-Specific Intersection Mitigation Measures –Variant Access Scheme 3.3-163
Table 3.3-37 On-Site Intersection LOS Results (Variant Access Scheme) 3.3-166
Table 3.3-38. Public Transit Ridership 3.3-169
Table 3.3-39. Peak Hour Commuter Rail and Bus Route Capacity Analysis 3.3-170
Table 3.3-40. Peak Hour Commuter Rail and Bus Route Capacity Analysis with TDM Mitigation.....3.3-170
Table 3.3-41. Peak-Hour Light-Rail Route 902 Capacity Analysis 3.3-171
Table 3.3-42. Peak-Hour Light-Rail Route 902 Capacity Analysis with TDM Mitigation 3.3-171
Table 3.3-43 Change in Emergency Response Times – Option 1 .....3.3-173
Table 3.3-44. Change in Emergency Response Times – Option 2 .....3.3-174
Table 3.3-45. City Place Parking Supply Rates 3.3-175
Table 3.3-46. Parking Supply for Parcels 1 through 5 (Scheme B) 3.3-175
Table 3.3-47. City Place Peak Parking Demand 3.3-176
Table 3.3-48. Bicycle Parking Supply 3.3-177
Table 3.3-49. Cumulative with-Project Signalized Intersection LOS Results 3.3-179
Table 3.3-50. Cumulative with-Project Intersection Mitigation Measures.....3.3-193
Table 3.3-51. Cumulative with-Project Unsignalized Intersection LOS Results 3.3-206
Table 3.3-52. Cumulative with-Project Signalized LOS Results for Variant Access Scheme 3.3-208
Table 3.3-53. Cumulative with-Project Unsignalized LOS Results for Variant Access Scheme 3.3-211

Please note that shaded items are contained in a separate volume.

Table 3.3-54. Cumulative with-Project Intersection Mitigation Measures – Variant Access Scheme 3.3-212
Table 3.3-55. City Place Construction Activities, Start and End Dates, and Daily Trucks and Workers 3.3-216
Table 3.3-56. City Place Construction Traffic Estimates – Peak Construction Period 3.3-218
Table 3.3-57. Summary of Congested Intersections (Intersections Operations at LOS E or F Before and After Games) 3.3-225
Table 3.3-58. Game-Day (Sunday) Project Vehicle Trip Estimate Summary 3.3-226
Table 3.3-59. Typical Sunday (Non-Game Day) Project Vehicle Trip Estimate Summary 3.3-226
Table 3.3-60. Project Intersection Mitigation Measures 3.3-231
Table 3.3-61. Summary of Secondary Impacts from Intersection Improvements 3.3-265

VOLUME II

Table 3.4-1. National and State Ambient Air Quality Standards 3.4-2
Table 3.4-2. Ambient Criteria Air Pollutant Monitoring Data (2012–2014) 3.4-9
Table 3.4-3. Federal and State Attainment Status for the Project Area 3.4-11
Table 3.4-4. Sensitive Receptors within 1,000 Feet of the Project Area 3.4-12
Table 3.4-5. BAAQMD Thresholds 3.4-13
Table 3.4-6. Unmitigated Average Daily Construction Emissions in BAAQMD 3.4-24
Table 3.4-7. Mitigated Average Daily Construction Emissions in BAAQMD 3.4-26
Table 3.4-8. Estimated 2030 Operational Average Daily Emissions 3.4-31
Table 3.4-9. Estimated 2030 Operational Average Daily Mitigated Emissions 3.4-32
Table 3.4-10. Project-Level PM2.5 Exposure during Construction 3.4-35
Table 3.4-11. Project-Level Cancer and Chronic (HI) Risks during Construction 3.4-35
Table 3.4-12. Project Traffic Emissions Toxic Air Contaminant Impacts 3.4-37
Table 3.4-13. Project On-Site Operational Emissions Toxic Air Contaminant Impacts 3.4-38
Table 3.4-14. Project-Level Toxic Air Contaminant Impacts from Locating New Receptors 3.4-39
Table 3.4-15. Mitigated Project-Level Toxic Air Contaminant Impacts from Locating New Receptors 3.4-41
Table 3.4-16. Unmitigated Cumulative Toxic Air Contaminant Health Risks 3.4-45
Table 3.4-17. Mitigated Cumulative Toxic Air Contaminant Health Risks 3.4-47
Table 3.5-1. Lifetimes and Global Warming Potentials of Key Greenhouse Gases 3.5-8
Table 3.5-2. Global, National, State, and Local GHG Emissions Inventories 3.5-9
Table 3.5-3. Operational GHG Thresholds/Substantial Progress Efficiency Metrics 3.5-12
Table 3.5-4. Estimated Construction GHG Emissionsa 3.5-15
Table 3.5-5. Estimated Operational GHG Emissions, Full Build-outa 3.5-17
Table 3.5-6. Estimated Mitigated Operational GHG Emissions, Full Build-outa 3.5-21
Table 3.5-7. Consistency of City Place Project with CAP Measures 3.5-23
Table 3.5-8. Estimated 2020 Santa Clara GHG Emissions with and without the City Place Project 3.5-25
Table 3.6-1. Definition of Sound Measurements 3.6-2
Table 3.6-2. Typical A-weighted Sound Levels 3.6-3
Table 3.6-3. Vibration Source Levels for Construction Equipment 3.6-5
Table 3.6-4. Vibration Damage Potential Threshold Criteria Guidelines 3.6-5
Table 3.6-5. Vibration Annoyance Potential Criteria Guidelines 3.6-5
Table 3.6-6. Typical Levels of Ground-borne Vibration 3.6-6
Table 3.6-7. Ground-borne Vibration Impact Criteria 3.6-7

Please note that shaded items are contained in a separate volume.

Table 3.6-8. Santa Clara City Code Schedule A Exterior Sound or Noise Limits 3.6-10
Table 3.6-9. Noise Compatibility Policies from San José International Airport Comprehensive Land Use Plan 3.6-11
Table 3.6-10. Summary of Short-term Sound Level Measurements 3.6-13
Table 3.6-11. Summary of Long-term Sound Level Measurements 3.6-14
Table 3.6-12. Typical Construction Noise Emission Levels 3.6-18
Table 3.6-13. Calculated Construction Noise Emission Levels 3.6-19
Table 3.6-14. Existing and Existing plus-Project Noise Levels at Actual Distance to Off-Site Receptors 3.6-23
Table 3.6-15. Cumulative Year 2040 and Cumulative Year 2040 plus-Project Noise Levels at Actual Distance to Off-Site Receptors 3.6-35
Table 3.6-16. Summary of Secondary Impacts from Soundwall 3.6-48
Table 3.8-1. Estimates of Sources of Existing and Cumulative Nitrogen Deposition in Serpentine Grassland Habitats in Coyote Ridge in Santa Clara County 3.8-24
Table 3.8-2. Special-Status Plants with Potential to Occur in Project Footprint 3.8-28
Table 3.8-3. Special-Status Fish and Wildlife with Potential to Occur in Project Footprint 3.8-31
Table 3.9-1. Modified Mercalli Scalea 3.9-5
Table 3.9-2. Regional Faults 3.9-7
Table 3.9-3. Site Stratigraphy 3.9-10
Table 3.9-4. Earthwork Estimates 3.9-20
Table 3.10-1. Beneficial Uses for Surface Waters of Water Bodies with Potential to Be Affected by the Project 3.10-13
Table 3.10-2. Water Quality Impairments within the Project Alignment 3.10-13
Table 3.10-3. Groundwater Depths and Elevations 3.10-15
Table 3.10-4. Impervious and Pervious Area Summary for Existing and Proposed) Project Parcels (Schemes A-1 and A-2) 3.10-27
Table 3.10-5. Peak Flow Summary (by Sub-Watershed) 3.10-32
Table 3.11-1. Existing Buildings Impacted by Project 3.11-13
Table 3.11-2: Summary of Findings for the Site-Specific Health Risk Analysis 3.11-30
Table 3.12-1. ABAG Regional Housing Need Allocation for 2014–2022 (Units) 3.12-2
Table 3.12-2. Population Trends in the City, County, and the Bay Area, 2015–2040 (Total Number of Persons) 3.12-3
Table 3.12-3. Household Trends in the City, County, and the Bay Area, 2015–2040 (Total Number of Households) 3.12-4
Table 3.12-4. Employment Trends in the City, County, and the Bay Area, 2015–2040 (Total Number of Jobs) 3.12-6
Table 3.12-5. Comparison of Number of Jobs to Employed Residents in City 3.12-6
Table 3.12-6. Proposed On-Site Residents and Employees—Scheme A 3.12-10
Table 3.13-1. Santa Clara Unified School District School Enrollment and Capacity 3.13-5
Table 3.13-2. Golf, Tennis, and BMX Facilities within the Vicinity of the Project Site 3.13-7
Table 3.13-3. Parkland in the City of Santa Clara 3.13-11
Table 3.14-1. Projected Water Demand in the City based on the 2005 UWMP and 2010 UWMP, 2010–2035 ..... 3.14-7
Table 3.14-2. Actual City Potable Water Deliveries and System Losses Compared with Projected Water Deliveries 3.14-7
Table 3.14-3. Water Supply Projections by Water Source with SFPUC 3.14-8

Please note that shaded items are contained in a separate volume.

Table 3.14-4. Water Demand of the Project by Land Use 3.14-20
Table 3.14-5. Water Demand of the Project by Parcel 3.14-20
Table 3.14-6. Water Demand, 2015–2035, Including Project and Other Approved Projects (afy) 3.14-21
Table 3.14-7. Santa Clara Water Supply and Demand, 2015–2035, Including Project and Other Approved Projects (afy) 3.14-22
Table 3.14-8. Santa Clara Water Demand, 2015–2035, Including Project and Cumulative Development (afy) 3.14-23
Table 3.14-9. Santa Clara Water Supply and Demand, 2015 – 2035, Including City Place and Cumulative Development (afy) 3.14-24
Table 3.14-10. Wastewater Generated by the Project 3.14-28
Table 4.1. More Likely Affected Resources from Induced Growth in Urban, Suburban, and Rural Areas 4-7
Table 4-2. List of Incorporated Places in Market Area 4-10
Table 4-3. Population Trends, 2010-2020 4-11
Table 4-4. Long-Term Population Projections 4-11
Table 4-5. Household Income 4-12
Table 4-6. Retail Overview, Santa Clara County, 2010-Q3 2014 4-13
Table 4-7. Summary of Leakage Analysis 4-15
Table 5-1. Comparative Description of the Project Alternatives – Net Increase 5-5
Table 5-2. No Project Alternative 2—Development Summary by Parcel 5-7
Table 5-3. Reduced Intensity Alternative—Development Summary by Parcel 5-8
Table 5-4. Increased Housing Alternative—Development Summary by Parcel 5-9
Table 5-5. No Project Alternative 2 Trip Generation (Net New) 5-21
Table 5-6. Reduced Intensity Alternative Trip Generation (Net New) 5-35
Table 5-7. Existing with Reduced Intensity Alternative Intersection Analysis Results 5-36
Table 5-8. Background with Reduced Intensity Alternative Intersection Analysis Results 5-37
Table 5-9. Significant Intersection Impact Comparison 5-38
Table 5-10. Mitigation Measures for Existing with Reduced Intensity Conditions and Background with Reduced Intensity Conditions 5-39
Table 5-11. Increased Housing Alternative Trip Generation (Net New) 5-68
Table 5-12. Comparison of Impacts among Project Alternatives 5-93

List of Figures

Follows Page:

VOLUME I

Figure 2-1. Project Location 2-1
Figure 2-2. Existing Land Uses 2-2
Figure 2-3. Historic Landfill Parcels 2-3
Figure 2-4. Illustrative Site Plan – Scheme A 2-10
Figure 2-5. Illustrative Site Plan – Scheme B 2-12
Figure 2-6. Proposed Fire Station 10 Locations 2-15

Please note that shaded items are contained in a separate volume.

Figure 2-7. Proposed Site Access and Street Network 2-16
Figure 2-8. Site Access Variants 2-17
Figure 2-9. Existing and Proposed Bicycle Network 2-18
Figure 2-10. Existing and Proposed Pedestrian Network 2-18
Figure 2-11. Project Phasing 2-30
Figure 2-12. Non-Refuse Area at Parcels 4 and 5 2-32
Figure 3.0-1. Cumulative Projects within a Three-Mile Radius 3-6
Figure 3.1-1. General Plan Land Use Diagram: Phase II (2015-2033) 3.1-3
Figure 3.1-2. General Plan Land Use Diagram: Phase III (2023-2035) 3.1-3
Figure 3.2-1. Project Vicinity 3.2-5
Figure 3.2-2. On-site Features – Parcel 1 ..... 3.2-8
Figure 3.2-3. On-site Features – Parcel 2 ..... 3.2-9
Figure 3.2-4. On-site Features – Parcel 3 ..... 3.2-10
Figure 3.2-5. On-site Features – Parcel 4 ..... 3.2-10
Figure 3.2-6. On-site Features – Parcel 5 ..... 3.2-11
Figure 3.2-7. On-site Features – Retention Basin 3.2-11
Figure 3.2-8. Public View Corridors 3.2-12
Figure 3.2-9. Public View Corridors 3.2-14
Figure 3.2-10. Scheme A Massing Rendering Facing Northeast 3.2-16
Figure 3.2-11. Scheme A Massing Rendering Facing Southeast 3.2-16
Figure 3.2-12. Scheme A Massing Rendering Facing Southwest 3.2-16
Figure 3.2-13. Scheme A Massing Rendering Facing Northwest 3.2-16
Figure 3.3-1. Project Study Area 3.3-1
Figure 3.3-2. City Place Santa Clara Master Community Plan – Parcel Numbers and Development Phasing 3.3-1
Figure 3.3-3. Signalized Intersection Level of Service Examples 3.3-21
Figure 3.3-4. Intersection LOS Standards 3.3-24
Figure 3.3-5. Existing Transit Services in the Focused Study Area 3.3-26
Figure 3.3-6. Existing Commuter Rail Shuttle Service 3.3-26
Figure 3.3-7. Existing Bicycle Facilities in the Focused Study Area 3.3-26
Figure 3.3-8. Existing Pedestrian Facilities Gap Analysis Along Parcel Boundaries 3.3-37
Figure 3.3-9. Projects Under Construction in Santa Clara 3.3-38
Figure 3.3-10. Existing Intersection Level of Service Results 3.3-46
Figure 3.3-11. Existing AM Peak Hour Directional Mixed-Flow Freeway Segment Results 3.3-47
Figure 3.3-12. Existing PM Peak Hour Directional Mixed-Flow Freeway Segment Results 3.3-47
Figure 3.3-13. Existing AM Peak Hour Directional HOV Freeway Segment Results 3.3-47
Figure 3.3-14. Existing PM Peak Hour Directional HOV Freeway Segment Results 3.3-47
Figure 3.3-15. City Place Santa Clara Master Community Plan – Street Network 3.3-62
Figure 3.3-16. Existing with Project Intersection Level of Service Results 3.3-62
Figure 3.3-17. Background with Project Intersection Level of Service Results 3.3-74
Figure 3.3-18. Existing with Project AM Peak Hour Directional Mixed-Flow Freeway Segment Results 3.3-116
Figure 3.3-19. Existing with Project PM Peak Hour Directional Mixed-Flow Freeway Segment Results 3.3-116
Figure 3.3-20. Existing with Project AM Peak Hour Directional HOV Freeway Segment Results 3.3-116
Figure 3.3-21. Existing with Project PM Peak Hour Directional HOV Freeway Segment Results 3.3-116

Please note that shaded items are contained in a separate volume.

Figure 3.3-22. Existing with Project Phases 1, 2, & 3 Intersection Level of Service Results 3.3-117
Figure 3.3-23. City Place Santa Clara Master Community Plan – Street Network (Variant Access Scheme) 3.3-144
Figure 3.3-24. Intersection Level of Service Results (Variant Access Scheme) 3.3-146
Figure 3.3-25. Intersection Level of Service Results (Variant Access Scheme) 3.3-146
Figure 3.3-26. Intersection Level of Service Results (Variant Access Scheme) 3.3-146
Figure 3.3-27. City Place Santa Clara Master Community Plan – Pedestrian Network 3.3-167
Figure 3.3-28. City Place Santa Clara Master Community Plan - Bicycle Network 3.3-168
Figure 3.3-29. Cumulative with Project Intersection Level of Service Results 3.3-178
Figure 3.3-30. Cumulative with Project Conditions 3.3-207
Figure 3.3-31. Cumulative with Project AM Peak Hour Directional Mixed-Flow Freeway Segment Results.....3.3-215
Figure 3.3-32. Cumulative with Project PM Peak Hour Directional Mixed-Flow Freeway Segment Results.....3.3-215
Figure 3.3-33. Cumulative with Project AM Peak Hour Directional HOV Freeway Segment Results 3.3-215
Figure 3.3-34. Cumulative with Project PM Peak Hour Directional HOV Freeway Segment Results 3.3-215
Figure 3.3-35. Levi's Stadium Parking Areas.....3.3-223

VOLUME TWO

Figure 3.4-1. Project Sensitive Receptors 3.4-11
Figure 3.6-1. Noise Monitoring Locations 3.6-13
Figure 3.6-2. San José Airport Noise Contours 3.6-14
Figure 3.6-3. Noise Impact Area from 2009 49ers Stadium Project Environmental Impact Report 3.6-27
Figure 3.8-1. Land Cover Types on the Project Site 3.8-7
Figure 3.8-2. CNDDB Plant Occurrences Within 2.5 Miles of the Project Site 3.8-10
Figure 3.8-3. CNDDB Wildlife Occurrences Within 2.5 Miles of the Project Site 3.8-10
Figure 3.9-1. Regional Faults 3.9-6
Figure 3.9-2. Project Site Generalized Cross-Section 3.9-9
Figure 3.9-3. Foundation Settlement 3.9-12
Figure 3.9-4. Generalized Foundation Cross-Section 3.9-23
Figure 3.10-1. HMP Applicability Map for the City of Santa Clara 3.10-9
Figure 3.10-2. Hydrological Features within the Project Vicinity 3.10-9
Figure 3.10-3. Existing Sub-Watersheds in the Project Area 3.10-10
Figure 3.10-4. FEMA Flood Zones within the Project Area 3.10-18
Figure 3.10-5. Vulnerability to Sea Level Rise in the Project Area 3.10-23
Figure 3.11-1. Existing Landfill Features 3.11-9
Figure 3.11-2. Existing Leachate Collection System Cross Sections.....3.11-12
Figure 3.13-1. Public Services Serving the Project Site..... 3.13-3
Figure 3.14-1. Santa Clara Recycled Water System 3.14-10
Figure 3.14-2. Santa Clara Water Supply Sources 3.14-11
Figure 3.14-3. Santa Clara Potable Water Pressure Zones 3.14-11
Figure 5-1. Reduced Intensity Alternative.....5-8

Please note that shaded items are contained in a separate volume.

Acronyms and Abbreviations

A	amp
AB	Assembly Bill
ABAG	Association of Bay Area Governments
ACE	Altamont Corridor Express
ACIP	auger cast in place
ACM	Asbestos-containing material
ADSRP	Anderson Dam Seismic Retrofit Project
ADWF	average dry weather flow
afy	acre-feet per year
ALUC	Airport Land Use Commission
A-PEFZA	Alquist-Priolo Earthquake Fault Zoning Act
APN	Assessor's Parcel Number
ARB	California Air Resources Board
Authority	Sports and Open Space Authority
BA	biological assessment
BAAQMD	Bay Area Air Quality Management District
BAT	best available technology
Bay Area	San Francisco Bay Area
BCT	best conventional pollutant control technology
BFE	base flood elevation
bgs	below ground surface
BMP	best management practices
BMX	Bicycle-Motocross
BO	biological opinion
BRT	bus rapid transit
C&D	construction and demolition
CAA	federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Protection
Cal/EPA	California Environmental Protection Agency
Cal/OSHA	California Division of Occupational Safety and Health
CalARP	California Accidental Release Prevention
CalEEMod	California Emissions Estimator Model
CALGreen Code	California Green Building Standards Code
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAP	climate action plan
CAP	Corrective Action Plan
Carl Moyer Program	Carl Moyer Memorial Air Quality Standards Attainment Program
CBC	California Building Code
CBIA vs. BAAQMD	California Building Industry Association vs. Bay Area Air Quality Management District
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CEQA Guidelines	California Environmental Quality Act Air Quality Guidelines

CERS	California Environmental Reporting System
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geological Survey
CH4	Methane
CHMIRS	California Hazardous Materials Information Reporting System
CHRIS	California Historical Resources Information System
City	City of Santa Clara
CIWMA	California Integrated Waste Management Act
CLSM	Controlled low strength material
CLUP	Comprehensive Land Use Plans
CMA	Congestion Management Agency
CMP	Congestion Management Plan
CNEL	Community Noise Equivalent Level
CNG	compressed natural gas
CNPPA	California Native Plant Protection Act
CNPS	California Native Plant Society
CO	carbon monoxide
CO2	carbon dioxide
CO2e	carbon dioxide equivalent
Convention Center	Santa Clara Convention Center
COPC	constituents of potential concern
County	Santa Clara County
CP	Commercial Park
CPUC	California Public Utilities Commission
CQA	Construction Quality Assurance
CRHR	California Register of Historical Resources
CTC	California Transportation Commission
CTP	California Transportation Plan
CUPA	Certified Unified Program Agencies
CWA	Clean Water Act
cy	cubic yards
dB	Decibel
dBA	A-Weighted Decibel
dBC	C-Weighted Decibel
DCE	1,1-dichloroethene
DDCs	drilled displacement columns
DDT	dichloro-diphenyl-trichloroethane
DDW	Division of Drinking Water
DOF	Department of Finance
DPM	diesel particulate matter
Draft EIR	Draft Environmental Impact Report
DWR	Department of Water Resources
EA	Environmental Assessment
EDCAQMD	El Dorado County Air Quality Management District
EFH	Essential Fish Habitat
EIR	Environmental Impact Report
EO	executive orders
EPA	Environmental Protection Agency

ESA	federal Endangered Species Act
ESLs	Environmental Screening Levels
FAR	Federal Aviation Regulations
FAR	floor area ratio
FEMA	Federal Emergency Management Agency
FHSZ	Fire Hazard Severity Zones
FHWA	Federal Highway Administration
Fire Station 10	Santa Clara Fire Station 10
FIRMs	Flood Insurance Rate Maps
FTA	Federal Transit Administration
FTE	full-time equivalent
g	gravity
g/bhp-hr	grams per brake horsepower-hour
g/L	grams per liter
General Construction Permit	General Permit for Construction Activities
General Plan	City of Santa Clara 2010–2035 General Plan
GHG	greenhouse gas
gpd	gallons per day
gpm	gallons per minute
gsf	gross square feet
GWP	global warming potential
HASP	Health and Safety Plan
HCD	Housing and Community Development
HCP/NCCP	Santa Clara Valley Habitat Conservation Plan/Natural Communities Conservation Plan
HEC-HMS	Hydrologic Engineering Center's Hydrologic Modeling System
HEC-RAS	Hydrologic Engineering Center's River Analysis System
HFCs	hydrofluorocarbons
HI	hazard index
HMPs	Hydromodification Management Plans
HMTA	Hazardous Material Transportation Act
HPD	Historic Properties Directory
HPR	High Performance Renewable
HRI	California Historic Resources Inventory
HVAC	heating, ventilation, and air conditioning
Hz	Hertz
IFC	International Fire Code
ITS	Intelligent Transportation Systems
IWMP	integrated waste management plan
kBTU	Thousand British thermal units
kV	kilovolt
kW	kilowatts
kWh	kilowatt-hour
Landfill	Santa Clara All-Purpose Landfill
LBP	lead-based paint
LCRS	leachate collection and removal system
Ldn	day-night sound level
LEA	Local Enforcement Agency
LEED	Leadership in Energy & Environmental Design

Leq	equivalent sound level
Leq	Equivalent Sound Level
LGTE	landfill gas-to-energy
LID	low impact development
Lmax	Maximum Sound Level
Lmin	Minimum Sound Level
Local Enforcement Agency	Santa Clara County Department of Environmental Health
Lxx	Percentile-Exceeded Sound Level
MBTA	Migratory Bird Treaty Act
MCE	Maximum Credible Earthquake
MEP	maximum extent practicable
mg/kg	milligrams per kilogram
mgd	million gallons per day
MM	Mitigation Measure
MMI	Modified Mercalli Intensity Scale
MMRP	Mitigation Monitoring and Reporting Program
MPG	Montana Property Group
MPO	Metropolitan Planning Organization
MRZ	Mineral Resource Zones
MS4	NPDES General Permit for Municipal Separate Storm Sewer Systems
msl	mean sea level
MT	metric tons
MTC	Metropolitan Transportation Commission
Mw	moment magnitude
N2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NAVD	North American Vertical Datum
NEHRP	National Earthquake Hazards Reduction Program
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NIST	National Institute of Standards and Technology
NO	nitric oxide
NO2	nitrogen dioxide
NOA	naturally occurring asbestos
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NOP	Notice of Preparation
NOT	Notice of Termination
NOX	Nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NSF	National Science Foundation
NSR	New Source Review
NWIC	Northwest Information Center
OEHHA	Office of Environmental Health Hazard Assessment
OHP	Office of Historic Preservation
OSHA	Occupational Health and Safety Administration
P.A.L.	Santa Clara Police Activities League

PCBs	polychlorinated biphenyls
PCE	Tetrachloroethylene
PCEP	Peninsula Corridor Electrification Project
PCLUP	Post-Closure Land Use Plan
PCMP	Post-Closure Maintenance Plan
PDAs	Priority Development Areas
Peak Velocity or PPV	Peak Particle Velocity
PFCs	perfluorinated carbons
PG&E	Pacific Gas & Electric Company
PL	Public Law
PM	particulate matter
PM10	particulate matter less than or equal to 10 microns
PM2.5	particulate matter less than or equal to 2.5 microns
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
ppb	parts per billion
ppm	parts per million
ppt	parts per trillion
PPV	peak particle velocity
PRC	Public Resources Code
PRMP	Paleontological Resource Mitigation Plan
Project	City Place Santa Clara Project
PS	potentially significant
psi	pounds per square inch
RCP	reinforced concrete pipe
RCRA	Resource Conservation and Recovery Act
REC2	Noncontact Water Recreation
Regional Water Board	Regional Water Quality Control Board
Related, or Project Developer	Related Companies
Retention Basin	Eastside Storm Retention Basin
RHNA	Regional Housing Needs Assessment
ROG	reactive organic gases
RPS	Renewable Portfolio Standard
RTP	Regional Transportation Plan
RWTP	Rinconada Water Treatment Plant
SAB	State Allocation Board
SAFETEA-LU	Safe, Accountable, Flexible, Efficient, Transportation Equity Act – A Legacy for Users
SAFZ	San Andreas Fault Zone
SB	Senate Bill
SBWR	South Bay Water Recycling
SCCL	Santa Clara City Library
SCFD	Santa Clara Fire Department
SCPD	Santa Clara Police Department
SCS	sustainable communities strategy
SCUSD	Santa Clara Unified School District
SCVHP	Santa Clara Valley Habitat Plan
SCVURPPP	Santa Clara Valley Urban Runoff Pollution Prevention Program
SCVWD	Santa Clara Valley Water District
SEIR	Supplemental EIR

SENL	Single-event noise levels
sf	square feet
SF Bay MS4 Permit	San Francisco Bay Region Municipal Regional Stormwater NPDES Permit No. CAS029718
SF6	sulfur hexafluoride
SFBAAB	San Francisco Bay Area Air Basin
SFHA	Special Flood Hazard Area
SFPUC	San Francisco Public Utility Commission
SGMP	Soil and Groundwater Management Plan
SHMA	Seismic Hazards Mapping Act
SIP	State Implementation Plan
SJC	San José International Airport
SLF	Sacred Lands file
SLIC	Spills Leaks Investigations and Cleanups
SLR	sea level rise
SO2	sulfur dioxide
SR	State Route
SRTP	Short-Range Transit Plan
Stadium EIR	49ers Stadium Project Environmental Impact Report
STIP	State Transportation Improvement Program
SVOCs	semi-volatile organic compounds
SVP	Silicon Valley Power
SWMM	Storm Water Management Model
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants
Tanner Act	Toxic Air Contaminant Identification and Control Act
TCA	trichloroethane
TCE	trichloroethylene
TCM	transportation control measures
TDM	Travel Demand Management
TMA	Transportation Management Association
TMDL	total maximum daily loads
TNM	Traffic Noise Model
TPHd	diesel
TPHg	total petroleum hydrocarbons as gasoline
TPHmo	motor oil
TPP	Transit Priority Project
TSCA	the Toxic Substances Control Act
U.S. Census	United States Census Bureau
UCL	upper confidence limit
UPRR	Union Pacific Railroad
URMP	Urban Runoff Management Plan
URTA	Urban Rapid Trash Assessment
USACE	U.S. Army Corps of Engineers
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UWMP	Urban Water Management Plan
VdB	level in decibel units

VMT	vehicle miles traveled
VOC	volatile organic compounds
VTA	Santa Clara Valley Transportation Authority
VTP	Valley Transportation Plan
Water Board	San Francisco Bay Regional Water Quality Control Board
WDR	Waste Discharge Requirements
WILD	Wildlife Habitat
WSA	Water Supply Assessment
WWTF	San José/Santa Clara Regional Wastewater Treatment Facility
µg/L	micrograms per liter
µg/m3	micrograms per cubic meter

3.4 Air Quality

This section describes the regulatory and environmental setting for air quality. It also describes impacts on air quality that would result from implementation of the Project and proposes mitigation for significant impacts, where appropriate. Impacts related to greenhouse gases (GHG) and climate change are described in Section 3.5, *Greenhouse Gas Emissions*.

Issues identified in response to the Notices of Preparation (NOPs) (Appendix 1) were considered in preparing this analysis. The NOP comments pertaining to air quality include impacts on nearby sensitive receptors and pollution from increased construction and operational traffic. These issues are addressed below.

Existing Conditions

Regulatory Setting

The agencies of direct importance to the Project for air quality are the U.S. Environmental Protection Agency (EPA), California Air Resources Board (ARB), and Bay Area Air Quality Management District (BAAQMD). EPA has established federal air quality standards for which ARB and BAAQMD have primary implementation responsibility. ARB and BAAQMD are also responsible for ensuring that State air quality standards are met.

Federal

Clean Air Act and National Ambient Air Quality Standards

The Clean Air Act (CAA) was first enacted in 1963 and has been amended numerous times in subsequent years (1965, 1967, 1970, 1977, and 1990). The CAA establishes federal air quality standards, known as National Ambient Air Quality Standards (NAAQS), and specifies future dates for achieving compliance. The CAA also mandates that the State submit and implement a State Implementation Plan (SIP) for local areas not meeting those standards. The plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA identify specific emission-reduction goals for areas not meeting the NAAQS. These amendments require both a demonstration of reasonable further progress toward attainment and incorporation of additional sanctions for failure to attain or meet interim milestones. The sections of the CAA that would most substantially affect the development of the Project include Title I (Nonattainment Provisions) and Title II (Mobile-Source Provisions).

Table 3.4-1 shows the NAAQS currently in effect for each criteria pollutant. The California Ambient Air Quality Standards (CAAQS) (discussed below) are also provided for reference.

Table 3.4-1. National and State Ambient Air Quality Standards

Criteria Pollutant	Average Time	California Standards	National Standards[a]	
			Primary	Secondary
Ozone	1-hour	0.09 ppm	None[b]	None[b]
	8–hour	0.070 ppm	0.075 ppm	0.075 ppm
Particulate Matter (PM10)	24-hour	50 μg/m³	150 μg/m³	150 μg/m³
	Annual mean	20 μg/m³	None	None
Fine Particulate Matter (PM2.5)	24-hour	None	35 μg/m³	35 μg/m³
	Annual mean	12 μg/m³	12.0 μg/m³	15.0 μg/m³
Carbon Monoxide	8-hour	9.0 ppm	9 ppm	None
	1-hour	20 ppm	35 ppm	None
	8-hour (Lake Tahoe)	6 ppm	None	None
Nitrogen Dioxide	Annual mean	0.030 ppm	0.053 ppm	0.053 ppm
	1-hour	0.18 ppm	0.100 ppm	None
Sulfur Dioxide[c]	Annual mean	None	0.030 ppm	None
	24-hour	0.04 ppm	0.14 ppm	None
	3-hour	None	None	0.5 ppm
	1-hour	0.25 ppm	0.075 ppm	None
Lead	30-day Average	1.5 μg/m³	None	None
	Calendar quarter	None	1.5 μg/m³	1.5 μg/m³
	3-month average	None	0.15 μg/m³	0.15 μg/m³
Sulfates	24-hour	25 μg/m³	None	None
Visibility Reducing Particles	8-hour	--[d]	None	None
Hydrogen Sulfide	1-hour	0.03 ppm	None	None
Vinyl Chloride	24-hour	0.01 ppm	None	None

Source: California Air Resources Board. 2013. *Ambient Air Quality Standards*. Last revised: June 4, 2013. Available: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf. Accessed: January 28, 2015.

Notes:

PM10 = particulate matter less than or equal to 10 microns in diameter.

PM2.5 = particulate matter less than or equal to 2.5 microns in diameter.

μg/m³ = micrograms per cubic meter.

ppm = parts per million.

[a] National standards are divided into primary and secondary standards. Primary standards are intended to protect public health, whereas secondary standards are intended to protect public welfare and the environment.

[b] The federal 1-hour standard of 12 parts per hundred million was in effect from 1979 through June 15, 2005. The revoked standard is referenced because it was employed for such a long period and is a benchmark for State Implementation Plans.

[c] The annual and 24-hour NAAQS for sulfur dioxide only apply for 1 year after designation of the new 1-hour standard to those areas that were previously nonattainment for 24-hour and annual NAAQS.

[d] CAAQS for visibility reducing particles is defined by an extinction coefficient of 0.23 per kilometer – visibility of 10 miles or more due to particles when relative humidity is less than 70 percent.

State

California Clean Air Act and California Ambient Air Quality Standards

In 1988, the State legislature adopted the California CAA, which established a statewide air pollution control program. The California CAA requires all air districts in the State to endeavor to meet the CAAQS by the earliest practical date. Unlike the federal CAA, the California CAA does not set precise attainment deadlines. Instead, the California CAA establishes increasingly stringent requirements for areas that will require more time to achieve the standards. CAAQS are generally more stringent than the NAAQS and incorporate additional standards for sulfates, hydrogen sulfide, visibility reducing particles, and vinyl chloride. The CAAQS and NAAQS are listed together in Table 3.4-1.

ARB and local air districts bear responsibility for achieving California's air quality standards, which are to be achieved through district-level air quality management plans that would be incorporated into the SIP. In California, EPA has delegated authority to prepare SIPs to ARB, which, in turn, has delegated that authority to individual air districts. ARB traditionally has established State air quality standards, maintaining oversight authority in air quality planning, developing programs for reducing emissions from motor vehicles, developing air emission inventories, collecting air quality and meteorological data, and approving SIPs.

The California CAA substantially adds to the authority and responsibilities of air districts. The California CAA designates air districts as lead air quality planning agencies, requires air districts to prepare air quality plans, and grants air districts authority to implement transportation control measures. The California CAA also emphasizes the control of "indirect and area-wide sources" of air pollutant emissions. The California CAA gives local air pollution control districts explicit authority to regulate indirect sources of air pollution and to establish traffic control measures (TCMs).

State Tailpipe Emission Standards

ARB established a series of increasingly strict emission standards for new off-road diesel equipment, on-road diesel trucks, and harbor craft. New construction equipment used for the Project, including heavy-duty trucks and off-road construction equipment, would be required to comply with the standards.

Carl Moyer Program

The Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) is a voluntary program that offers grants to owners of heavy-duty vehicles and equipment. The program is a partnership between ARB and the local air districts throughout the State to reduce air pollution emissions from heavy-duty engines. Locally, the air districts administer the Carl Moyer Program.

Toxic Air Contaminant Regulation

California regulates toxic air contaminants (TACs) primarily through the Toxic Air Contaminant Identification and Control Act (Tanner Act) and the Air Toxics "Hot Spots" Information and Assessment Act of 1987 ("Hot Spots" Act). In the early 1980s, ARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Tanner Act created California's program to reduce exposure to air toxics. The "Hot Spots" Act supplements the Tanner Act by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks.

In August 1998, ARB identified diesel particulate matter (DPM) from diesel-fueled engines as TACs. In September 2000, ARB approved a comprehensive Diesel Risk Reduction Plan to reduce emissions from both new and existing diesel-fueled engines and vehicles. The goal of the plan is to reduce DPM (respirable particulate matter) emissions and the associated health risk by 75 percent in 2010 and by 85 percent by 2020. The plan identifies 14 measures that ARB will implement over the next several years.

Local

Bay Area Air Quality Management District

BAAQMD has local air quality jurisdiction over projects in Santa Clara County. Responsibilities of the air district include overseeing stationary-source emissions, approving permits, maintaining emissions inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality–related sections of environmental documents required by the California Environmental Quality Act (CEQA). BAAQMD is also responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and State air quality laws and for ensuring that NAAQS and CAAQS are met.

BAAQMD has adopted advisory emission thresholds to assist CEQA lead agencies in determining the level of significance of a project's emissions, which are outlined in its CEQA Guidelines.[1] BAAQMD has also adopted air quality plans to improve air quality, protect public health, and protect the climate. The Bay Area 2001 Ozone Attainment Plan was adopted to reduce ozone and achieve the NAAQS ozone standard; the 2010 Clean Air Plan was adopted to provide an integrated control strategy for ozone, particulate matter (PM), TACs, and GHG emissions. BAAQMD also adopted a redesignation plan for carbon monoxide (CO) in 1994. The redesignation plan includes strategies to ensure the continuing attainment of the NAAQS for CO in the San Francisco Bay Area Air Basin (SFBAAB).

The Project may be subject to the following district rules. This list may not be all encompassing as additional BAAQMD rules may apply to the Project as specific components are identified.

- **Regulation 2, Rule 2 (New Source Review).** This regulation contains requirements for Best Available Control Technology and emission offsets.
- **Regulation 2, Rule 5 (New Source Review of Toxic Air Contaminates).** This regulation outlines guidance for evaluating TAC emissions and their potential health risks.
- **Regulation 6, Rule 1 (Particulate Matter).** This regulation restricts emissions of PM darker than No. 1 on the Ringlemann chart to less than three minutes in any one hour.
- **Regulation 7 (Odorous Substances).** This regulation establishes general odor limitations on odorous substances and specific emission limitations on certain odorous compounds.

[1] Bay Area Air Quality Management District 2011. *California Environmental Quality Act Air Quality Guidelines*. May. San Francisco, CA. The BAAQMD CEQA Guidelines were challenged in court by the California Building Industry Association. Although a lower court ruling put the adoption of the guidelines on hold, with a ruling that BAAQMD had to complete a CEQA analysis to adopt the guidelines, the lower court ruling was overturned by the appellate court. The guidelines are currently under consideration by the California Supreme Court. BAAQMD at present has no recommendation to local lead agencies on the use of the 2011 guidelines. However, there is no court order constraining their use, and they are frequently employed by lead agencies when conducting CEQA reviews because the evidence in the BAAQMD 2011 guidelines still provides a substantial evidence-based approach to air quality impact analysis and the BAAQMD recommended significant thresholds.

- **Regulation 8, Rule 3 (Architectural Coatings)**. This regulation limits the quantity of reactive organic gases (ROG) in architectural coatings.
- **Regulation 9, Rule 6 (Nitrogen oxides [NO_X] emission from natural gas-fired boilers and water heaters)**. This regulation limits emissions of NO_X generated by natural gas–fired boilers.
- **Regulation 9, Rule 8 (Stationary Internal Combustion Engines).** This regulation limits emissions of NO_X and CO from stationary internal combustion engines of more than 50 horsepower.
- **Regulation 11, Rule 2 (Asbestos Demolition, Renovation and Manufacturing)**. This regulation controls emissions of asbestos to the atmosphere during demolition and renovation activities.

City of Santa Clara General Plan

The City's current General Plan[2] includes the following goals and policies associated with air quality.

Goal 5.10.2-G1: Improved air quality in Santa Clara and the region.

Goal 5.10.2-G2: Reduced greenhouse gas emissions that meet the State and regional goals and requirements to combat climate change.

Policy 5.10.2-P1: Support alternative transportation modes and efficient parking mechanisms to improve air quality.

Policy 5.10.2-P2: Encourage development patterns that reduce vehicle miles traveled and air pollution.

Policy 5.10.2-P3: Encourage implementation of technological advances that minimize public health hazards and reduce the generation of air pollutants.

Policy 5.10.2-P4: Encourage measures to reduce greenhouse gas emissions to reach 30 percent below 1990 levels by 2020.

Policy 5.10.2-P5: Promote regional air pollution prevention plans for local industry and businesses.

Policy 5.10.2-P6: Require "Best Management Practices" for construction dust abatement.

Policy 5.10.5-P35: Establish minimum buffers between odor sources and new residential or other uses with sensitive receptors, consistent with BAAQMD guidelines, unless a project-specific study demonstrates that these risks can be reduced to acceptable levels.

Environmental Setting

The Project area, described in Chapter 2, *Project Description*, is located within the larger SFBAAB; the air basin comprises the study area for the Project. Ambient air quality in the study area is affected by climatological conditions, topography, and the types and amounts of pollutants emitted. The following

[2] City of Santa Clara. 2010. *City of Santa Clara 2010–2035 General Plan*. Adopted November 16, 2010. Last amended December 9, 2014. Available: http://santaclaraca.gov/index.aspx?page=1263. Accessed: February 9, 2015.

discussion describes relevant characteristics of the SFBAAB, describes key pollutants of concern, summarizes existing ambient pollutant concentrations, and identifies sensitive receptors.

Regional Climate and Meteorology

The SFBAAB contains all of Napa, Contra Costa, Alameda, Santa Clara, San Mateo, San Francisco, and Marin Counties, as well as portions of Sonoma and Solano Counties (17 California Code of Regulations Section 60101). The Santa Clara portion of the SFBAAB is bounded by the Bay to the north and by mountains to the east, south, and west. Temperatures are warm on summer days and cool on summer nights, and winter temperatures are fairly mild. At the northern end of the valley, mean maximum temperatures are in the low 80s during the summer and the high 50s during the winter, and mean minimum temperatures range from the high 50s in the summer to the low 40s in the winter. Farther inland, where the moderating effect of the Bay is not as strong, temperature extremes are greater. For example, in San Martin, 27 miles south of Norman Y. Mineta San José International Airport, temperatures can be more than 10 degrees warmer on summer afternoons and more than 10 degrees cooler on winter nights.

Winds in the Santa Clara Valley are greatly influenced by the terrain, resulting in a prevailing flow that roughly parallels the valley's northwest–southeast axis. A north–northwesterly sea breeze flows through the valley during the afternoon and early evening, and a light south–southeasterly drainage flow occurs during the late evening and early morning. In the summer the southern end of the valley sometimes becomes a “convergence zone,” when air flowing from the Monterey Bay gets channeled northward into the southern end of the valley and meets with the prevailing north-northwesterly winds.

The air pollution potential of the Santa Clara Valley is high. Warm summer temperatures, stable air, and mountains surrounding the valley combine to promote ozone formation. In addition to the many local sources of pollution, ozone precursors from San Francisco, San Mateo, and Alameda Counties are carried by prevailing winds to the Santa Clara Valley. The valley tends to channel pollutants to the southeast. In addition, on summer days with low-level inversions, ozone can be recirculated by southerly drainage flows in the late evening and early morning and by the prevailing northwesterlies in the afternoon. A similar recirculation pattern occurs in the winter, affecting levels of CO and PM. This movement of the air up and down the valley increases the impact of the pollutants significantly.

Pollution sources are plentiful and complex in this subregion. The Santa Clara Valley has a high concentration of industry at the northern end, in the Silicon Valley. Some of these industries are sources of air toxics as well as criteria air pollutants. In addition, Santa Clara Valley's large population and many work-site destinations generate the highest mobile-source emissions of any subregion in the SFBAAB.

Pollutants of Concern

Criteria Pollutants

As discussed above, the federal and State governments have established NAAQS and CAAQS, respectively, for six criteria pollutants: ozone, lead, CO, nitrogen dioxide (NO2), sulfur dioxide (SO2), and PM, which consists of PM less than or equal to 10 microns in diameter (PM10) and PM less than or equal to 2.5 microns in diameter (PM2.5). Ozone and NO2 are considered regional pollutants because they (or their precursors) affect air quality on a regional scale. Pollutants such as CO, SO2, and lead are considered local pollutants that tend to accumulate in the air locally. PM10 and PM2.5 are both regional and local pollutants.

The primary criteria pollutants of concern in the Project area are ozone (including NO_X and ROG), CO, and PM. Principal characteristics surrounding these pollutants are discussed below.

Ozone, or smog, is a photochemical oxidant that is formed when ROG and NO_X (both by-products of the internal combustion engine) react with sunlight. Ozone poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. Additionally, ozone has been tied to crop damage, typically in the form of stunted growth and premature death. Ozone can also act as a corrosive, resulting in property damage such as the degradation of rubber products.

Reactive Organic Gases are compounds made up primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Other sources of ROG are emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. Adverse effects on human health are not caused directly by ROG, but rather by reactions of ROG to form secondary pollutants such as ozone.

Nitrogen Oxides serve as integral participants in the process of photochemical smog production. The two major forms of NO_X are nitric oxide (NO) and NO_2. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen (0_2) when combustion takes place under high temperature and/or high pressure. NO_2 is a reddish-brown gas formed by the combination of NO and oxygen. NO_X acts as an acute respiratory irritant and increases susceptibility to respiratory pathogens.

Carbon Monoxide is a colorless, odorless, toxic gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. The primary adverse health effect associated with CO is interference with normal oxygen transfer to the blood, which may result in tissue oxygen deprivation.

Particulate Matter consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulates are now recognized—inhalable coarse particles, or PM10, and inhalable fine particles, or PM2.5. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. However, wind on arid landscapes also contributes substantially to local particulate loading. Both PM10 and PM2.5 may adversely affect the human respiratory system, especially in those people who are naturally sensitive or susceptible to breathing problems**.**

Toxic Air Contaminants

Although NAAQS and CAAQS have been established for criteria pollutants, no ambient standards exist for TACs. Many pollutants are identified as TACs because of their potential to increase the risk of developing cancer or because of their acute or chronic health risks. For TACs that are known or suspected carcinogens, ARB has consistently found that there are no levels or thresholds below which exposure is risk-free. Individual TACs vary greatly in the risks they present. At a given level of exposure, one TAC may pose a hazard that is many times greater than another. TACs are identified and their toxicity is studied by the California Office of Environmental Health Hazard Assessment (OEHHA).

Air toxics are generated by a number of sources, including *stationary sources*, such as dry cleaners, gas stations, auto body shops, and combustion sources; *mobile sources*, such as motor vehicles, diesel trucks, ships, and trains; and *area sources*, such as farms, landfills, and construction sites. Adverse health effects of TACs can be carcinogenic (cancer-causing), short-term (acute) noncarcinogenic, and long-term (chronic) noncarcinogenic. Direct exposure to these pollutants has been shown to cause cancer, birth defects, damage to the brain and nervous system, and respiratory disorders.

The primary TACs of concern associated with the Project are DPM and asbestos. As discussed above, DPM is generated by diesel-fueled engines and is considered a carcinogen. Asbestos is the name given to a number of naturally occurring fibrous silicate minerals. It has been mined for applications requiring thermal insulation, chemical and thermal stability, and high tensile strength. It is also found in its

natural state in rock or soil (known as naturally occurring asbestos or NOA). Mapping published by the United States Geological Survey and California Geological Survey indicates that the Project site does not have any reported historic asbestos mines, historic asbestos prospects, asbestos-bearing talc deposits, fibrous amphiboles, or ultramafic rock outcrops.[3] Asbestos may have been used during construction of the existing on-site buildings, however.

Odors

Although offensive odors rarely cause physical harm, they can be unpleasant and lead to considerable distress among the public. This distress often generates citizen complaints to local governments and air districts. According to BAAQMD CEQA Guidelines[4] and ARB's *Air Quality and Land Use Handbook*,[5] land uses associated with odor complaints typically include wastewater treatment plants, landfills, confined animal facilities, composting stations, food manufacturing plants, refineries, chemical plants, petroleum refineries, auto body shops, coating operations, fiberglass manufacturing, foundries, rendering plants, and livestock operations. BAAQMD provides recommended screening distances for citing new receptors near existing odor sources. Sources of potentially offensive odors within 2 miles of the Project site include the following:

- Zanker Materials Recovery and Landfill, approximately 1.2 miles northeast of the Project site.
- San José-Santa Clara Regional Wastewater Facility, approximately 1.3 miles northeast of the Project site.
- Sunnyvale Auto Body, approximately 4,000 feet west of the Project site.
- Active Auto Body, approximately 4,250 feet west of the Project site.
- Rabbit's Foot Meadery, approximately 4,450 feet west of the Project site.

The Project would be located on the site of the previous City of Santa Clara All Purpose Sanitary Landfill. However, the landfill was closed and capped in 1994 and therefore does not represent a significant source of existing ambient odors. Nevertheless, during Project construction, landfill materials may be disturbed and exposed to air. Therefore, the odor impact analysis considers potential construction-period odor generation from disturbed landfill material.

Existing Air Quality Conditions

ARB collects ambient air quality data through a network of air monitoring stations throughout the State. In Santa Clara County, there are five stations that record ozone levels, three stations that record PM2.5, and two stations that record PM10, CO, NO_2, and SO_2. The closest ozone monitoring station is the San José–Jackson Street station, which is approximately 6 miles southeast of the Project area. Table 3.4-2 summarizes ozone, PM2.5, PM10, CO, NO_2, and SO_2 levels for the last 3 years for which complete data are available (2012–2014). As shown in Table 3.4-2, the San José–Jackson Street station has experienced violations of the ozone, PM10, and PM2.5 standards.

---

[3] U.S. Geological Survey and California Geological Survey. 2011. *Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California – Map*. Available: http://pubs.usgs.gov/of/2011/1188/pdf/Plate.pdf. Accessed: January 30, 2015.

[4] Bay Area Air Quality Management District. 2011. *California Environmental Quality Act Air Quality Guidelines*. May. San Francisco, CA.

[5] California Air Resources Board. 2005. *Air Quality and Land Use Handbook*. April. Available: http://www.arb.ca.gov/ch/handbook.pdf. Accessed: January 30, 2015.

Table 3.4-2. Ambient Criteria Air Pollutant Monitoring Data (2012–2014)

Pollutant Standards	2012	2013	2014
Ozone (O_3)			
Maximum 1-hour concentration (ppm)	0.101	0.093	0.089
Maximum 8-hour concentration (ppm)	0.062	0.079	0.066
Number of days standard exceeded[a]			
CAAQS 1-hour (>0.09 ppm)	1	0	0
CAAQS 8-hour (>0.070 ppm)	0	1	0
NAAQS 8-hour (>0.075 ppm)	0	1	0
Carbon Monoxide (CO)			
Maximum 8-hour concentration (ppm)	1.86	--	--
Maximum 1-hour concentration (ppm)	2.5	3.0	2.4
Number of days standard exceeded[a]			
NAAQS 8-hour (≥9 ppm)	0	0	0
CAAQS 8-hour (≥9.0 ppm)	0	0	0
NAAQS 1-hour (≥35 ppm)	0	0	0
CAAQS 1-hour (≥20 ppm)	0	0	0
Nitrogen Dioxide (NO_2)			
State maximum 1-hour concentration (ppm)	67	58	58
State second-highest 1-hour concentration (ppm)	61	57	57
Annual average concentration (ppm)	13	15	13
Number of days standard exceeded			
CAAQS 1-hour (0.18 ppm)	0	0	0
Particulate Matter (PM10)			
National[b] maximum 24-hour concentration (μg/m^3)	56.5	55.8	56.4
National[b] second-highest 24-hour concentration (μg/m^3)	46.1	53.7	52.0
State[c] maximum 24-hour concentration (μg/m^3)	59.6	58.1	54.7
State[c] second-highest 24-hour concentration (μg/m^3)	48.8	57.1	49.6
National annual average concentration (μg/m^3)	18.8	21.6	19.5
State annual average concentration (μg/m^3)[d]	18.8	22.2	20.0
Number of days standard exceeded[e]			
NAAQS 24-hour (>150 μg/m^3)	0	0	0
CAAQS 24-hour (>50 μg/m^3)	3	15	3
Particulate Matter (PM2.5)			
National[b] maximum 24-hour concentration (μg/m^3)	38.4	57.7	60.4
National[b] second-highest 24-hour concentration (μg/m^3)	36.6	45.9	37.3
State[c] maximum 24-hour concentration (μg/m^3)	38.4	57.7	60.4
State[c] second-highest 24-hour concentration (μg/m^3)	36.6	45.9	37.3
National annual average concentration (μg/m^3)	9.1	11.8	8.4
State annual average concentration (μg/m^3)[d]	--	12.4	8.4
Number of days standard exceeded[e]			
NAAQS 24-hour (>35 μg/m^3)	2	4	2

Table 3.4-2. Ambient Criteria Air Pollutant Monitoring Data (2012–2014)

Sources: California Air Resources Board. 2015. *iADAM: Air Quality Data Statistics: Top 4 Summary*. Available: http://www.arb.ca.gov/adam/topfour/topfour1.php. Accessed: May 27, 2015. U.S. Environmental Protection Agency. 2014. *Monitor Values Report*. Available: http://www.epa.gov/airdata/ad_rep_mon.html. Accessed: May 27, 2015.

Notes:

ppm	=	parts per million
NAAQS	=	National Ambient Air Quality Standards
CAAQS	=	California Ambient Air Quality Standards
$\mu g/m^3$	=	micrograms per cubic meter
--	=	data not available

[a.] An exceedance is not necessarily a violation.

[b.] National statistics are based on standard conditions data. In addition, national statistics are based on samplers using federal reference or equivalent methods.

[c.] State statistics are based on local conditions data, except in the South Coast Air Basin, for which statistics are based on standard conditions data. In addition, State statistics are based on California approved samplers.

[d.] State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

[e.] Mathematical estimate of how many days concentrations would have been measured as higher than the level of the standard had each day been monitored. Values have been rounded.

Attainment Status

Local monitoring data (Table 3.4-2) are used to designate areas as *nonattainment*, *maintenance*, *attainment*, or *unclassified* for the NAAQS and CAAQS. The four designations are defined as follows.

- **Nonattainment** is assigned to areas where monitored pollutant concentrations consistently violate the standard in question.
- **Maintenance** is assigned to areas where monitored pollutant concentrations exceeded the standard in question in the past but are no longer in violation of that standard.
- **Attainment** is assigned to areas where pollutant concentrations meet the standard in question over a designated period of time.
- **Unclassified** is assigned to areas were data are insufficient to determine whether a pollutant is violating the standard in question.

Table 3.4-3 summarizes the attainment status of the Project area with regard to the NAAQS and CAAQS.

Table 3.4-3. Federal and State Attainment Status for the Project Area

Criteria Pollutant	Federal Designation	State Designation
Ozone (O_3) (8-hour)	Marginal Nonattainment	Nonattainment
CO	Maintenance	Attainment
PM10	Attainment	Nonattainment
PM2.5	Nonattainment (2006)	Nonattainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
Lead	Attainment (2008)	Attainment
Sulfates	(No Federal Standard)	Attainment
Hydrogen Sulfide	(No Federal Standard)	Unclassified
Visibility Reducing Particles	(No Federal Standard)	Unclassified

Sources: California Air Resources Board. 2014. *Area Designations Maps/ State and National.* Last Revised: August 22, 2014. Available: http://www.arb.ca.gov/desig/adm/adm.htm. Accessed: January 28, 2015.
U.S. Environmental Protection Agency 2014. *The Green Book Nonattainment Areas for Criteria Pollutants*. Available: http://www.epa.gov/oaqps001/greenbk/Accessed: July 2, 2014.
Notes:
O_3 = ozone.
CO = carbon monoxide.
PM10 = particulate matter less than or equal to 10 microns.
PM2.5 = particulate matter less than or equal to 2.5 microns.
NO_2 = nitrogen dioxide.
SO_2 = sulfur dioxide.

Sensitive Receptors

The NAAQS and CAAQS apply at publicly accessible areas, regardless of whether those areas are populated. BAAQMD generally defines a *sensitive receptor* as a facility or land use that houses or attracts members of the population who are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of sensitive receptors include residential areas, schools, and hospitals. BAAQMD recommends that any proposed project that includes the siting of a new source or receptors assess associated impacts within 1,000 feet.[6] Sensitive receptors located within 1,000 feet of the Project are shown in Table 3.4-4 and on Figure 3.4-1. Note that Figure 3.4-1 does not explicitly identify specific residential receptors due to the number of homes within 1,000 feet of the Project site (the closest of which are approximately 240 feet southeast of Parcel 5). Refer to Appendix 3.4 for additional information on the locations of all residential receptors within 1,000 feet of the Project site.

[6] Bay Area Air Quality Management District. 2011. *Recommended Methods for Screening and Modeling Local Risk and Hazards.*

Figure 3.4-1
Project Sensitive Receptors
City Place Santa Clara

Table 3.4-4. Sensitive Receptors within 1,000 Feet of the Project Area

Receptor	Distance of Nearest Receptor to Project (Nearest Project Parcel)
Kathryn Hughes Elementary School	983 feet south (Parcel 5)
Santa Clara Youth Soccer Park	108 feet south (Parcel 5)
Guadalupe River Park	61 feet east (Parcel 1)
Residences	--[a]

Note:
[a.] There are residences north (across State Route [SR] 237), south (across Tasman Drive), and east (across the Guadalupe River) of the Project. The closest homes are approximately 415 feet east of Parcels 1 and 2. Refer to Appendix 3.4 for additional information on the locations of all residential receptors within 1,000 feet of the Project.

Environmental Impacts

This section analyzes impacts of the Project related to air quality. It also describes the methods that were used to determine the impacts of the Project and lists the thresholds that were used to conclude whether each impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion, as warranted.

Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the Project would be considered to have a significant effect if it would result in any of the conditions listed below.

- Conflict with or obstruct implementation of the applicable air quality plan. For the purposes of this analysis, "conflict with or obstruct implementation" is defined as circumstances in which the project would worsen existing air quality violations or exceed the growth assumptions utilized by the City of Santa Clara and Association of Bay Area Governments (ABAG).
- Violate any air quality standard or substantially contribute to an existing or projected air quality violation. For the purposes of this analysis, "violate any air quality standard or substantially contribute to an existing or projected air quality violation" is defined as circumstances in which construction or operational emissions exceed the pertinent BAAQMD thresholds, as described below under *Local Air District Thresholds*.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or State ambient air quality standard. For the purposes of this analysis, a "cumulatively considerable net increase" is defined as circumstances in which total direct emissions exceed BAAQMD thresholds identified in Table 3.4-5. The emissions thresholds presented in Table 3.4-5 represent the average daily emissions that a project may generate before contributing to a cumulative impact on regional air quality. Therefore, exceedances of the project-level thresholds, as identified in Table 3.4-5, would be cumulatively considerable.

- Expose sensitive receptors to substantial pollutant concentrations. For the purpose of this analysis, schools, daycare facilities, places of assembly, medical facilities, parks, and residences are considered sensitive receptor locations. A "substantial pollutant concentration" is defined as levels in excess of applicable BAAQMD thresholds, as described below under *Local Air District Thresholds*.
- Create objectionable odors that would affect a substantial number of people. For the purpose of this analysis, an odor-producing facility, as defined by BAAQMD,[7] creates an "objectionable odor" if it receives five complaints per year averaged over 3 years.

Table 3.4-5. BAAQMD Thresholds

Analysis	Threshold	
Regional Criteria Pollutants (Construction)	ROG:	54 pounds/day
	NO_X:	54 pounds/day
	PM10:	82 pounds/day (exhaust only)
	PM2.5:	54 pounds/day (exhaust only)
Regional Criteria Pollutants (Operations)	ROG:	Same as construction
	NO_X:	Same as construction
	PM10:	PM10: 82 pounds/day (total)
	PM2.5:	PM2.5: 54 pounds/day (total)
Localized Carbon Monoxide	Violation of CAAQS (per screening criteria)	
Localized Particulate Matter	Failure to implement emissions control practices PM2.5 increase of greater than 0.3 $\mu g/m^3$ (Project) PM2.5 increase of greater than 0.8 $\mu g/m^3$ (cumulative)	
Localized Toxic Air Contaminants (TAC)	Increased cancer risk of 10 in 1 million (Project) Increased HI greater than 1.0 (Project) Increased cancer risk of 100 in 1 million (cumulative) Increased HI greater than 10.0 (cumulative)	
Asbestos	Failure to comply with Regulation 11, Rule 2	

Source: Bay Area Air Quality Management District. 2011. *California Environmental Quality Act Air Quality Guidelines*. May. San Francisco, CA.

Notes:

ROG = reactive organic gas.
NO_X = nitrogen oxides.
PM10 = particulate matter less than or equal to 10 microns in diameter.
PM2.5 = particulate matter less than or equal to 2.5 microns in diameter.
CAAQS = California ambient air quality standards.
$\mu g/m^3$ = micrograms per cubic meter.
HI = hazard index.

[7] Bay Area Air Quality Management District. 2011. *California Environmental Quality Act Air Quality Guidelines*. May. San Francisco, CA.

Local Air District Thresholds

The following section summarizes BAAQMD's thresholds and presents substantial evidence regarding the basis upon which they were developed. It also describes how the thresholds are used to determine whether Project construction and operational emissions would result in either of the following:

- Interfere or impede with attainment of State or federal ambient air quality standards (CAAQS and NAAQS, respectively); or
- Cause increased risk to human health.

Regional Thresholds for Air Basin Attainment of State and Federal Ambient Air Quality Standards

BAAQMD adopted thresholds for regional air pollutants (see Table 3.4-5) (as discussed above, ROG and NO_X are regional pollutants, whereas PM is both a regional and local pollutant) to assist lead agencies in determining the significance of environmental effects with regards to local attainment of State and federal ambient air quality standards. The thresholds are based on emissions levels identified under the "New Source Review" (NSR) program, which is a permitting program established by Congress as part of the CAA Amendments of 1990 to ensure that air quality is not significantly degraded by new sources of emissions. The NSR program requires that stationary sources receive permits before construction begins and/or the use of equipment. By permitting large stationary sources, the NSR program assures that new emissions would not slow regional progress toward attaining the NAAQS. BAAQMD has concluded that the stationary pollutants described under the NSR program are equally significant to those pollutants generated with land use projects. BAAQMD's regional thresholds identified in Table 3.4-5 were set as the total emission thresholds associated within the NSR program to help attain the NAAQS.[8]

Health-Based Thresholds for Project-Generated Pollutants of Human Health Concern

As discussed above, all criteria pollutants are associated with some form of health risk (e.g., asthma, asphyxiation). Adverse health effects associated with criteria pollutant emissions are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, as well as the number and character of exposed individuals [e.g., age, gender]). Moreover, ozone precursors (ROG and NO_X) affect air quality on a regional scale. Health effects related to ozone are therefore the product of emissions generated by numerous sources throughout a region. Existing models have limited sensitivity to small changes in criteria pollutant concentrations, and, as such, translating Project-generated criteria pollutants to specific health effects would produce meaningless results. In other words, minor increases in regional air pollution from Project-generated ROG and NO_X would have nominal or negligible impacts on human health.[9]

As such, an analysis of impacts on human health associated with Project-generated regional emissions is not included in the Project-level analysis. Increased emissions of ozone precursors (ROG and NO_X) generated by the Project could increase photochemical reactions and the formation of tropospheric ozone,

---

[8] Bay Area Air Quality Management District. 2011. *California Environmental Quality Act Air Quality Guidelines*. May. San Francisco, CA.

[9] As an example, the BAAQMD's Multi-Pollutant Evaluation Method (MPEM) requires a 3 to 5 percent increase in regional ozone precursors to produce a material change in modeled human health impacts. Based on 2008 ROG and NO_X emissions in the Bay Area, a 3 to 5 percent increases equates to over 20,000 pounds per day of ROG and NO_X.

which at certain concentrations, could lead to respiratory symptoms (e.g., coughing), decreased lung function, and inflammation of airways. Although these health effects are associated with ozone, the impacts are a result of cumulative and regional ROG and NO_X emissions, and the incremental contribution of the Project to specific health outcomes from criteria pollutant emissions would be limited and cannot be solely traced to the Project (see Impact C-AQ-2 for a discussion of regional cumulative impacts).

Because localized pollutants generated by a Project can directly affect adjacent sensitive receptors, the analysis of Project-related impacts on human health focuses only on those localized pollutants with the greatest potential to result in a significant, material impact on human health. This is consistent with the current state-of-practice and published guidance by BAAQMD,[10] the California Air Pollution Control Officers Association,[11] OEHHA,[12] and ARB.[13] These pollutants are (1) locally concentrated CO and PM2.5, (2) DPM,[14] and (3) asbestos. BAAQMD thresholds of significance for each pollutant are discuss below and summarized in Table 3.4-5.

Localized Carbon Monoxide Concentrations

Heavy traffic congestion can contribute to high levels of CO, and individuals exposed to such hot spots may have a greater likelihood of developing adverse health effects. BAAQMD has adopted screening criteria that provide a conservative indication of whether Project-generated traffic would cause a potential CO hot spot. If the screening criteria are not met, a quantitative analysis through site-specific dispersion modeling of Project-related CO concentrations would not be necessary, and the Project would not cause localized violations of CO CAAQS. BAAQMD's CO screening criteria are summarized below.

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

---

[10] Bay Area Air Quality Management District. 2011. *California Environmental Quality Act Air Quality Guidelines*. May. San Francisco, CA.

[11] California Air Pollution Control Officers Association. 2009. *Health Risk Assessments for Proposed Land Use Projects.* CAPCOA Guidance Document. Available: http://www.capcoa.org/. July.

[12] Office of Environmental Health Hazard Assessment. 2014. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments.* July.

[13] California Air Resources Board. 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles.* October.

[14] DPM is the primary TAC of concern for mobile sources—of all controlled TACs, emissions of DPM are estimated to be responsible for about 70 percent of the total ambient TAC risk. Given the risks associated with DPM, tools and factors for evaluating human health impacts from Project-generated DPM have been developed and are readily available. Conversely, tools and techniques for assessing Project-specific health outcomes as a result of exposure to other TAC (e.g., benzene) remain limited. These limitations impede the ability to evaluate and precisely quantify potential public health risks posed by TAC exposure.

Localized Particulate Matter Concentrations

BAAQMD adopted an incremental PM2.5 concentration-based significance threshold, where a "substantial" contribution at the project level for an individual source is defined as total (exhaust and fugitive) PM2.5 concentrations exceeding 0.3 micrograms per cubic meter ($\mu g/m^3$). This is the same threshold used to evaluate the placement of new receptors that are exposed to individual PM2.5 emissions sources.

Additionally, BAAQMD considers projects to have a cumulatively considerable PM2.5 impact if sensitive receptors are exposed to PM2.5 concentrations from all local sources within 1,000 feet, including existing sources, project-related sources, and reasonably foreseeable future sources, that exceed 0.8 $\mu g/m^3$.

BAAQMD has not established PM10 thresholds of significance. BAAQMD's PM2.5 thresholds apply to both new receptors and new sources. However, BAAQMD considers fugitive PM10 from earthmoving activities to be less than significant with application of BAAQMD's Basic and Additional Construction Mitigation Measures.

Localized Toxic Air Contaminant Concentrations

TACs are a defined set of airborne pollutants that may pose a present or potential hazard to human health. A wide range of sources, from industrial plants to motor vehicles, emit TACs, either directly or through reactions among the different pollutants in the atmosphere. The health effects associated with TACs are quite diverse and generally assessed locally rather than regionally. TACs can cause long-term health effects, such as cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage, or short-term acute affects, such as eye watering, respiratory irritation (a cough), running nose, throat pain, or headaches. For evaluation purposes, TACs are separated into carcinogen and non-carcinogen categories, based on the nature of the physiological effects associated with exposure to the pollutant.

DPM is a form of PM (see above) that is generated by diesel equipment and vehicle exhaust. DPM has been identified as a TAC and is particularly concerning because long-term exposure can lead to cancer, birth defects, and damage to the brain and nervous system.

Other potential TACs that may be of concern for the Project include vehicle emissions–related TACs, such as acetaldehyde, benzene, 1,3-butadiene, ethylbenzene, formaldehyde, and naphthalene.

BAAQMD has adopted incremental cancer and hazard thresholds to evaluate receptor exposure to single sources of TAC emissions. The "substantial" TAC threshold defined by BAAQMD is exposure of a sensitive receptor to an individual emissions source resulting in an excess cancer risk level of more than 10 in 1 million, or a non-cancer (i.e., chronic or acute) hazard index (HI) greater than 1.0.

The air district considers projects to have a cumulatively considerable TAC impact if they contribute TAC emissions that, when combined with cumulative sources within 1,000 feet of sensitive receptors, result in excess cancer risk levels of more than 100 in 1 million or an HI greater than 10.0. BAAQMD also considers a significant cumulative impact to occur if a project introduces new receptors into a location where the combined exposure to all cumulative sources within 1,000 feet is in excess of these cumulative thresholds.

Asbestos

BAAQMD considers a project to have a significant impact if it does not comply with the applicable regulatory requirements outlined in Regulation 11, Rule 2.

Methods for Analysis

Air quality impacts associated with construction and operation of the Project were assessed and quantified using standard and accepted software tools, techniques, and emission factors. A summary of the methodology is provided below. A full list of assumptions can be found in Appendix 3.4.

Construction

Mass Emissions

Construction of the Project would generate emissions of ROG, NO_X, CO, PM10, and PM2.5 that would result in short-term impacts on ambient air quality in the study area. Combustion exhaust, fugitive dust (PM10 and PM2.5), and fugitive off-gassing were estimated using a combination of emission factors and methodologies from the California Emissions Estimator Model (CalEEMod), version 2013.2.2, ARB's EMFAC2014 model, and EPA's AP-42 *Compilation of Air Pollutant Emission Factors.*

It is projected that construction would occur in eight phases between 2017 and 2030. Each phase would be comprised of multiple activities, such as site grading, curb and gutter installation, and building construction. Phasing information, including the projected construction schedule, equipment, grading and paving quantities, and number of truck trips, was obtained from the Project Developer (see Appendix 3.4).[15] Pollutant estimates were based on a combination of Project Developer input and model defaults, as described below.

- Emission factors for off-road construction equipment (e.g., loaders, cranes) were obtained from the CalEEMod User's Guide appendix, which provides default values per unit of activity (in grams per horsepower-hour) for each calendar year. Default equipment load factors were also obtained from CalEEMod. Engine horsepower ratings were provided by the Project Proponent and/or obtained from CalEEMod defaults. Criteria pollutant and GHG emissions from off-road equipment were estimated by multiplying the CalEEMod default data by the equipment inventory provided by the Project Proponent[16]
- Emission factors for on-road employee commute vehicles were obtained from ARB's EMFAC2014 model. Factors are based on a weighted average for all vehicle speeds for EMFAC's LDA/LDT/MDV vehicle categories.[17] Construction employee one-way trip lengths are based on the CalEEMod default of 12.4 miles per employee trip for construction worker trips in Santa Clara County (CalEEMod User's Guide appendix). It was conservatively assumed that all employees would make two trips per day (one to the site and one home). Criteria pollutant and GHG emissions generated by employee vehicles were estimated by multiplying the number of daily employee vehicle miles by the EMFAC2014 emission factors.
- Emission factors for on-road haul trucks were obtained from the ARB's EMFAC2014 model. Factors for haul trucks are based on aggregated-speed emission factors for EMFAC's T7 Single (for landfill, dump, asphalt, and concrete trucks) and T6 Heavy (for material deliveries) vehicle categories. Criteria pollutant and GHG emissions generated by haul trucks were estimated by multiplying the EMFAC2014 emission factors by daily vehicle mileage estimates provided by the Project Proponent.[18]

---

[15] Related Companies. 2015.

[16] Ibid.

[17] LDA = light-duty auto; LDT = light-duty truck; MDV = medium-duty vehicle.

[18] Abbe, Alexander. City of Santa Clara. May 7, 2015—email message to Erin Efner, ICF International.

- Fugitive re-entrained road dust emissions are based on the EPA's AP-42 methodology.[19] Emissions were quantified by multiplying the AP-42 emission factors by daily vehicle mileage estimates.
- Fugitive dust emissions associated with earthwork (site grading and truck loading) are based on daily intensity rates (acres graded per day and cubic yards moved per day) provided by the Project Proponent [20] Fugitive dust calculation methodologies from the EPA,[21,22] which are utilized by CalEEMod, were used to quantify emissions.
- Fugitive dust emissions from building demolition are based on 161,665 gross square feet (gsf) of demolished building space and utilize the CalEEMod default emission factors.
- Fugitive ROG emissions associated with architectural coatings and paving were calculated using emissions factors and calculation methodologies contained in the CalEEMod User's Guide appendix.
    - The architectural coatings emissions estimates are based on 9,164,400 gsf of new construction. Emissions calculations assume a ROG content of 100 grams per liter (g/L) for both interior and exterior coatings, consistent with Leadership in Energy & Environmental Design (LEED) v2009 and Green Seal Standard GC-03 requirements. Architectural coatings emissions were estimated based on input from the Project Proponent that painting would not be required on 95 percent of the exterior surface and 25 percent of the interior surfaces.
    - The paving emissions estimates are based on 1,943,585 gsf of new paved area[23] and utilize the CalEEMod default emission factor of 2.62 pounds of ROG per acre.

Emissions from each of the above sources will be generated throughout construction, varying in intensity depending on the nature and scale of construction activity. Average daily emissions were compared to BAAQMD thresholds.[24] Average daily construction emissions were estimated by calculating emissions for the individual construction sub-phases and then summing emissions from overlapping activities within each year in the proposed construction schedule (see Appendix 3.4).

Diesel Particulate Matter

Exposure to construction-related DPM was assessed by predicting the health risks in terms of excess cancer, non-cancer hazard impacts, and elevated PM2.5 concentrations. EPA's AERMOD dispersion model was used to predict DPM and PM2.5 hourly concentrations at sensitive land uses, based on daily PM10 and PM2.5 exhaust mass emissions, with exhaust emissions of PM10 used as a surrogate for DPM, in accordance with OEHHA guidance.[25] Estimates of project-level cancer risk, non-cancer HI, and annual PM2.5 concentrations were based on annual concentrations from AERMOD, anticipated

---

[19] U.S. Environmental Protection Agency. 2011. *Section 13.2.1, Paved Roads.* Available: http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s0201.pdf. Accessed: May 8, 2015.

[20] Related. 2015.

[21] U.S. Environmental Protection Agency. 1998. *Section 11.9, Western Surface Coal Mining*. Available: http://www.epa.gov/ttn/chief/ap42/ch11/final/c11s09.pdf. Accessed: May 8, 2015.

[22] U.S. Environmental Protection Agency. 2006. Section 13.2.4, *Aggregate Handling and Storage Piles.* Available: http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s0204.pdf. Accessed: May 8, 2015.

[23] U.S. Environmental Protection Agency. 2006. Section 13.2.4, *Aggregate Handling and Storage Piles.* Available: http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s0204.pdf. Accessed: May 8, 2015.

[24] BAAQMD does not have a threshold for fugitive dust. Instead, the threshold consists of compliance with dust control best management practices.

[25] Office of Environmental Health Hazard Assessment. 2015. *Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments*. February.

construction durations, and accepted OEHHA[26] and BAAQMD[27] default values. The risk calculations incorporate OEHHA's recent guidance update, which includes age-specific factors to take into account the increased sensitivity to carcinogens during early-in-life exposure.

Consistent with BAAQMD guidance, cumulative health risks were also analyzed by adding Project-level health risk contributions to ambient conditions. Background stationary, highway, and railway sources within 1,000 feet of the Project site were identified using Google Earth map files provided by BAAQMD.[28] The Google Earth map files include estimated risk and hazard impacts at nearby receptors from these sources. Risk and hazard impacts from generators were adjusted using BAAQMD's Diesel IC Engine Multiplier Tool.

Vapor Emissions Associated with Disturbance of Landfill Material During Construction

This issue is addressed separately in Section 3.11, *Hazards and Hazardous Materials*.

Operation

Mass Emissions

Operation of the Project would generate emissions of ROG, NO_X, CO, PM10, and PM2.5 that could result in long-term impacts on ambient air quality. Three types of air pollutant sources are expected during operation of the Project: area, energy, and mobile. Area sources include landscaping activities, consumer products (e.g., personal care products), and periodic paint emissions from facility upkeep. Energy sources include natural gas combustion for space heating and cooking. Mobile sources include vehicle trips from residents, visitors, and employees.

Construction of the Project would require removal of an existing golf course, tennis courts, a maintenance facility, clubhouse, restaurant and banquet facility, restroom building, fire station, and paved parking areas, all of which are on-site. Construction would also require removal of three off-site office buildings and surface parking lots. Operation of these facilities currently generates area, energy, and mobile-source emissions, which would be eliminated but replaced with operational emissions associated with the Project. The difference in operational emissions between the Project and the existing uses represents the net impact of the Project analyzed in this analysis.

Mass emissions associated with Schemes A and B and existing land uses were estimated using CalEEMod. Vehicle trip information was obtained from the Project's traffic impact assessment (see Section 3.3, *Traffic and Circulation*). Traffic data for the Project account for foreseeable trip reductions associated with proximity to public transit use. Emissions from area and energy sources were modeled using CalEEMod default values for the expected land use types. The analysis of Project emissions assumes all hearths (fireplaces and stoves) would be natural gas–fired, pursuant to Project design requirements.

---

[26] Office of Environmental Health Hazard Assessment. 2015. *Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments*. February.

[27] Bay Area Air Quality Management District. 2011. *California Environmental Quality Act Air Quality Guidelines*. May. San Francisco, CA.

[28] Bay Area Air Quality Management District. 2014. *Tools & Methodology*. Last Revised: January 3, 2014. Available: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx. Accessed: May 8, 2015.

Toxic Air Contaminants

The Project would result in additional traffic on the roadways as well as introduce new emissions at the Project site. The operational HRA includes analysis of both project-level and cumulative TAC impacts and includes an analysis of the impact of new project emissions as well as the siting of new receptors.

Exposure to operations-related TAC was assessed by predicting the health risks in terms of excess cancer, non-cancer hazard impacts, and elevated PM2.5 concentrations at on- and off-site receptor locations.

Regarding new on-site Project TAC sources, the Project's retail and office uses would result in new diesel-related truck activity as well as the siting of new emergency generators. The estimate of truck activity was based on truck trip generation for retail uses from the City of San Francisco *Transportation Impact Analysis Guidelines.*[29] Under Scheme A, there would be up to 1.5 million gsf of retail on Parcels 4 and 5. However, new sensitive receptors would only be within 1,000 feet of some of the retail locations (the emissions impact of loading dock idling is considered minimal beyond 1,000 feet). Thus, for this analysis, it was assumed that on-site receptors would be exposed to the equivalent truck loading associated with two-thirds of the overall retail (= 1 million gsf). It was assumed that each truck would idle for 5 minutes at the loading docks. Generator activity was based on the maximum activity allowed by a BAAQMD permit for emergency generators (50 hours per year) and CalEEMod default horsepower and load factor ratings. Because the exact location of the docks and generators is unknown, emissions from both were estimated separately in EPA's AERMOD's screening mode, AERSCREEN, to estimate worst-case concentrations at downwind receptors.

EPA's AERMOD dispersion model was also used to predict annual average DPM, PM2.5, and air toxic concentrations from nearby roadways associated with-Project and cumulative roadway conditions. DPM and PM2.5 concentrations include exhaust from diesel traffic as well as road, tire, and brake PM2.5 dust from all vehicles operating on roadways near the Project site. Estimates of gasoline-related air toxic emissions were based on EMFAC2014 total organic gases (TOG) rates from gasoline vehicles, TOG-speciation values obtained from BAAQMD,[30] and risk values obtained from OEHHA and ARB.[31] The Project analysis is based on year 2030 emission rates while the cumulative analysis is based on year 2040 emission rates from EMFAC 2014. Estimates of project-level cancer risk, non-cancer HI, and annual PM2.5 concentrations were based on Project-related traffic on nearby roadways, annual concentrations from AERMOD, and accepted OEHHA[32] and BAAQMD[33] default dose and risk calculations, similar to the construction analysis above.

Consistent with BAAQMD guidance, cumulative health risks were determined by considering the combined effect of existing sources, Project emissions, and reasonably foreseeable future other emissions (such as non-project cumulative traffic). Existing stationary and railway sources within 1,000

---

[29] *Transportation Impact Analysis Guidelines for Environmental Review*. Table H: http://sf-planning.org/Modules/ShowDocument.aspx?documentid=6753

[30] *BAAQMD Recommended Methods for Screening and Modeling Local Risks and Hazards*. May 2012. Table 14. Toxic Speciation of TOG due to Tailpipe Emissions.

[31] *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values*. http://www.arb.ca.gov/toxics/healthval/contable.pdf

[32] Office of Environmental Health Hazard Assessment. 2015. *Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments*. February.

[33] Bay Area Air Quality Management District. 2011. *California Environmental Quality Act Air Quality Guidelines*. May. San Francisco, CA.

feet of the Project site were identified using Google Earth map files provided by BAAQMD.[34] Risk and hazard impacts from generators were adjusted using BAAQMD's Diesel IC Engine Multiplier Tool. Risk and hazard impacts from one off-site manufacturing source (Coatek) were analyzed using site-specific dispersion analysis.[35] Risk and hazards from roadways were estimated in AERMOD. Estimates of the risk and hazards from the railway sources were based on the existing risk and hazards presented by BAAQMD and then taking into account the proposed increase in ACE and Capitol Corridor passenger service and locomotive fleet turnover.

Emission calculations, model inputs, and risk calculations are all contained within Appendix 3.4.

Carbon Monoxide Hot Spot

The analysis of CO hot spots was conducted using vehicle trip information from the Project's traffic impact assessment (see Section 3.3, *Traffic and Circulation*). Because Scheme B would generate higher traffic volumes and congestion, relative to Scheme A, the assessment utilizes data for Scheme B to represent worst-case Project impacts. The analysis also utilizes data from game day Sundays to represent potential impacts on roadways during events at nearby Levi's Stadium. Traffic volumes at local intersections under Scheme B conditions were evaluated relative to the BAAQMD screening criteria discussed above.

Vapor Emissions Associated with Landfill Material During Operation

This issue is addressed separately in Section 3.11, *Hazards and Hazardous Materials*.

Scheme Analysis

As described in Chapter 2, *Project Description*, this Environmental Impact Report (EIR) analyzes two schemes: Scheme A and Scheme B, which represent a variety of uses and site plans that could be included with implementation of the Project. Both schemes would encompass up to 9.164 million gsf. Construction activity and associated emissions are therefore anticipated to be similar between the schemes. Accordingly, the construction analysis presents one impact assessment for both Schemes A and B.

Although construction activity is anticipated to be similar for both schemes, differences in their residential and commercial land use gsf would influence long-term operational emissions. More housing is proposed under Scheme A, which could result in higher ROG emissions from use of consumer products. Conversely, more commercial uses are proposed under Scheme B, which could result in higher mobile-source emissions due to Project increases in vehicle trip generation. Given the differences in land use design, operational impacts under both Schemes A and B are evaluated in this analysis.

The construction activity schedule is only a rough estimate of the anticipated pace and scale of

[34] Bay Area Air Quality Management District. 2014. *Tools & Methodology*. Last Revised: January 3, 2014. Available: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx. Accessed: May 8, 2015.

[35] The PM2.5 emission rates from the facility were used in the assessment. The resultant modeled annual average concentrations are much lower in the refined modeling approach than in the BAAQMD defaults because of the more realistic and sophisticated cavity wake algorithm used in AERMOD versus the more conservative and simplistic cavity wake region formulation found in SCREEN3 and used for the BAAQMD defaults. The modeling approach used for this document also considered that emissions from the facility occur only during the daytime hours of 9 a.m. to 5 p.m. This coincides with the periods of generally increased turbulent mixing of pollutants within the boundary layer, leading to overall lower concentrations.

construction over the lengthy 14-year construction period. As such, it is likely that emissions at any particular point during the construction period will vary from the estimates in this analysis. However, the analysis, which is based on the construction schedule provided by the Project Developer, represents the best available information at this time. Where appropriate, the proposed mitigation for significant impacts allows for adjustments when the evidence suggests that the emissions will be substantially different from the estimates presented in this document.

Impacts and Mitigation Measures

Impact AQ-1: Conflict with Air Quality Plan. The Project would conflict with or obstruct implementation of the applicable air quality plan. (SU)

Santa Clara County is currently designated a nonattainment area for federal ozone and PM2.5 standards, a maintenance area for the federal CO standard, and nonattainment for State ozone, PM10, and PM2.5 standards (Table 3.4-3). The most recent federal attainment plans are the 2001 Ozone Attainment Plan and the 1994 CO Redesignation Request and Maintenance Plan. The most recent State air quality plan is the 2010 Clean Air Plan, which provides an integrated strategy to control ozone, PM, TACs, and GHG emissions. The BAAQMD plans estimate future emissions in the SFBAAB and determine strategies necessary for emissions reductions through regulatory controls. Emissions projections are based on population, vehicle, and land use trends typically developed by BAAQMD, the Metropolitan Transportation Commission, and ABAG.

A project is deemed inconsistent with air quality plans if it would result in population and/or employment growth that exceeds estimates used to develop applicable air quality plans. Projects that propose development consistent with the growth anticipated by the relevant land use plans would be consistent with the current BAAQMD air quality plans. However, if a project proposes development that is greater than that anticipated growth projections, the project would be in conflict with the BAAQMD air quality plans, and might have a potentially significant impact on air quality because emissions would exceed those estimated for the region.

As discussed in Section 3.12, *Population and Housing*, the existing land uses supply 510 on- and off-site employees. Under Scheme A, the Project is expected to result in a net increase of 1,360 dwelling units, 3,270 new residents, and up to 24,760 net new jobs (25,770 total jobs minus the 510 existing jobs) under full build-out. The increase in jobs could also indirectly increase housing demand by 2,405 units and population by approximately 6,350 people, as future development not directly associated with the Project is built to support the additional jobs created by the Project. The Project-induced population of up to 9,620 new residents (3,270 new residents plus 6,350 indirect residents) would represent approximately 0.5 percent of the anticipated population growth in the ABAG area in 2040. Additionally, the increased housing demand would represent approximately 2.6 percent of the regional growth in the ABAG area in 2040.

Under Scheme B, the Project is expected to result in a net increase of 200 dwelling units, 480 new residents, and up to 28,720 net new jobs (29,230 total jobs minus the 510 existing jobs) under full build-out. The increase in jobs could also indirectly increase housing demand by 2,790 units and population by approximately 7,364 people. The Project-induced population of up to 7,844 new residents (480 new residents plus 7,364 indirect residents) would represent approximately 0.4 percent of the anticipated population growth in the ABAG area in 2040. Additionally, the increased housing demand would represent approximately 3.0 percent of the regional growth in the ABAG area in 2040.

The Project includes several strategies consistent with BAAQMD's 2010 Clean Air Plan strategies, such as TCM D-3 (Local Land Use Strategies) and TCM-D (Support Focused Growth).[36] The Project would create a dense mixture of uses that supports alternative modes of travel (bicycles, pedestrians, transit) in proximity to transit (Amtrak, ACE rail, VTA light rail) that would be consistent with the overarching goal of local, regional, and statewide clean air and emission reduction plans of reducing reliance on single-passenger motor vehicle travel. The Project also includes energy conservation measures, including reducing energy use by 10 percent relative to 2013 California Energy Code, Transportation Demand Management (TDM) measures, and energy efficient building design in pursuit of Leadership in Energy and Environmental Design (LEED) certification for City Center (LEED for Neighborhood Development [LEED ND]), commercial buildings (Gold), and residential buildings (Silver). These measures would reduce Project-related area- and mobile-source emissions, relative to traditional commercial, office, and residential uses.

Despite these measures, the Project would contribute unplanned regional growth. Moreover, long-term operational emissions generated by the Project would far exceed BAAQMD's thresholds of significance even with mitigation (see Impact AQ-3). Accordingly, the Project would conflict with implementation of the applicable air quality plan. This impact would be ***significant and unavoidable***.

Impact AQ-2: Construction Criteria Air Pollutant Emissions. Construction activities at the Project site would result in the generation of regional criteria pollutant emissions during construction in excess of Bay Area Air Quality Management District thresholds. (LTS/M)

Construction of the Project has the potential to create air quality impacts through the use of heavy-duty construction equipment, construction worker vehicle trips, and truck hauling trips. In addition, fugitive dust emissions would result from site disturbance, whereas fugitive ROG emissions would result from application of architectural coatings and paving. The assessment of construction air quality impacts considers each of these potential sources. Construction assumptions are detailed in the calculation worksheets provided in Appendix 3.4.

The total amount, duration, and intensity of construction activity could have a substantial effect on the amount of construction emissions, their concentrations, and the resulting impacts occurring at any one time. Consequently, the emission forecasts provided herein reflect a specific set of conservative assumptions based on the expected construction scenario wherein a relatively large amount of construction takes place in a relatively intensive and overlapped schedule. Because of this conservative assumption, actual emissions could be less than those forecasted in this analysis. If construction is delayed or occurs over a longer period, emissions could be reduced because of: (1) a more modern and cleaner burning construction equipment fleet mix; and/or (2) a less intensive and overlapping build-out schedule (i.e., fewer daily emissions occurring over a longer period). Conversely, if construction is accelerated and occurs over a shorter period, average daily emissions could be increased. However, the analysis presented herein is based on a reasonably foreseeable construction schedule that was available at the time the analysis was prepared.

Construction would require multiple phases over a projected 14-year construction period beginning in 2017. Because activities during several phases would occur concurrently, it was assumed that during these periods of overlap, all equipment would operate at the same time. Daily average emissions

[36] TCM D-3 supports and promotes land use patterns, policies, and infrastructure investments that support higher density mixed-use, residential, and employment development near transit in order to facilitate bicycling, walking, and transit use.

estimates for individual phases occurring in each construction phase were therefore added to obtain the average daily emissions on a yearly basis. Estimated emissions are summarized in Table 3.4-6 and are representative of emissions under both Schemes A and B, both of which would construct up to 9.16 million gsf. Exceedances of BAAQMD thresholds are shown in underline. Model output and calculation spreadsheets are provided in Appendix 3.4.

Table 3.4-6. Unmitigated Average Daily Construction Emissions in BAAQMD[a]

				PM10			PM2.5			
Year	ROG	NO_X	CO	Exhaust	Dust	Total	Exhaust	Dust	Total	SO_2
2017	25	146	119	7	26	33	5	6	12	<1
2018	45	50	140	5	71	76	3	18	21	<1
2019	37	37	113	5	65	70	2	16	19	<1
2020	35	28	76	3	47	50	2	12	14	<1
2021	13	18	29	1	14	16	1	4	4	<1
2022	18	12	29	1	20	21	1	5	6	<1
2023	14	18	39	2	23	25	1	6	7	<1
2024	9	12	22	1	13	14	1	3	4	<1
2025	23	19	43	2	30	33	1	8	9	<1
2026	10	10	20	1	13	14	1	3	4	<1
2027	17	15	31	2	23	24	1	6	7	<1
2028	13	9	21	1	17	18	1	4	5	<1
2029	17	10	24	1	21	23	1	5	6	<1
2030	18	2	16	1	23	25	1	6	6	<1
Threshold	54	54	--	82	BMPs	--	54	BMPs	--	--

Notes:
Exceedances of BAAQMD thresholds are shown in underline.
BMPs = best management practices.
[a] pounds/day.

As shown in Table 3.4-6, construction emissions would exceed BAAQMD's daily NO_X thresholds during the first year of Project construction. The majority of NO_X emissions are generated by off-road heavy-equipment and on-road vehicle exhaust. Although the Project analysis identified only a potential exceedance of the BAAQMD NO_X average daily threshold for 2017, as noted above, the emissions estimates are based on a preliminary sub-phase construction schedule. The actual construction schedule may vary. Thus, there may be an exceedance of the NO_X average daily threshold in other years with heavy construction activity as well. Examination of the emissions by phase indicates that the overlapping of construction phases is likely to result in emissions that could exceed the NO_X average daily threshold only during construction on Parcels 4 and 5 (i.e., construction of Phases 1 through 4) and not during construction on Parcels 1, 2 and 3.

All criteria pollutants are associated with some form of health risk (e.g., asthma, asphyxiation). Adverse health effects associated with criteria pollutant emissions are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, the number and character of exposed individuals [e.g., age, gender]). Moreover, ozone precursors (ROG and NO_X) affect air quality on a regional scale. Health effects related to ozone are

therefore the product of emissions generated by numerous sources throughout a region. Existing models have limited sensitivity to small changes in criteria pollutant concentrations, and as such, translating project-generated criteria pollutants to specific health effects would produce meaningless results. In other words, increases in regional air pollution from Project-generated ROG and NO_X would have no effect on specific human health outcomes that could be attributed to specific Project emissions. As such, an analysis of impacts on human health associated with Project-generated regional emissions is not included in the project-level analysis.[37]

Increased emissions of ozone precursors (ROG and NO_X) generated by the Project could increase photochemical reactions and the formation of tropospheric ozone, which, at certain concentrations, could lead to respiratory symptoms (e.g., coughing), decreased lung function, and inflammation of airways. Although these health effects are associated with ozone, the impacts are a result of cumulative and regional ROG and NO_X emissions. The incremental contribution of the Project to specific health outcomes related to criteria pollutant emissions would be limited. Furthermore, the incremental contribution could not be traced solely to the Project. Despite the limitations of current modeling tools to attribute health outcomes to small regional emissions sources, Project NO_X and ROG emissions would contribute to the regional emissions inventory and thus would contribute to the health effects described above for regional criteria air pollutants. Project NO_X emissions would result in a ***significant*** impact.

BAAQMD does not have quantitative thresholds for fugitive dust. Instead, the threshold is based on compliance with best management practices (BMPs). Unmitigated fugitive dust could adversely affect local and regional PM10 levels, which would result in health impairment due to the inhalation of dust. Project fugitive dust emissions would result in a ***significant*** impact.

MITIGATION MEASURES. Mitigation would be required to reduce NO_X emissions generated by the Project. Similarly, because BAAQMD considers fugitive dust emissions to be significant without BMPs, mitigation would also be required to control fugitive dust. Mitigation Measure AQ-2.1 requires that heavy-duty equipment comply with Tier 3 and Tier 4 emissions standards, whereas Mitigation Measure AQ-2.2 requires that construction haul trucks utilize model year 2010 engines or newer. Implementation of these measures will reduce ROG and NO_X emissions from off-road heavy-equipment and on-road vehicles. BAAQMD recommended BMPs for fugitive dust and equipment exhaust are outlined in Mitigation Measure AQ-2.3.

Table 3.4-7 summarizes estimated construction emissions after the incorporation of Mitigation Measures AQ-2.1 through AQ-2.3. Exceedances of BAAQMD thresholds are shown in <u>underline.</u>

[37] Human health impacts due to project-related localized toxic air contaminants (TACS) are analyzed through health risk assessments (HRAs) discussed later in this section.

Table 3.4-7. Mitigated Average Daily Construction Emissions in BAAQMD[a, b, c]

				PM10			PM2.5			
Year	ROG	NO_X	CO	Exhaust	Dust	Total	Exhaust	Dust	Total	SO_2
2017	21	90	119	7	26	32	5	6	12	<1
2018	44	35	140	5	71	76	3	18	21	<1
2019	36	25	113	5	65	70	2	16	19	<1
2020	34	20	76	3	47	50	2	12	14	<1
2021	12	12	29	1	14	16	1	4	4	<1
2022	17	9	29	1	20	21	1	5	6	<1
2023	14	5	39	1	23	24	1	6	6	<1
2024	9	3	22	1	13	14	0	3	4	<1
2025	23	5	43	2	30	32	1	8	8	<1
2026	10	2	20	1	13	14	0	3	4	<1
2027	17	4	31	1	23	24	1	6	6	<1
2028	12	3	21	1	17	18	0	4	5	<1
2029	17	3	24	1	21	23	1	5	6	<1
2030	18	2	16	1	23	25	1	6	6	<1
Threshold	54	54	--	82	BMPs	--	54	BMPs	--	--

Notes:
Exceedances of BAAQMD thresholds are shown in underline.
BMPs = best management practices.
[a] pounds/day
[b] The analysis assumes emissions reductions compared to a fleet-wide average Tier 2 engine between 2017 and 2022 and Tier 3 engine between 2023 and 2030.
[c] PM10 and NO_X standards were phased in through the 2007 and 2010 model years on a percent-of-sales basis (50 percent of sales in 2007 to 2009 and 100 percent of sales in 2010). This mitigation measure assumes that all on-road heavy-duty diesel trucks will be model year 2010 and newer, with all trucks compliant with EPA 2007 on-road emissions standards.

Mitigation Measure GHG-1.1 would require the use of 30 percent alternative fuel for construction diesel equipment. The effects of this measure are not included in Table 3.4-7, but would lower particulate emissions without increasing NOx emissions.[38]

[38] The use of alternative fuels can sometimes lower emissions of one pollutant but increase emissions of another pollutant compared to the use of conventional diesel or gasoline. The net air quality effects depend on which alternative fuel is used. For example, compared to conventional diesel, biodiesel will have lower particular matter and hydrocarbon emissions, but can increase NOx emissions, depending on blend. One EPA study showed that B100 could increase NOx by 10 percent compared to conventional diesel but that B20 could lower or raise NOx emissions by 2 percent either direction. Mitigation Measure GHG-1.1 only includes B20 (not B100) and B20 has a very small effect on NOx. CNG and electricity would reduce hydrocarbons, particulate and NOx emissions compared to conventional diesel fuel. Thus Mitigation Measure GHG-1.1 is expected to lower GHG emissions as well as particulate and hydrocarbon emissions while not increasing NOx emissions. The referenced EPA Study is available as follows: http://cta.ornl.gov/bedb/biofuels/biodiesel/Average_Biodiesel_Emissions_Compared_to_Conventional_Diesel.xls.

As shown in Table 3.4-7, NO_X emissions in 2017 would still exceed BAAQMD's 54 pounds per day threshold for NO_X after implementation of Mitigation Measures AQ-2.1 through AQ-2.3. Accordingly, additional mitigation is required to reduce NO_X impacts to a less-than-significant level. Pursuant to Mitigation Measure AQ-2.4, the Project Developer will pay an off-site mitigation fee for NO_X emissions in excess of BAAQMD thresholds. With the implementation of Mitigation Measure AQ-2.4, NO_X emissions would be reduced to a ***less-than-significant*** level.

AQ-2.1: *Utilize Clean Diesel-Powered Equipment during Construction to Control Construction-Related Reactive Organic Gas (ROG) and Oxides of Nitrogen (NO_X) Emissions.* The Project Developer shall ensure that all off-road diesel-powered equipment used during construction between 2017 and 2022 is equipped with the U.S. Environmental Protection Agency (EPA) Tier 3 or cleaner engines, except for specialized construction equipment for which an EPA Tier 3 engine is not available. Consistent with advancements of the statewide fleet average, the Project Developer shall ensure that all off-road diesel-powered equipment used during construction between 2023 and 2030 is equipped with EPA Tier 4 engines, except for specialized construction equipment for which an EPA Tier 4 engine is not available. This requirement will ensure construction equipment remains cleaner than the fleet-wide average.[39]

AQ-2.2: *Use Modern Fleet for On-Road Material Delivery and Haul Trucks during Construction.* The Project Developer shall ensure that all on-road heavy-duty diesel trucks with a gross vehicle weight rating of 19,500 pounds or greater used at the Project site comply with EPA 2007 on-road emissions standards for PM10 and NO_X (0.01 grams per brake horsepower-hour [g/bhp-hr] and 0.20 g/bhp-hr, respectively).

AQ-2.3: *Implement Bay Area Air Quality Management District (BAAQMD) Additional Construction Mitigation Measures to Reduce Construction-Related Dust and Exhaust Emissions.* The Project Developer shall require all construction contractors to implement the specific construction mitigation measures below to reduce fugitive dust and equipment exhaust emissions. Emission reduction measures shall include, at a minimum, the following measures. Alternative measures may be identified by the Project Developer or its contractor, as appropriate, provided that they are as effective as the measures below. Alternative measures shall be submitted to the City of Santa Clara for approval.

- All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe. If water infiltration into landfill refuse layers is a concern, non-toxic soil stabilizers may be used instead.
- All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 miles per hour (mph) for a period of 2 hours or more.

[39] As explained in MM AQ-6.1, below, as necessary to reduce cancer risk to on-site sensitive receptors related to construction diesel particulate matter emissions to a level below the BAAQMD, the Project Developer may need to use Tier 4 equipment after occupancy of on-site residences or daycare centers, or may use other appropriate measures (see AQ-6.1). If Tier 4 equipment is used earlier than 2023, this may reduce the amount of mitigation required in MM AQ-2.4.

- Windbreaks (e.g., fences) shall be installed on the windward side(s) of actively disturbed areas of construction. Windbreaks shall have at maximum 50 percent air porosity.
- Exposed ground areas that are to be reworked more than 1 month after initial grading should be sown with fast-germinating native grass seed and watered appropriately until vegetation is established. If grass seeding is not feasible, then non-toxic soil stabilizers may be used.
- All construction trucks and equipment, including tires, involved in ground disturbance or transit through loose soil areas shall be washed off prior to leaving the site.
- Site accesses to a distance of 25 feet from the paved road shall be treated with a 6- to 12-inch compacted layer of wood chips, mulch, or gravel. Alternatively, a rumble plate may be used in place of chips, mulch, or gravel.
- Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than 1 percent.
- Idling time of diesel powered construction equipment shall be limited to 2 minutes.
- All construction equipment, diesel trucks, and generators shall be equipped with Best Available Control Technology for emission reductions of PM and NO_X.
- All contractors shall use equipment that meets the California Air Resources Board's (ARB's) most recent certification standard for off-road heavy-duty diesel engines.

AQ-2.4: Offset NO_X Emissions Generated during Construction that Are above BAAQMD NO_X Average Daily Emission Threshold. The Project Developer shall track construction activity, estimate emissions, and enter into a construction mitigation contract with BAAQMD to offset NO_X emissions that exceed BAAQMD NO_X average daily threshold of 54 pounds per day.

The average daily emissions shall be calculated on an annual basis by determining total construction-related NO_X emissions in each calendar year and dividing by the number of actual workdays in that calendar year. BAAQMD will use the mitigation fees provided by the Project Developer to implement emissions reduction efforts that offset Project NO_X emissions that exceed BAAQMD threshold.

Implementation of this mitigation measure shall apply only to Phase 1 through Phase 4 construction on Parcels 4 and 5 because only construction on Parcels 4 and 5 has the potential to exceed the BAAMQD average daily NO_X threshold on an annual basis, depending on construction sequencing and overlapping activity.

This mitigation includes the following specific requirements:

- The Project Developer shall require construction contractors to provide annual construction activity monitoring data for Phases 1 through 4 to estimate actual construction emissions, including the effect of equipment emissions reduction measures. The Project Developer shall submit the annual construction activity monitoring data and an estimate of actual annual construction emissions to the City and BAAQMD for review by February 1 of each year for the prior construction year. The City shall examine the construction activity monitoring to ensure it is representative, and BAAMQD shall examine the emissions estimate to ensure it is calculated properly.

- After acceptance of the emissions estimates by BAAQMD for the prior year, the Project Developer shall submit mitigation fees to BAAQMD to fund offsets for the portion of annual emissions that exceed the average daily NO_X threshold. The mitigation fees shall be based on the mitigation contract with BAAQMD (see discussion below) but shall not exceed the emissions-reduction project cost-effectiveness limit set for the Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) for the year in which mitigation fees are paid. The current Carl Moyer Program cost-effectiveness limit is $18,030 per weighted ton of criteria pollutants (NO_X + ROG + [20*PM]). An administrative fee of 5 percent shall be paid by the Project Developer to BAAQMD to implement the program.
- The mitigation fees shall be used by BAAQMD to fund projects that are eligible for funding under the Carl Moyer Program guidelines or other BAAMQD emissions-reduction incentive programs that meet the Carl Moyer Program cost-effectiveness threshold and are real, surplus, quantifiable, and enforceable.
- The Project Developer shall enter into a mitigation contract with BAAQMD for the emissions-reduction incentive program. The mitigation contract shall include the following:
  - Identification of appropriate off-site mitigation fees required for the Project.
  - Timing for submission of mitigation fees.
  - Processing of mitigation fees paid by the Project Developer.
  - Verification of emissions estimates submitted by the Project Developer.
  - Verification that off-site fees are applied to appropriate mitigation programs within the SFBAAB.
- The mitigation fees shall be submitted within 4 weeks after BAAQMD accepts an emissions estimate provided by the Project Developer showing that the average daily NO_X threshold was exceeded (when measured on an annual basis).

Impact AQ-3: Operational Criteria Air Pollutant Emissions. The Project would result in the generation of regional criteria pollutant emissions during operation in excess of Bay Area Air Quality Management District thresholds. (SU)

Operation of the Project has the potential to create air quality impacts primarily associated with mobile, area, and energy sources. Motor vehicle traffic would include daily resident access, visitor trips, waste management trucks, and employee trips. Area sources include landscaping equipment, off-gassing during the reapplication of architectural coatings, and consumer products (solvents, cleaning supplies, cosmetics, toiletries). Energy sources include natural gas combustion for space and water heating. Each of these sources was taken into account in calculating the Project's long-term operational emissions.

The existing land uses on the Project site currently generate mobile-, area-, and energy-source emissions. Emissions generated by these uses represent existing conditions, against which the Project must be evaluated.

The Project site is served by public bus, shuttle, and rail routes, which will result in greater alternative transportation use and lower mobile-source emissions compared with emissions from similar projects elsewhere that are not near transit routes. Wood-fired hearths would be prohibited in all residential and commercial structures. The Project would pursue LEED certification for the City Center (LEED ND),

commercial buildings (Gold), and residential buildings (Silver). Many of the strategies that have been incorporated into the Project design to achieve LEED certification are consistent with BAAQMD-recommended mitigation for plan-level impacts.[40,41] For example, the Project would create landscaped greenways, trails, and sidewalks that connect neighborhoods and commercial areas, supporting compact and mixed-use design. All buildings would be designed to exceed the California Green Building Code through energy-efficient design.

Vehicle trip information was obtained from the Project's traffic impact assessment (see Section 3.3, *Traffic and Circulation*); default trip lengths from CalEEMod were used.

Estimated operational emissions under both existing and Project conditions (Schemes A and B) are summarized in Table 3.4-8. The difference in operational emissions between the Project and the existing uses represents the net impact of the Project. All Project structures were conservatively assumed to be fully occupied immediately following construction. Exceedances of BAAQMD thresholds are shown in underline.

As shown in Table 3.4-8, ROG, NO_X, PM10, and PM2.5 emissions under both Schemes A and B would exceed BAAQMD's mass emissions thresholds. The majority of ROG emissions would be generated through the use of consumer products (e.g., aerosols), whereas the majority of NO_X emissions would be generated by resident and visitor trips. PM emissions are primarily attributable to road dust from increased motor vehicle trips. This is a ***significant*** impact.

MITIGATION MEASURES. Mitigation Measure GHG-1.2 (see Section 3.5, *Greenhouse Gases*) requires the Project's energy efficiency to exceed the 2013 Title 24 requirements by at least 15 percent or meet the Title 24 requirements that are applicable at the time of issuance of building permits for an individual phase (whichever has more stringent requirements for energy efficiency). This action will improve energy efficiency and reduce natural gas consumption. In addition, Mitigation Measure TRA-1.1 requires implementation of TDM measures to reduce mobile-source emissions.

Table 3.4-9 summarizes operational emissions with implementation of Mitigation Measures GHG-2.1 and TRA-1.1.

[40] Bay Area Air Quality Management District. 2011. *California Environmental Quality Act Air Quality Guidelines*. May. San Francisco, CA.

[41] Additional reductions may be achieved through LEED measures that reduce energy consumption, particularly natural gas usage, and encourage alternative transportation (e.g., bicycling and walking); however, such emissions benefits were not quantified or included in the analysis because the specific strategies that will be pursed to achieve LEED certification are currently unknown.

Table 3.4-8. Estimated 2030 Operational Average Daily Emissions[a]

Condition/Source	ROG	NO_X	CO	PM10	PM2.5
Existing					
Mobile Sources	12	22	107	14	4
Area Sources	167	>1	>1	>1	>1
Energy Sources	>1	1	1	>1	>1
Total Existing[b]	180	23	108	14	4
Scheme A					
Mobile Sources	280	435	2,576	589	164
Area Sources	199	<1	17	1	1
Energy Sources	5	49	41	4	4
Total Scheme A[b]	484	484	2,634	594	168
Scheme B					
Mobile Sources	305	472	2,800	640	178
Area Sources	229	<1	17	<1	<1
Energy Sources	6	55	46	4	4
Total Scheme B[b]	540	527	2,863	644	182
Net Emissions Scheme A	304	460	2,526	580	164
Net Emissions Scheme B	360	504	2,755	631	178
Threshold	54	54	CAAQS[c]	82	82

Notes:
Exceedances of BAAQMD thresholds are shown in underline.
CAAQS = California ambient air quality standards.
[a] pounds per day.
[b] Values may not add due to rounding.
[c] Refer to Impact AQ-2.4 for significance determination.

Table 3.4-9. Estimated 2030 Operational Average Daily Mitigated Emissions[a]

Condition/Source	ROG	NO_X	CO	PM10	PM2.5
Existing	180	23	108	14	4
Scheme A					
Mobile Sources	275	426	2,526	577	160
Area Sources	199	<1	17	1	1
Energy Sources	5	43	36	3	3
Total Scheme A[b]	479	469	2,580	581	164
Scheme B					
Mobile Sources	299	462	2,743	625	173
Area Sources	229	<1	17	<1	<1
Energy Sources	5	48	40	4	4
Total Scheme B[b]	534	511	2,801	629	177
Net Emissions Scheme A	299	446	2,471	567	161
Net Emissions Scheme B	354	487	2,693	616	173
Threshold	54	54	CAAQS[c]	82	82

Notes:
Exceedances of BAAQMD thresholds are shown in underline.
CAAQS = California ambient air quality standards.
[a] pounds per day; table assumes a 15 percent exceedance of the Title 24 2013 standards per Mitigation Measure GHG-2.1 and the trip reduction calculated by Fehr & Peers with implementation of Mitigation Measure TRA-1.1
[b] Values may not add due to rounding.
[c] Refer to Impact AQ-4, below, for significance determination.

Although Project design features, LEED certification, and operational mitigation would contribute to criteria pollutant reductions, ROG, NO_X, PM10, and PM2.5 emissions would still exceed BAAQMD's mass emissions thresholds of 54 pounds per day for ROG and NO_X and 82 pounds per day for PM10 and PM2.5. These emissions would be primarily the result of personal consumer products at private residences and mobile-source emissions associated with vehicle use; as such, there is no feasible on-site mitigation to reduce emissions below BAAQMD's thresholds.

Requirement of operational offsets (such as those included in Mitigation Measure AQ-2.4 is not considered feasible as it would require the procurement of annual offsets until Project decommissioning. Assuming a 30-year Project lifespan, implementing Mitigation Measure AQ-2.4 to also cover operational ROG and NO_X emissions over the BAAQMD thresholds would result in approximately $76 million in fees (Scheme B).[42] Purchasing offsets in this magnitude and duration would place an undue financial burden on the Project that is not considered economically feasible. Consequently, the impact of ROG, NO_X, and PM emissions on air quality during Project operation would be ***significant and unavoidable***.

[42] The current emissions fee is $18,030/weighted ton of criteria pollutants (NO_X + ROG + [20*PM due to exhaust]). Although there would be operational PM exceedances of BAAQMD thresholds, this is primarily due to non-exhaust related PM (mitigated daily operational PM10 exhaust emissions are only approximately 14 lbs/day compared with overall PM10 emissions of 616 lbs/day overall) and thus PM exhaust emissions were not included in the cost estimate presented above.

Impact AQ-4: Generation of Regional Criteria Pollutant Emissions During Combined Project Construction and Operation. The Project would generate regional criteria pollutant emissions during combined Project construction and operation in excess of Bay Area Air Quality Management District thresholds. (SU)

As discussed above and in Chapter 2, *Project Description*, construction would occur in phases, beginning with Parcel 5 in 2017. Operational emissions could begin immediately following construction. Accordingly, concurrent construction and operational activities would occur, resulting in higher daily emissions than either construction or operational emissions when analyzed separately. These emissions, before mitigation, would be ***significant.***

MITIGATION MEASURES. Mitigation Measures AQ-2.1 through AQ-2.4 (discussed above) would ensure that construction emissions would not exceed BAAQMD's mass emissions thresholds on their own. However, based on the magnitude of operational emissions (see Table 3.4-8), combined construction and operational emissions would result in exceedances of the BAAQMD's ROG, NOx, PM10, and PM2.5 thresholds.[43]

As discussed above, operational emissions would be primarily the result of personal consumer products at private residences and mobile-source emissions associated with vehicle use; as such, there is no feasible on-site mitigation to reduce combined construction and operational emissions below BAAQMD's thresholds. Expanding Mitigation Measure AQ-2.4 to include operational offsets during the 14-year overlap period as described above, is considered economically infeasible. Consequently, the impact of ROG, NO_X, and PM emissions on air quality during Project operation would be ***significant and unavoidable***.

Impact AQ-5: Exposure of Sensitive Receptors to Carbon Monoxide Hot Spots. The Project would not result in a significant exposure of sensitive receptors to potential carbon monoxide hot spots. (LTS)

Continuous engine exhaust may elevate localized CO concentrations. Receptors exposed to these CO hot spots may have a greater likelihood of developing adverse health effects. CO hot spots are typically observed at heavily-congested intersections where a substantial number of gasoline-powered vehicles idle for prolonged durations throughout the day. Section 3.3, *Traffic and Circulation*, analyzes peak-hour traffic volumes under Scheme B at intersections in the transportation study area.[44] The analysis indicates that the highest traffic volumes would occur during the PM Peak Hour under Existing with Project conditions at Great America Parkway and Tasman Drive (10,500 vehicles per hour), during the AM Peak Hour under 2020 with Project conditions at Mission College Boulevard and Montague Expressway (11,590 vehicles per hour), and during the AM Peak Hour under Cumulative 2040 with Project conditions at Mission College Boulevard and Montague Expressway (14,350 vehicles per hour). These levels, under each Project and cumulative condition, would be far below the congested traffic volume modeled by BAAQMD (44,000 vehicles per hour) that would be needed to contribute to a localized CO hot spot and below the congested traffic volume modeled by BAAQMD (24,000 vehicles per hour) that would be needed to contribute to a localized CO hot spot at an intersection where vertical and/or horizontal mixing is substantially limited. Accordingly, CO concentrations would not exceed the CAAQS according to BAAQMD's screening criteria. This impact would be ***less than significant***. No mitigation is required.

---

[43] Although emissions presented in Table 3.4-9 are representative of full build-out conditions in 2030, it is expected that the incremental increase in operational emissions from development construction between 2017 and 2030 would contribute to exceedances of BAAQMD's thresholds.

[44] Scheme B would result in higher traffic volumes and increased congestion, relative to Scheme A.

Impact AQ-6: Exposure of Sensitive Receptors to Toxic Air Contaminant Emissions during Construction. Project construction emissions would result in the exposure of sensitive receptors to localized TAC. (LTS/M)

Project construction would generate PM2.5 and DPM, resulting in the exposure of nearby existing sensitive receptors (e.g., residences, schools, parks) to increased PM2.5 concentrations and health risks associated with DPM. Similarly, new residents and children in potential daycare centers that may occupy the Project area prior to completion of the entire Project may be exposed to a portion of construction-generated PM2.5 and DPM.

As shown in Table 3.4-4, several sensitive receptors are located adjacent to the Project site, in addition to the new receptors that would occupy the Project area while subsequent phases of construction would occur. Therefore, exposure to construction PM2.5 and DPM emissions was assessed by predicting PM2.5 and DPM concentrations at on- and off-site receptor locations.

PM2.5 Analysis

The results of the PM2.5 analysis are summarized in Table 3.4-10 and are compared to BAAQMD's Project-level PM2.5 threshold. As shown, construction emissions would be less than BAAQMD threshold. Construction PM2.5 emissions would be even lower with the required implementation of Mitigation Measures AQ-2.1 through AQ-2.3 (required separately to address NOx emission impacts) and the specific measures selected to reduce DPM impacts (per Mitigation Measure AQ-6.1, see discussion below). In addition, Mitigation Measure GHG-1.1, which would require use of 30 percent alternative fuels for construction diesel equipment would also reduce particulate matter emissions, but the reduction value has not been quantified as it is unknown at this time exactly which alternative fuels would actually be used.

As shown in Table 3.4-10, the Project would not result in PM2.5 concentrations in excess of BAAQMD's threshold during construction without mitigation and would be lower with mitigation required to address other significant air quality impacts. This would be a ***less than significant*** impact.

DPM Analysis

Cancer health risks associated with exposure to diesel exhaust are typically associated with chronic exposure, in which long-term exposure is assumed. Exposure to construction DPM emissions were assessed by predicting the health risks in terms of excess cancer and non-cancer risks at both on- and off-site receptor locations. Exposure to carcinogens is expressed in terms of the number of people in 1 million who would contract cancer over a lifetime of exposure. The BAAQMD project threshold is an increased risk of contracting cancer of 10 in 1 million (which means that out of 1 million exposed people, 10 would contract cancer).[45] Chronic exposure to non-carcinogens is expressed with use of a hazard index (HI), which is the ratio of expected exposure level to an acceptable reference exposure level. A HI greater than 1.0 is considered significant.

The results of the health risk assessment are summarized in Table 3.4-11 and are compared to BAAQMD's Project-level DPM thresholds. Before mitigation, exceedances of BAAQMD thresholds are shown in <u>underline</u>. A detailed summary of the methodology used in estimating risk is provided in Appendix 3.4.

[45] BAAQMD estimates that, in 2005, approximately 50 percent of the population within the San Francisco Bay Area had an ambient cancer risk of 500 in 1 million or more due to existing air pollution. Ambient cancer risks vary, depending on proximity and exposure to toxic air contaminant emissions sources.

Table 3.4-10. Project-Level PM2.5 Exposure during Construction

Receptor	Annual PM2.5 Concentration (μg/m³)	
	Unmitigated	With Mitigation Measures AQ-2.1, AQ-2.2, and AQ-2.3 and Tier 4 equipment requirement from AQ-6.1
On-site Receptors		
Parcel 1 (daycares)	0.02	<0.01
Parcel 2 (daycares)	0.02	<0.01
Parcel 3 (daycares)	0.01	<0.01
Parcel 4 (residences)	0.04	<0.01
Parcel 4 (daycares)	0.04	<0.01
Parcel 5 (residences)	0.07	0.01
Parcel 5 (daycares)	0.07	0.01
Off-site Receptors[a]		
Residential	0.03	<0.01
Schools	0.01	<0.01
Recreational	0.05	<0.01
BAAQMD Threshold	0.3	

Notes:
[a.] See Table 3.4-4 and Appendix 3.4 for additional information on the off-site receptors modeled in the analysis.

Table 3.4-11. Project-Level Cancer and Chronic (HI) Risks during Construction[a]

Phase	Unmitigated		Mitigated (AQ-2.1 through AQ-2.3, plus Tier 4 per AQ-6.1)	
	Non-Cancer HI	Increased Cancer Risk (per million)	Non-Cancer HI	Increased Cancer Risk (per million)
On-site Receptors				
Parcel 1 (daycares)	< 0.01	4.9	<0.01	0.8
Parcel 2 (daycares)	< 0.01	3.9	<0.01	0.8
Parcel 3 (daycares)	< 0.01	1.3	<0.01	0.2
Parcel 4 (residences)	< 0.01	<u>11.8</u>	<0.01	1.4
Parcel 4 (daycares)	< 0.01	<u>10.4</u>	<0.01	1.2
Parcel 5 (residences)	0.02	<u>16.4</u>	<0.01	1.5
Parcel 5 (daycares)	0.02	<u>14.3</u>	<0.01	1.3
Off-site Receptors				
Residential	< 0.01	9.2	<0.01	0.8
Schools	< 0.01	1.8	<0.01	0.2
Recreational	0.01	0.6	0.01	0.1
BAAQMD Thresholds	1.0	10.0	1.0	10.0

Notes:
Exceedances of BAAQMD thresholds are shown in <u>underline.</u>

As shown in Table 3.4-11, construction of the Project, would result in an increase in cancer risk in excess of BAAQMD thresholds at residential and daycare receptors within Parcel 5, which would be constructed during Phase 1. This would be a ***significant*** impact.

MITIGATION MEASURES. With implementation of Mitigation Measures AQ-2.1, AQ-2.2, AQ-2.3 and AQ-6.1, cancer risks related to DPM exposure during construction would be reduced below the BAAQMD threshold. Accordingly, this impact would be ***less than significant with mitigation***.

AQ-6.1: Assess Construction Diesel Particulate Matter (DPM) Emissions Potential Prior to Construction, Utilize Clean Diesel-Powered Equipment, Filtration Systems, and/or other Measures as Necessary to Reduce Cancer Risks Associated with DPM during Construction. This measure only applies to construction that occurs after the first occupancy of on-site residences or daycare centers. The Project Developer shall implement the following measures, as necessary, to reduce cancer risks associated with DPM during construction to a level less than BAAMQD incremental cancer risk threshold of 10 in 1 million:

- Revised Health Risk Assessment (HRA): The Project Developer may choose to assess the potential construction DPM emissions later in the design phase, but prior to construction, and to prepare a revised HRA using updated construction equipment activity data and submit to the City for review. If the revised HRA demonstrates, to the satisfaction of the City, that the cancer risk for construction of the entire Project at all potentially exposed on-site and off-site sensitive receptors will be less than BAAMQD threshold cited, then no additional mitigation is necessary. If the revised HRA demonstrates, to the satisfaction of the City, that the cancer risk for construction of the entire Project at some of the on-site or off-site sensitive receptors will be less than presented in the EIR but still over the BAAMQD threshold, then some of the mitigation below may not be necessary.
- As necessary to reduce cancer risks below the BAAQMD threshold in light of projected DPM emissions and exposure and other mitigation (MM AQ-2.1 through MM AQ-2.3 and MM GHG-1.1), one or more of the following measures shall be implemented and the Project Developer will provide updated modeling to the City demonstrating that all on-site risks are reduced to below the BAAMQD threshold level:
    - Tier 4 Construction Equipment. The Project Developer shall ensure that all off-road diesel-powered equipment used during construction after occupancy of on-site residences or on-site daycare centers is equipped with EPA Tier 4 or cleaner engines, except for specialized construction equipment for which an EPA Tier 4 engine is not available. This requirement shall be in addition to the clean diesel requirements in Mitigation Measure AQ-2.1.
    - Install Filtration Systems on Ventilation and Recirculation Systems. Filtration systems shall be installed on ventilation and recirculation systems within on-site residences and the heating, cooling, or ventilation systems that serve daycare centers. All filters must be rated Minimum Efficiency Reporting Value (MERV) 13 or higher. The Project Developer shall submit a plan for installation and maintenance of all filters in accordance with the manufacturer's recommendations to the City prior to approval of the first building permits.

- Employ other reduction measures, such as high-performance renewable diesel fuel, that would reduce diesel particulate matter. Proposals for alternative reduction measures shall be submitted to the City for review and approval, including evidence of the particulate reduction and/or risk reduction effectiveness of the proposed alternative measures.

Impact AQ-7: Exposure of Existing or New Sensitive Receptors to Operational Toxic Air Contaminant Emissions. The Project would result in the exposure of existing or new sensitive receptors to TAC emissions during operation. (LTS/M)

BAAQMD guidance recommends analysis of project impacts to examine whether any individual project source would result in impacts to sensitive receptors in excess of project-level significance thresholds. The guidance also recommends analysis of whether new project receptors would be exposed to any individual source in excess of project significance thresholds. Both analyses are done under this impact.

Project Roadway-Related Emissions TAC Exposure. Project operational traffic would generate vehicle-related TACs (including DPM and other TACs), resulting in the exposure of nearby existing sensitive receptors (e.g., residences, schools, and parks) to increased TAC concentrations. The impact of DPM and other vehicle-related TACs was analyzed for roadways surrounding the Project site, including Lafayette Street, Tasman Drive, Great America Parkway, and SR 237 between 1st Street in San José and Great America Parkway. As shown in Table 3.4-12, the Project would not result in TAC impacts to any sensitive receptors that exceed the project-level thresholds and this impact would be ***less than significant***.

Table 3.4-12. Project Traffic Emissions Toxic Air Contaminant Impacts

Parcel	Chronic Non-Cancer Hazard Index	Increased Cancer Risk (per million)	PM2.5 Exposure ($\mu g/m^3$)
Project Traffic			
On-site Receptors			
Parcel 1 (daycares)	0.01	0.49	0.16
Parcel 2 (daycares)	0.01	0.44	0.09
Parcel 3 (daycares)	0.00	0.16	0.05
Parcel 4 (residences)	0.01	1.75	0.15
Parcel 4 (daycares)	0.00	0.22	0.07
Parcel 5 (residences)	0.01	1.42	0.12
Parcel 5 (daycares)	0.01	0.38	0.12
Off-site Receptors			
Residential	0.01	2.46	0.20
Schools	0.00	0.10	0.05
Recreational	0.01	0.54	0.10
BAAQMD Thresholds	1.0	10.0	0.3

Exposure to Project Emissions from Emergency Generators and Truck Loading Areas. On-site and off-site sensitive receptors would be exposed to DPM from periodic emergency generator operation and due to truck idling/access at commercial loading areas resulting in the exposure to increased TAC concentrations. As shown in Table 3.4-13, Project emissions would not result in exposure of any sensitive receptors to impacts exceeding the project-level thresholds and this impact would be ***less than significant***.

Table 3.4-13. Project On-Site Operational Emissions Toxic Air Contaminant Impacts[a]

Parcel	Chronic Non-Cancer Hazard Index	Increased Cancer Risk (per million)	PM2.5 Exposure ($\mu g/m^3$)
New On-site Project Sources (Emergency Generators + on-site truck loading)			
On-site Receptors			
Parcel 1 (daycares)	<0.01	0.51	<0.01
Parcel 2 (daycares)	<0.01	0.51	<0.01
Parcel 3 (daycares)	<0.01	0.51	<0.01
Parcel 4 (residences)	<0.01	1.19	<0.01
Parcel 4 (daycares)	<0.01	0.51	<0.01
Parcel 5 (residences)	<0.01	1.19	<0.01
Parcel 5 (daycares)	<0.01	0.51	<0.01
Off-site Receptors	<0.01	1.19	<0.01
BAAQMD Thresholds	1.0	10.0	0.3

Notes:
[a.] Individual source contributions are provided in Appendix 3.4.

Exposure of New Project Receptors to Existing TAC Emissions. In addition to exposure due to Project sources (which is discussed above), new on-site sensitive receptors would also be exposed to individual TAC emissions associated with existing traffic, train, and stationary sources within 1,000 feet of the Project site resulting in exposure to TAC concentrations. Google Earth map files and distance multipliers provided by the BAAQMD[46] were used to estimate excess impacts for existing stationary and rail sources. ICF modeled impacts associated with existing roadway sources.

As shown in Table 3.4-14, new residential and daycare receptors would be exposed to certain significant cancer risks associated with an existing on-site emergency generator (at Santa Clara Fire Station 10 [Fire Station 10]) and existing train service along Lafayette Street, but impacts would be less than significant related to exposure to other stationary sources and to adjacent roadways. The impacts related to the on-site emergency generator are limited to the areas within approximately 300 feet of the Fire Station. Cancer risk impacts related to on-site exposure to train TAC emissions are limited to the areas within approximately 400 feet of the rail line along Lafayette Street. The impacts associated with TAC exposure to these existing sources is considered ***significant***.

The very southern portion of Parcel 2 could also be exposed to significant PM2.5 impacts due to an off-site printed circuit board manufacturing facility (Coatek) south of Parcel 2. Dispersion modeling is

[46] Bay Area Air Quality Management District. 2014.

presently being conducted of this source. Given that Parcel 2 is upwind of this facility, it is possible that the PM2.5 emissions shown in Table 3.4-14 overstate the actual emissions. However, until the dispersion modeling is complete, this impact is also considered ***significant***.

Table 3.4-14. Project-Level Toxic Air Contaminant Impacts from Locating New Receptors[a]

Parcel	Chronic Non-Cancer Hazard Index	Increased Cancer Risk (per million)	PM2.5 Exposure (μg/m³)
Impacts from Existing Permitted Sources			
New On-site Receptors[b]			
Parcel 1 (daycares)	< 0.01	3.0	0.12
Parcel 2 (daycares)	< 0.01	< 0.1	0.07
Parcel 3 (daycares)	< 0.01	3.0	0.12
Parcel 4 (residences)	< 0.01	2.6	< 0.01
Parcel 4 (daycares)	0.02	43.9	0.08
Parcel 5 (residences)	0.01	21.9	0.04
Parcel 5 (daycares)	0.01	21.9	0.04
Impacts from Existing Roadway Emissions			
New On-site Receptors			
Parcel 1 (daycares)	0.05	2.5	0.24
Parcel 2 (daycares)	0.01	0.6	0.14
Parcel 3 (daycares)	0.01	0.5	0.14
Parcel 4 (residences)	0.01	3.0	0.25
Parcel 4 (daycares)	0.01	0.4	0.12
Parcel 5 (residences)	0.01	2.5	0.21
Parcel 5 (daycares)	0.01	0.7	0.21
Impacts From Existing Railway Emissions			
New On-site Receptors			
Parcel 1 (daycares)	0.01	12.9	0.02
Parcel 2 (daycares)	0.01	17.7	0.03
Parcel 3 (daycares)	0.01	12.4	0.02
Parcel 4 (residences)	0.01	7.8	0.01
Parcel 4 (daycares)	0.01	13.9	0.02
Parcel 5 (residences)	0.01	17.6	0.03
Parcel 5 (daycares)	0.01	14.5	0.02
BAAQMD Thresholds	1.0	10.0	0.3

Underlined results exceed BAAQMD threshold

Notes:

a. Individual source contributions are provided in Appendix 3.4. Results are for the worst-case receptor at each location.

b. The worst-case stationary sources for each location are as follows: Parcel 1 – Landfill gas flare; Parcel 2 – Italix (off-site stationary source); Parcel 3 – Landfill gas flare; Parcel 4 Fire Station emergency generator; Parcel 5 – Fire Station emergency generator.

MITIGATION MEASURE. As shown in Table 3.4-15 below, with implementation of Mitigation Measure AQ-7.1 (described below) cancer risks and PM2.5 exposure for on-site new receptors associated with emissions from existing train service, an on-site emergency generator, and an off-site stationary source would be reduced below the BAAQMD project-level thresholds. Accordingly, this impact would be ***less than significant with mitigation***.

AQ-7.1: Provide Filtration Systems for On-site Residences and Daycare Centers as Necessary to Reduce Operational Cancer Risks and Exposure to Particulate Matter 2.5 Microns in Diameter or Less (PM2.5). This measure only applies to on-site residences and daycare centers. The Project Developer shall implement the following measures, as necessary, to reduce cancer risks to a level less than BAAQMD project-level thresholds:

- Revised HRA: The Project Developer may choose to reassess the potential on-site cancer risk and PM2.5 concentrations to be experienced by on-site residential receptors and on-site daycare centers later in the design phase, but prior to occupancy, and to prepare a revised HRA using updated receptor location information and more detailed assessment of risks associated with existing and Project operational sources and submit to the City for review. If the revised HRA demonstrates, to the satisfaction of the City, that the cancer risk and exposure to PM2.5 for all potentially exposed on-site receptors will be less than BAAMQD project-level thresholds, then no additional mitigation is necessary. If the revised HRA demonstrates, to the satisfaction of the City, that the cancer risk or exposure to PM2.5 for on-site sensitive receptors will be less than presented in the EIR but still over BAAMQD threshold, then the mitigation effort may be less.
- Install Filtration Systems on Ventilation and Recirculation Systems. Filtration systems shall be installed on ventilation and recirculation systems within on-site residences and the heating, cooling, and ventilation systems that serve daycare centers that are exposed to risks above BAAQMD thresholds due to individual existing sources. All filters must be rated MERV 13 or higher. The Project Developer shall submit a plan for installation and maintenance of all filters in accordance with the manufacturer's recommendations to the City prior to approval of the first building permits.

Table 3.4-15. Mitigated Project-Level Toxic Air Contaminant Impacts from Locating New Receptors[a]

Parcel	Chronic Non-Cancer Hazard Index	Increased Cancer Risk (per million)	PM2.5 Exposure (μg/m³)
Impacts from Existing Permitted Sources			
New On-site Receptors[b]			
Parcel 1 (daycares)	NA	NA	NA
Parcel 2 (daycares)	NA	NA	NA
Parcel 3 (daycares)	NA	NA	NA
Parcel 4 (residences)	NA	NA	NA
Parcel 4 (daycares)	NA	6.6	NA
Parcel 5 (residences)	NA	3.3	NA
Parcel 5 (daycares)	NA	3.3	NA
Impacts from Existing Roadway Emissions			
New On-site Receptors			
Parcel 1 (daycares)	NA	NA	NA
Parcel 2 (daycares)	NA	NA	NA
Parcel 3 (daycares)	NA	NA	NA
Parcel 4 (residences)	NA	NA	NA
Parcel 4 (daycares)	NA	NA	NA
Parcel 5 (residences)	NA	NA	NA
Parcel 5 (daycares)	NA	NA	NA
Impacts From Existing Railway Emissions			
New On-site Receptors			
Parcel 1 (daycares)	NA	1.9	NA
Parcel 2 (daycares)	NA	2.7	NA
Parcel 3 (daycares)	NA	1.9	NA
Parcel 4 (residences)	NA	1.2	NA
Parcel 4 (daycares)	NA	2.1	NA
Parcel 5 (residences)	NA	2.6	NA
Parcel 5 (daycares)	NA	2.2	NA
BAAQMD Thresholds	1.0	10.0	0.3

Impact AQ-8: Exposure of Sensitive Receptors to Asbestos During Construction. The Project would not result in significant exposure of sensitive receptors to asbestos during demolition activities. (LTS)

Asbestos is a set of naturally occurring minerals that was previously used in building construction due to its heat resistance and strong insulating properties. Exposure to asbestos, however, has been shown to cause a number of disabling and fatal diseases, including lung cancer, mesothelioma, and pleural plaques. Demolition of the three buildings to be removed along the proposed Lick Mill Boulevard extension, and other Project features may expose workers to asbestos if the material was used during

construction of the existing buildings. The Project would comply with BAAQMD Regulation 11, Rule 2, which would control emissions of asbestos to the atmosphere during demolition activities. Accordingly, this impact is ***less than significant***. No mitigation is required.

Impact AQ-9: Objectionable Odors. The Project could create objectionable odors affecting a substantial number of people. (LTS/M)

Although offensive odors rarely cause any physical harm, they can be unpleasant and lead to considerable distress among the public. This distress may often generate citizen complaints to local governments and air districts. Any project with the potential to frequently expose the public to objectionable odors would be deemed as one having a significant impact. According to ARB,[47] land uses associated with odor complaints typically include sewage treatment plants, landfills,[48] recycling facilities, and manufacturing facilities.

Potential odor sources from Project operations would include diesel exhaust from weekly trash pick-up and the use of architectural coatings during routine maintenance; limited odors may also result from residential cooking appliances. When compared to existing odor sources in the surrounding area, which include commercial and residential uses, odor impacts from Project operation would be similar. Accordingly, Project operation is not expected to result in odor impacts that would exceed BAAQMD's odor thresholds (see Table 3.4-4).

Potential odor sources during construction activities include diesel exhaust from heavy-duty equipment, the use of architectural coatings, and landfill off-gassing during excavating and regrading. Construction-related odors near existing receptors would be temporary in nature and dissipate as a function of distance. Due to the disturbance of landfill materials, odors may be generated that could affect adjacent residential and recreational receptors, which would be a ***significant*** impact.

MITIGATION MEASURES. Potential odors from disturbance of landfill soil would be controlled through Mitigation Measure HAZ-2.1, which includes on-site odor monitoring during excavation. If odors are detected, they will be controlled though application of a deodorant, masking agent, neutralizing agent, lime, or an interim landfill cover. Accordingly, with mitigation, construction activities would not be likely to result in nuisance odors that would violate BAAQMD Regulation 7 (Odorous Substances). This construction-period impact would be ***less than significant with mitigation***.

Cumulative Impacts

Impact C-AQ-1: Cumulative Criteria Pollutants. The Project would result in a cumulatively considerable net increase in criteria pollutants for which the Project region is a nonattainment area for an applicable federal or State ambient air quality standard. (SU)

As discussed above, BAAQMD's emissions thresholds (Table 3.4-5) represent the average daily emissions that a project may generate before contributing to a cumulative impact on regional air quality. Therefore, exceedances of the BAAQMD project-level thresholds would be cumulatively considerable for project activities in the SFBAAB.

---

[47] California Air Resources Board. 2005. *Air Quality and Land Use Handbook.* May.

[48] As discussed in above, the City of Santa Clara All Purpose Sanitary Landfill was closed and capped in 1994 and therefore does not represent a significant source of ambient odor.

As discussed in Impact AQ-2, construction emissions would exceed BAAQMD's project-level thresholds without mitigation. Similarly, as analyzed in Impact AQ-3, long-term operation of the Project would result in ROG, NO_X, PM10, and PM2.5 emissions in excess of BAAQMD's numeric thresholds. Increases in ROG and NO_X could increase the formation of tropospheric ozone, depending upon complex photochemistry and regional ozone precursor emissions throughout the SFBAAB. An increase in ozone precursor emissions at one location does not guarantee a corresponding increase in respiratory ailments due to the nature and complexity of ozone formation. Nevertheless, because the Project without mitigation would exceed BAAQMD's mass emissions thresholds, its incremental effect on regional air quality would be ***cumulatively considerable***.

MITIGATION MEASURES. Mitigation Measures AQ-2.1 through AQ-2.4 (described above) would reduce construction-related emissions below BAAQMD's mass emissions thresholds (see Table 3.4-8). Accordingly, construction of the Project would result in a less than cumulatively considerable impact on air quality with mitigation for construction emissions only. However, as described in Impact AQ-3, although there are certain feasible mitigation measures that would lower operational emissions, there is insufficient feasible mitigation that would reduce long-term operational emissions below BAAQMD's mass emissions thresholds. Accordingly, this impact would be ***cumulatively considerable (i.e., significant and unavoidable).***

Impact C-AQ-2: Cumulative Health Risks. The Project's TAC emissions could contribute to cumulative exposure health risks of sensitive receptors (SU). The Project would also locate new receptors where they would be exposed to cumulative health risks due to cumulative TAC emissions (LTS/M).

Consistent with BAAQMD's CEQA Guidelines, cumulative exposure to TACs was evaluated by examining the exposure of on-site and off-site sensitive receptors to the cumulative effect of existing, Project (construction and operation), and reasonably foreseeable future sources of TAC emissions.

There are multiple cumulative TAC emission sources that would be within 1,000 feet of on-site and off-site sensitive receptors including the following:

- Existing sources: There are multiple existing stationary, rail, and roadway sources within 1,000 feet of the Project that generate TACs. Google Earth map files and distance multipliers provided by the BAAQMD[49] were used to estimate excess impacts for existing stationary, rail and roadway sources except landfill gas capture. The Landfill gas capture impacts used the *Site Investigation and Environmental Risk Assessment* by Langan Treadwell Rollo (see Chapter 3.11, *Hazards and Hazardous Materials*).[50] Note that the Langan Treadwell Rollo report does not present PM2.5 concentrations. Therefore, PM2.5 concentrations provided by BAAQMD were scaled using the cancer risk values from Langan Treadwell Rollo as a proxy for PM2.5 and the ratio of PM2.5 to VOC emission factors used in ARB's emission inventory. A description of this scaling is provided in Appendix 3.4.
- Project sources: The Project will contribute construction TAC emissions as well as operational TAC emissions associated with on-site emergency generators, truck loading at on-site loading

[49] Bay Area Air Quality Management District. 2014.

[50] Langan Treadwell Rollo. 2015. *Site Investigation and Environmental Risk Assessment, City Place Santa Clara, Santa Clara, California*. Langan Project No. 770611601. 23 January.

bays and traffic-related emissions added to nearby roadways. The methods used to estimate Project TAC emissions are described above in the assessment of project-level impacts.

- Cumulative land use development:
  - Construction: As shown in Figure 3.0-1, there are three cumulative projects within 1,000 feet of the Project vicinity that could contribute emissions during construction including the 3Com/Cognac project along Great America Parkway (#12), the Tasman East project (#20) and the Santa Clara double-track project proposed by Capitol Corridor/ACE. The 3Com project is already in construction but there are no cumulative sensitive receptors within 1,000 feet from the 3Com project that would also be affected by the City Place construction emissions. The Tasman East project and the proposed double-tracking of the railroad along Lafayette Street by Capitol Corridor are in environmental review, but detailed assessment of potential construction emissions is not readily available and could not be taken into account in this analysis.
  - Operations: Cumulative land use development in the region surrounding the Project site would increase traffic levels and would result in increased vehicle-related emissions along roadways surrounding the Project site, although over time, State and federal regulations would reduce the allowed emission rates for new vehicles. Vehicle-related emissions impacts were assessed using the same methodology described above for assessing Project vehicle-related emissions impacts but using cumulative volume forecasts for 2040 in the traffic impact analysis.
- Passenger rail service expansion: There are proposals from ACE and Capitol Corridor to expand passenger train service through Santa Clara, which would result in an increased number of trains along Lafayette Street. Although Capitol Corridor and the San Joaquin Regional Rail Commission (which operates ACE) are currently preparing environmental review of proposed passenger rail service expansions, the detailed assessment of TAC emissions for these projects has not been developed at this time. For this document, potential future railway emissions were estimated by taking BAAQMD's estimates of current TAC impacts associated with existing train operations, scaling up to reflect the proposed rail service increases, and adjusting the emissions rates, taking into account expected future changes in locomotive equipment. Railway impacts were also adjusted by taking into account the distance from the railroad to existing or new receptors.

All of these existing and future cumulative TAC sources could contribute to a cumulative health risk to existing off-site receptors. In addition, the Project would introduce new residential and daycare user receptors that would be exposed to these cumulative TAC sources located within 1,000 feet of the Project site. The results of the cumulative impact assessment are summarized in Table 3.4-16. Individual source contributions are provided in Appendix 3.4. These impacts do not assume implementation of any mitigation measures. However, until the dispersion modeling is complete, the cumulative PM2.5 impact is considered ***potentially significant***. The Project would contribute to this cumulatively significant PM2.5 impact due to Project PM2.5 emissions associated with construction and operations and thus the Project's contribution is ***cumulatively considerable***.

Table 3.4-16. Unmitigated Cumulative Toxic Air Contaminant Health Risks[a]

Parcel	Non-Cancer Hazard Index	Increased Cancer Risk (per million)	PM2.5 Exposure (μg/m³)
Contribution from Existing and Non-Project Sources			
On-site Receptors			
Parcel 1 (daycares)	0.06	17.4	0.45
Parcel 2 (daycares)	0.02	13.9	0.33
Parcel 3 (daycares)	0.02	12.7	0.32
Parcel 4 (residences)	0.02	13.3	0.41
Parcel 4 (daycares)	0.03	57.2	0.34
Parcel 5 (residences)	0.03	38.0	0.45
Parcel 5 (daycares)	0.03	33.7	0.45
Off-site Receptors			
Residential	0.06	25.9	0.88
Schools	0.02	9.9	0.19
Recreational	0.04	23.6	0.69
Contribution from Project Construction and Operations			
On-site Receptors			
Parcel 1 (daycares)	0.01	5.8	0.18
Parcel 2 (daycares)	0.01	4.8	0.11
Parcel 3 (daycares)	0.00	1.9	0.06
Parcel 4 (residences)	0.01	14.1	0.19
Parcel 4 (daycares)	0.01	11.0	0.11
Parcel 5 (residences)	0.02	18.5	0.19
Parcel 5 (daycares)	0.02	15.1	0.19
Off-site Receptors			
Residential	0.01	11.0	0.17
Schools	0.00	3.0	0.05
Recreational	0.02	1.9	0.13
Cumulative Totals			
On-site Receptors			
Parcel 1 (daycares)	0.07	23.1	0.62
Parcel 2 (daycares)	0.03	18.7	0.44
Parcel 3 (daycares)	0.02	14.7	0.37
Parcel 4 (residences)	0.03	27.4	0.60
Parcel 4 (daycares)	0.04	68.2	0.45
Parcel 5 (residences)	0.05	56.5	0.64
Parcel 5 (daycares)	0.05	48.8	0.64

Table 3.4-16. Unmitigated Cumulative Toxic Air Contaminant Health Risks[a]

Parcel	Non-Cancer Hazard Index	Increased Cancer Risk (per million)	PM2.5 Exposure (μg/m³)
Off-site Receptors			
Residential	0.08	36.9	1.05
Schools	0.03	13.0	0.24
Recreational	0.05	25.5	0.82
BAAQMD Thresholds	10.0	100.0	0.8

Notes:

a. Individual source contributions are provided in Appendix 3.4.

MITIGATION MEASURES. As discussed above, Mitigation Measures AQ-2.1, AQ-2.2, and AQ-2.3 would substantially reduce DPM and PM2.5 during construction. Mitigation Measure AQ-6.1 would reduce on-site receptor exposure to DPM and PM2.5 from construction and Mitigation Measure AQ-7.1 would reduce on-site receptor exposure to DPM and PM2.5 from operations.

While these mitigation measures can reduce the on-site cumulative impact to less than significant and reduce the Project construction emission contributions, as shown in Table 3.4-17, below, it would not reduce the off-site PM2.5 levels at certain residential and park receptors to a less-than-significant cumulative levels. Additional mitigation for this impact is not considered feasible for the following reasons:

- The primary source of the off-site PM2.5 impact is cumulative traffic. Cumulative traffic (including the Project) is responsible for approximately 67 percent of the off-site residential impact and 85 percent of the off-site park impact. While the Project will be required to reduce Project trip generation with Mitigation Measure TRA-1.1, the Project Developer cannot control vehicle technology or fuels, which are regulated by the State and federal government.
- The second-largest source of the off-site residential PM2.5 impact is the existing stationary sources. The Coatek manufacturing facility, which is located in the business park southeast of the Project site, is not controlled by or the responsibility of the Project Developer. This facility is responsible for approximately 21 percent of the off-site residential impact. Other existing stationary sources contribute an additional 8 percent of the off-site residential PM2.5 impact
- The remaining sources of the off-site residential PM2.5 impact consist of Project construction (3 percent) and train emissions (1 percent). Construction mitigation measures (see discussed above) would reduce construction emissions but would not completely eliminate them. The Project Developer does not control train service, train technology, or fuels, which are the responsibility of the train operators and regulated by the federal government.
- The remaining sources of the off-site park PM2.5 impact consist of Project construction (3 percent), train emissions (1 percent), and Project operations (< 0.2 percent). Construction mitigation measures (see discussed above) would reduce construction emissions but would not completely eliminate them. The Project Developer does not control train service, train technology, or fuels, which are the responsibility of the train operators and regulated by the

federal government. The Project's operational emissions contribute only a very small portion of this off-site impact.

With mitigation, the Project would contribute approximately 16 percent of the off-site residential PM2.5 impact and 19 percent of the off-site park PM2.5 impact, consisting primary of PM2.5 emissions related to Project traffic along adjacent roadways (13 percent of off-site residential impact and 10 percent of the off-site park impact), with the remainder primarily due to construction impacts. This contribution is identified as ***cumulatively considerable and unavoidable with mitigation.***

Table 3.4-17. Mitigated Cumulative Toxic Air Contaminant Health Risks[a]

Parcel	Non-Cancer Hazard Index	Increased Cancer Risk (per million)	PM2.5 Exposure (μg/m³)
Cumulative[b]			
On-site Receptors			
Parcel 1 (daycares)	NA	NA	NA
Parcel 2 (daycares)	NA	NA	NA
Parcel 3 (daycares)	NA	NA	NA
Parcel 4 (residences)	NA	NA	NA
Parcel 4 (daycares)	NA	NA	NA
Parcel 5 (residences)	NA	NA	NA
Parcel 5 (daycares)	NA	NA	NA
Off-site Receptors			
Residential	NA	NA	1.04
Schools	NA	NA	NA
Recreational	NA	NA	0.81
BAAQMD Thresholds	10.0	100.0	0.8

Notes:

a. Individual source contributions are provided in Appendix 3.4.

3.5 Greenhouse Gas Emissions

This section describes the regulatory and environmental setting for greenhouse gases (GHG) and climate change. It also describes impacts on GHG emissions that would result from implementation of the Project and proposes mitigation for significant impacts, where appropriate. The study area for GHGs is much broader than for the air quality analysis (see Section 3.4, *Air Quality*) due to the global nature of climate change. The analysis considers potential regional and global GHG effects.

Issues identified in response to the Notices of Preparation (NOPs) (Appendix 1) were considered in preparing this analysis. The NOP comments pertaining to GHG Emissions include the proposed Leadership in Energy and Environmental Design (LEED) certification, carbon footprints, and carbon dioxide (CO_2) emissions. These issues are addressed below.

The phenomenon known as the *greenhouse effect* keeps the atmosphere near the earth's surface warm enough for the successful habitation of humans and other life forms. Present in the earth's lower atmosphere, GHGs play a critical role in maintaining the earth's temperature; GHGs trap some of the long-wave infrared radiation emitted from the earth's surface that would otherwise escape to space.

Sunlight, including infrared, visible, and ultraviolet light, passes through the atmosphere. Some of the sunlight that strikes the earth is absorbed and converted to heat, which warms the surface. The surface emits infrared radiation to the atmosphere where some of it is absorbed by GHGs and re-emitted toward the surface; some of the heat is not trapped by GHGs and escapes into space. Human activities that emit additional GHGs to the atmosphere increase the amount of infrared radiation that gets absorbed before escaping into space, thereby enhancing the greenhouse effect and amplifying the warming of the earth.[1]

Increases in fossil fuel combustion and deforestation have exponentially increased concentrations of GHGs in the atmosphere since the Industrial Revolution. Rising atmospheric concentrations of GHGs in excess of natural levels enhance the greenhouse effect, which contributes to global warming of the earth's lower atmosphere. This warming induces large-scale changes in ocean circulation patterns, precipitation patterns, global ice cover, biological distributions, and other changes to the earth system, which are collectively referred to as *climate change*.

According to Assembly Bill (AB) 32, GHGs include the following gases: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), perfluorinated carbons (PFCs), sulfur hexafluoride (SF_6), and hydrofluorocarbons (HFCs). The State CEQA Guidelines (Section 15364.5) also identify these six gases as GHGs.[2] The primary GHGs of concern associated with the Project are CO_2, CH_4, and N_2O. The principal characteristics of these pollutants are discussed below.

- **Carbon Dioxide (CO_2)** enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, respiration, and also as a result of other chemical reactions (e.g., manufacture of cement). CO_2 is also removed from the atmosphere (or *sequestered*) when it is absorbed by plants as part of the biological carbon cycle.

[1] Center for Climate and Energy Solutions. 2011. *The Greenhouse Effect*. Available: http://www.c2es.org/facts-figures/basics/greenhouse-effect. Accessed: January 17, 2012.

[2] Water vapor, the most abundant GHG, is not included in this list because its natural concentrations and fluctuations far outweigh its anthropogenic (human-made) sources.

- **Methane (CH_4)** is emitted during the production and transport of coal, natural gas, and oil. CH_4 emissions also result from livestock and other agricultural practices and the decay of organic waste in municipal solid waste landfills.
- **Nitrous Oxide (N_2O)** is emitted during agricultural and industrial activities as well as during the combustion of fossil fuels and solid waste.

Note that climate change is a global problem, and GHGs are global pollutants, unlike criteria air pollutants (such as ozone precursors), which are primarily pollutants of regional and local concern. Given their long atmospheric lifetimes, GHGs emitted by countless sources worldwide accumulate in the atmosphere. No single emitter of GHGs is large enough to trigger global climate change on its own. Rather, climate change is the result of the individual contributions of countless past, present, and future sources. Therefore, GHG impacts are inherently cumulative, and the analysis below is a cumulative impact analysis.

Existing Conditions

Regulatory Setting

This section summarizes federal, State, and local regulations related to GHG emissions and climate change that are applicable to the Project.

Federal

Climate change is widely recognized as an imminent threat to the global climate, economy, and population. The U.S. Environmental Protection Agency (EPA) has acknowledged potential threats posed by climate change in a Cause or Contribute Finding, which found that the GHG emissions from new motor vehicles contribute to pollution that threatens public health and welfare and was a necessary finding prior to adopting new vehicle emissions standards that reduce GHG emissions. Federal climate change regulation under the federal Clean Air Act (CAA) is also currently under development for both existing and new sources. Standards for CO_2 emissions from new fossil-fuel-fired electricity power plants have also been proposed by EPA and outlined in President Obama's 2013 "Climate Action Plan." Federal vehicle emission standards have been established that specifically take into account the need for GHG emissions reductions. Despite these actions, there is still no comprehensive federal overarching law specifically related to the reduction of GHG emissions.

State

California has adopted statewide legislation addressing various aspects of climate change and GHG mitigation. Much of this establishes a broad framework for the State's long-term GHG reduction and climate change adaptation program. The former and current governors of California have also issued several executive orders (EOs) related to the State's evolving climate change policy. Summaries of key policies, EOs, regulations, and legislation at the State level that are relevant to the Project are provided below.

Executive Order S-3-05, Schwarzenegger (2005)

EO S-3-05 asserted that California is vulnerable to the effects of climate change. To combat this concern, the order established the following GHG emissions reduction targets:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

Executive orders are legally binding only on State agencies. Accordingly, EO S-3-05 guides State agencies' efforts to control and regulate GHG emissions, but has no direct binding effect on local government or private actions. The secretary of the California Environmental Protection Agency (CalEPA) is required to report to the governor and State legislature biannually on the impacts of global warming on California, mitigation and adaptation plans, and progress made toward reducing GHG emissions to meet the targets established in this EO.

Assembly Bill 1493, Pavley Rules (2002, Amendments 2009, 2012)

Known as Pavley I, Assembly Bill (AB) 1493 established the nation's first GHG standards for automobiles. AB 1493 required the California Air Resources Board (ARB) to adopt vehicle standards to lower GHG emissions from new light duty autos to the maximum extent feasible beginning in 2009. Additional strengthening of the Pavley standards (referred to previously as *Pavley II* and now referred to as the *Advanced Clean Cars* measure) was adopted for vehicle model years 2017–2025 in 2012. Together, the two standards are expected to increase average fuel economy to roughly 54.5 mpg in 2025.

Senate Bills 1078/107/X 1-2, Renewable Portfolio Standard and Renewable Energy Resources Act (2002, 2006, 2011)

Senate Bills (SBs) 1078 and 107, California's Renewables Portfolio Standard (RPS), obligated investor-owned utilities energy service providers and Community Choice Aggregations to procure an additional 1 percent of retail sales per year from eligible renewable sources until 20 percent was reached by 2010. The California Public Utilities Commission (CPUC) and California Energy Commission (CEC) are jointly responsible for implementing the program. SB X 1-2, called the California Renewable Energy Resources Act, obligates all California electricity providers to obtain at least 33 percent of their energy from renewable resources by 2020.

Assembly Bill 32, California Global Warming Solutions Act (2006)

AB 32 codified the State's GHG emissions target by requiring that the State's global warming emissions be reduced to 1990 levels by 2020. Since this target was adopted, ARB, CEC, CPUC, and the Building Standards Commission have been developing regulations that will help meet the goals of AB 32. ARB prepared its plan for implementing AB 32, called the "AB 32 Scoping Plan," which identifies specific measures to reduce GHG emissions to 1990 levels by 2020. It requires ARB and other State agencies to develop and enforce regulations and other initiatives for reducing GHGs. The AB 32 Scoping Plan was first developed in 2008, and the first update was completed in 2013.

Executive Order S-01-07, Low Carbon Fuel Standard (2007)

EO S-01-07 mandated (1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020, and (2) that a low carbon fuel standard for transportation fuels be established in California. The EO initiated a research and regulatory process at

ARB. ARB has since adopted and implemented the Low Carbon Fuel Standard, which requires a progressive reduction in the carbon intensity of fuels over time.

Senate Bill 375, Sustainable Communities Strategy (2008)

Senate Bill (SB) 375 provides for a new regional planning process that coordinates land use planning, regional transportation plans, and transportation funding priorities to help California meet the GHG reduction goals established in AB 32. SB 375 requires metropolitan planning organizations to incorporate a "sustainable communities strategy" (SCS) in their Regional Transportation Plans. The goal of the SCS is to reduce regional vehicle miles traveled (VMT) through land use planning and consequent transportation patterns in combination with the Regional Transportation Plan that provide for needed transportation investments, including transit. The Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG) adopted the Sustainable Communities Strategy and the 2040 Regional Transportation Plan, titled *Plan Bay Area*, in July 2013. The MTC is currently working on a strategic update to the SCS, called *Plan Bay Area 2040*, which builds on prior work to develop an efficient transportation network, provide more housing choices, and grow the region in a financially and environmentally responsible way. Plan Bay Area expressly states that it does not require any changes to local land use policies or environmental review processes.[3]

Plan Bay Area consistency is discussed in Section 3.1, *Land Use and Planning*, but is not discussed further in this section.

California Green Building Standards Code and Title 24 (2010)

In January 2010, the California Building Standards Commission adopted the statewide mandatory Green Building Standards Code (CALGreen [California Code of Regulations, Title 24, Part 11]). CALGreen applies to the planning, design, operation, construction, use, and occupancy of every newly constructed building or structure.

CALGreen requires the installation of energy- and water-efficient indoor infrastructure for all new projects beginning after January 1, 2011. CALGreen also requires that newly constructed buildings develop a waste management plan and divert at least 50 percent of the construction materials generated during project construction (CALGreen Sections 4.408 and 5.408).

The CEC adopted the 2013 Building Energy Efficiency Standards contained in the California Code of Regulations, Title 24, Part 6 (also known as the California Energy Code) and associated administrative regulations in CALGreen Part 11, which took effect on January 1, 2014. The 2013 Building Energy Efficiency Standards are 25 percent more efficient than previous standards for residential construction. Part 11 also established voluntary standards that became mandatory in the 2010 edition of the code, including planning and design for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. The standards offer builders better windows, insulation, lighting, ventilation systems, and other features that reduce energy consumption in homes and businesses.

The next set of energy efficiency standards will be the 2016 Building Energy Efficiency Standards, which are currently going through the rule-making process. These are expected to be adopted in 2016 and take effect on January 1, 2017. According to the CEC, single-family homes built to the 2016 standards will use about 28

[3] Metropolitan Transportation Commission. 2013. *Plan Bay Area: Strategy for a Sustainable Region*. Metropolitan Transportation Agency and Association of Bay Area Governments. Adopted: July 18, 2013. Available: http://files.mtc.ca.gov/pdf/Plan_Bay_Area_FINAL/Plan_Bay_Area.pdf.

percent less energy for lighting, heating, cooling, ventilation, and water heating than those built to the 2013 standards.

In 2008, California set energy-use reduction goals targeting zero net energy (ZNE) use in all new homes by 2020 and commercial buildings by 2030. The ZNE goal means new buildings must use a combination of improved efficiency and distributed renewable energy generation to meet 100 percent of their annual energy need. The proposed draft 2016 standards do not require ZNE. However, they will make important steps toward further changing residential building practices in California. The 2019 standards are expected to take the final step toward achieving ZNE for newly constructed residential buildings throughout California. Later standards are expected to require ZNE for newly constructed commercial buildings.

State CEQA Guidelines (2010)

The California Environmental Quality Act (CEQA) Guidelines require lead agencies to describe, calculate, or estimate the amount of GHG emissions that would result from a project. Moreover, the guidelines emphasize the necessity to determine potential climate change effects of a project and propose mitigation as necessary. They also confirm the discretion of lead agencies to determine appropriate significance thresholds, but require the preparation of an environmental impact report (EIR) if "there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with adopted regulations or requirements" (Section 15064.4).

State CEQA Guidelines Section 15126.4 includes considerations for lead agencies related to feasible mitigation measures to reduce GHG emissions, which may include, among others, measures in an existing plan or mitigation program for the reduction of emissions that are required as part of the lead agency's decision; implementation of project features, project design, or other measures that are incorporated into the project to substantially reduce energy consumption or GHG emissions; off-site measures, including offsets that are not otherwise required, to mitigate a project's emissions; and measures that sequester carbon or carbon-equivalent emissions.

Executive Order B-30-15, Brown (2015)

EO B-30-15 established a medium-term goal for 2030 of reducing GHG emissions by 40 percent below 1990 levels and requires ARB to update its current AB 32 Scoping Plan to identify the measures to meet the 2030 target. The executive order supports EO S-3-05, described above, but currently is only binding on State agencies.

Regional

As described in Section 3.4, *Air Quality*, the Bay Area Air Quality Management District (BAAQMD) leads regional regulation of stationary sources and also often coordinates with local governments on reduction of air pollution from new projects, both of which can also result in reduction of GHG emissions. The air district has adopted advisory GHG emissions thresholds for stationary source and land use development projects in its *California Environmental Quality Act Air Quality Guidelines* (BAAQMD CEQA Guidelines),[4] as described further below.

[4] Bay Area Air Quality Management District. 2011. *California Environmental Quality Act Air Quality Guidelines*. May. San Francisco, CA. The BAAQMD CEQA Guidelines were challenged in court by the California Building Industry Association. Although a lower court ruling put the adoption of the guidelines on hold, with a ruling that BAAQMD had to complete a CEQA analysis to adopt the guidelines, the lower court ruling was overturned by the appellate court. The guidelines are currently under consideration by the California Supreme Court. BAAQMD at present has

Local

Climate Action Plan

The City of Santa Clara adopted a Climate Action Plan (CAP) in December 2013. The CAP outlines the City's efforts to reduce GHG emissions consistent with BAAQMD's CEQA Guidelines and larger statewide GHG reduction goals. The CAP estimates current (2008) and future (2020 and 2035) GHG emissions generated by community activities and sets a GHG reduction goal of 15 percent below 2008 emissions levels by 2020.[5] Measures to achieve this target are identified and focus on energy efficiency, renewable energy, water conservation, waste reduction, off-road equipment, and transportation and land use. The CAP is incorporated as part of the City's General Plan. As described in the Project Description, the package of proposed approvals for the Project include General Plan amendments that, among other things, would add VMT reduction requirements for the new mixed-use zoning designation which would be applicable to the Project.

City of Santa Clara General Plan

The City's current General Plan[6] includes the following goals and policies associated with GHGs.

Policy 5.3.1-P11: Encourage new developments proposed within a reasonable distance of an existing or proposed recycled water distribution system to utilize recycled water for landscape irrigation, industrial processes, cooling and other appropriate uses to reduce water use consistent with the CAP.

Policy 5.3.1-P14: Encourage Transportation Demand Management strategies and the provision of bicycle and pedestrian amenities in all new development greater than 25 housing units or more than 10,000 non-residential square feet, and for City employees, in order to decrease use of the single-occupant automobile and reduce vehicle miles traveled consistent with the CAP.

Policy 5.3.1-P33: Implement, and regularly update, the City's adopted Climate Action Plan to reduce greenhouse gas emissions and meet the established goals consistent with State regulations.

Policy 5.8.1-P4: Expand transportation options and improve alternate modes that reduce greenhouse gas emissions.

Policy 5.8.1-P5: Work with local, regional, State and private agencies, as well as employers and residents, to encourage programs and services that reduce vehicle miles traveled.

Policy 5.8.1-P6: Implement Level of Service standards that support increased transit ridership, biking and walking, in order to decrease vehicle miles traveled and reduce air pollution, energy consumption and greenhouse gas emissions.

Policy 5.8.6-P15: Require new parking lots to be surfaced with materials to reduce heat gain, consistent with the Building Code and CAP.

Policy 5.10.1-P8: Increase to 80 percent reduction for solid waste tonnage by 2020, or as consistent with the CAP.

---

no recommendation to local lead agencies on the use of the 2011 guidelines. However, there is no court order constraining their use, and they are frequently employed by lead agencies when conducting CEQA reviews.

[5] The CAP also mentions a potential target for 2035 of 55 percent below baseline levels, but the 2035 target has not been adopted by the City as of the writing of this document.

[6] City of Santa Clara. 2010. *City of Santa Clara 2010–2035 General Plan*. Adopted November 16, 2010. Last amended December 9, 2014. Available: http://santaclaraca.gov/index.aspx?page=1263. Accessed: February 9, 2015.

Goal 5.10.2-G2: Reduced greenhouse gas emissions that meet the State and regional goals and requirements to combat climate change.

Policy 5.10.2-P4: Encourage measures to reduce greenhouse gas emissions to reach 30 percent below 1990 levels by 2020.

Goal 5.10.3-G2: Implementation of energy conservation measures to reduce consumption.

Policy 5.10.3-P1: Promote the use of renewable energy resources, conservation and recycling programs.

Policy 5.10.3-P2: Transition away from using coal as an energy source to renewable resources by replacing coal in Silicon Valley Power's portfolio, exploring City owned property for renewable energy projects, developing solar projects, and incentivizing solar projects for residents and businesses, consistent with the CAP.

Policy 5.10.3-P3: Maximize the efficient use of energy throughout the community by achieving adopted electricity efficiency targets and promoting natural gas efficiency, consistent with the CAP.

Policy 5.10.3-P4: Encourage new development to incorporate sustainable building design, site planning and construction, including encouraging solar opportunities.

Policy 5.10.3-P5: Reduce energy consumption through sustainable construction practices, materials and recycling.

Policy 5.10.3-P6: Promote sustainable buildings and land planning for all new development, including programs that reduce energy and water consumption in new development.

Policy 5.10.3-P7: Encourage installation of solar energy collection through solar hot water heaters and photovoltaic arrays.

Policy 5.10.3-P8: Provide incentives for LEED certified, or equivalent development.

Policy 5.10.3-P9: Incorporate criteria for sustainable building and solar access into the City's ordinances and regulations.

Policy 5.10.3-P11: Continue innovative energy programs to develop cost effective alternative power sources and encourage conservation.

Policy 5.10.3-P12: Work with Silicon Valley Power to implement adequate energy distribution facilities to meet the demand generated by new development.

Policy 5.10.3-P13: Work with Pacific Gas and Electric to ensure an adequate supply of natural gas to meet the demand generated by new development.

Policy 5.10.3-P14: Explore opportunities for alternative energy "fueling stations" and promote participation in shuttle services that use new technology vehicles to reduce greenhouse gas emissions.

Environmental Setting

This section provides a discussion of global climate change and GHG emissions as they relate to the Project area.

Methods have been set forth to describe emissions of GHGs in terms of a single gas to simplify reporting and analysis. The most commonly accepted method to compare GHG emissions is the global warming potential (GWP) methodology defined in the Intergovernmental Panel on Climate Change (IPCC) reference documents. The IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all

GHG emissions in terms of carbon dioxide equivalent (CO_2e), which compares the gas in question to that of the same mass of CO_2 (CO_2 has a global warming potential of 1 by definition).

Table 3.5-1 lists the global warming potential of CO_2, CH_4, and N_2O, their lifetimes, and abundances in the atmosphere.

Table 3.5-1. Lifetimes and Global Warming Potentials of Key Greenhouse Gases

Greenhouse Gases	Global Warming Potential (100 years)	Lifetime (years)	2014 Atmospheric Abundance
CO_2	1	50–200	394 ppm
CH_4	28	9–15	1,893 ppb
N_2O	265	121	326 ppb

Sources: Myhre, G., D. Shindell, F.-M. Bréon, W. Collins, J. Fuglestvedt, J. Huang, D. Koch, J.-F. Lamarque, D. Lee, B. Mendoza, T. Nakajima, A. Robock, G. Stephens, T. Takemura, and H. Zhang. 2013. Anthropogenic and Natural Radiative Forcing. In: Climate Change 2013: The Physical Science Basis. Pages 659–740 in T. F. Stocker, D. Qin, G.-K. Plattner, M. Tignor, S. K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex, and P. M. Midgley (eds.), *Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge, United Kingdom and New York, NY, USA: Cambridge University Press. National Oceanic and Atmospheric Administration. 2014. *Up-to-date Weekly Average CO_2 at Mauna Loa.* Available: http://www.esrl.noaa.gov/gmd/ccgg/trends/
weekly.html. Accessed: September 18, 2014. Blasing, T. J. 2014. *Recent Greenhouse Gas Concentrations*. DOI: 10.3334/CDIAC/atg.032. Updated February.
Notes:
CH_4 = methane.
CO_2 = carbon dioxide.
N_2O = nitrous oxide.
ppb = parts per billion.
ppt = parts per trillion.

Greenhouse Gas Emissions Inventories

A GHG inventory is a quantification of all GHG emissions and sinks[7] within a selected physical and/or economic boundary. GHG inventories can be performed on a large scale (i.e., for global and national entities) or on a small scale (i.e., for a particular building or person). Although many processes are difficult to evaluate, several agencies have developed tools to quantify emissions from certain sources.

Table 3.5-2 outlines the most recent global, national, statewide, and local GHG inventories to help contextualize the magnitude of potential Project-related emissions.

[7] A greenhouse gas sink is a process, activity, or mechanism that removes a GHG from the atmosphere.

Table 3.5-2. Global, National, State, and Local GHG Emissions Inventories

Emissions Inventory	CO_2e (metric tons)
2004 IPCC Global GHG Emissions Inventory	49,000,000,000
2012 EPA National GHG Emissions Inventory	6,526,000,000
2012 ARB State GHG Emissions Inventory	458,680,000
2007 SFBAAB GHG Emissions Inventory	95,800,000
2008 City of Santa Clara GHG Emissions Inventory	2,037,800

Sources: Intergovernmental Panel on Climate Change. 2007. Climate Change 2007: The Physical Science Basis. In. S. D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Averyt, M. Tignor and H. L. Miller (eds.), *Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*; U.S. Environmental Protection Agency. 2014. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2012.* EPA 430-R-14-003; California Air Resources Board. 2014. *California Greenhouse Gas Emission Inventory*. Last Revised: December 22, 2014. Available: http://www.arb.ca.gov/cc/inventory/inventory_current.htm. Accessed: May 27, 2015; Bay Area Air Quality Management District. 2010. *Source Inventory of Bay Area Greenhouse Gas Emissions*; City of Santa Clara. 2014. *City of Santa Clara Climate Action Plan*. December.

Notes:

CO_2e = carbon dioxide equivalent.
IPCC = Intergovernmental Panel on Climate Change
EPA = U.S. Environmental Protection Agency
ARB = California Air Resources Board
SFBAAB = San Francisco Bay Area Air Basin

Potential Effects of Climate Change in the Project Area

Even with the efforts of the municipalities throughout the greater San Francisco Bay Area and California, a certain amount of climate change is unavoidable due to existing and future predicted GHG emissions. The San Francisco Bay Area, including Santa Clara County and Project area, may be subject to the following climatic changes.[8,9]

- Hotter and drier climate, with average annual temperatures increasing 2.9 to 3.4°F by 2090, relative to a baseline period between 1961 and 1990.
- Decreases in chaparral/coastal scrub (19–43 percent by 2070) and blue oak woodland/foothill pine (44–55 percent by 2070); increases in grassland (85–140 percent by 2070).
- Increased salinity in San Francisco Bay, with salinity increasing by up to 1–3 practical salinity units[10] during dry years.
- Increase in estuarine flows into the San Francisco Bay estuary, with winter gains approximately balancing spring-summer losses.
- Increased potential for extreme heat events and decreased air quality, with the result that public health will be placed at potential risk, and native plant and animal species may be lost.

[8] PRBO Conservation Science. 2011. *Projected Effects of Climate Change in California*. February.
[9] California Energy Commission. 2015. *Cal-Adapt*. Available: http://cal-adapt.org/tools/factsheet/. Accessed: May 27, 2015.
[10] Ocean salinity is generally defined as the salt (e.g., sodium and chlorine) concentration in sea water. It is measured in Practical Salinity Units (PSUs), which are based on the properties of sea water conductivity, as measured in g/kg.

- Changes in annual precipitation and increased public and private water demand.
- Rising sea level of up to 24 inches by 2050 and 66 inches by 2100 (compared with 2000 conditions).

Environmental Impacts

This section describes the impact analysis relating to GHG emissions for the Project. It describes the methods used to determine the impacts of the Project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

Thresholds of Significance

Greenhouse Gases

GHG emissions are fundamentally a cumulative impact issue. No single development project would result in sufficient GHG emissions to affect global warming or climate change in isolation. Instead, it is the cumulative global emissions that are of a sufficient scale to change the radiative balance of the atmosphere. As such, project-level effects in isolation would be less than significant and the analysis below is a cumulative impact analysis.

In accordance with Appendix G of the State CEQA Guidelines, the Project would be considered to have a significant effect if it would result in any of the conditions listed below.

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. For the purposes of this analysis, a "significant impact" from GHG emissions would occur if emissions exceed thresholds described below.
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. For the purposes of this analysis, applicable plans include the AB 32 Scoping Plan and the City's CAP (consistency with the goals in EO B-30-15 and EO S-03-05 is also evaluated).[11]

GHG emissions are evaluated using guidance and thresholds outlined in BAAQMD's CEQA Guidelines for consistency with GHG reduction targets for 2020 established in AB 32. For the period after 2020, GHG emissions will be evaluated by modifying the relevant BAAQMD GHG threshold for AB 32 to the 2030 period, taking into account the GHG reduction target in EO B-30-15, as discussed below.

BAAQMD's CEQA Guidelines do not identify a quantitative GHG emission threshold for construction-related emissions. Instead BAAQMD recommends that GHG emissions from construction be quantified and disclosed, and that a determination regarding the significance of these GHG emissions be made with respect to whether a project is consistent with the AB 32 GHG emission reduction goals. BAAQMD further recommends incorporation of best management practices (BMPs) to reduce GHG emissions during construction, as feasible and applicable. BMPs may include use of alternative-fueled (e.g., biodiesel, electric) construction vehicles and equipment for at least 15 percent of the fleet, use of at least 10 percent of local building materials, and recycling or reusing at least 50 percent of construction waste or demolition materials.

[11] As noted above, consistency with Plan Bay Area is discussed in Section 3.1, *Land Use and Planning*.

With respect to Project operations, BAAQMD's guidelines establish three potential analysis criteria for land use development projects:

- Compliance with a qualified CAP, with a goal consistent with AB 32,[12]
- A mass emissions threshold of 1,100 metric tons (MT) of CO_2e per year, or
- A GHG efficiency threshold of 4.6 MT of CO_2e per service population (Project jobs + projected residents).

BAAQMD thresholds are based on the AB 32 GHG reduction goals and a "gap analysis" that attributes an appropriate share of GHG emissions reductions to new land use development projects in BAAQMD's jurisdiction.[13] The efficiency threshold (4.6 MT of CO_2e per service population) was calculated by dividing the AB 32 GHG reduction target for land use development emissions in California by the estimated 2020 population and employment level.[14] BAAQMD thresholds are tied directly to AB 32 and statewide emissions reduction goals for 2020.

There is no adopted State plan that addresses GHG emission reduction beyond 2020. However, long-term goals for 2030 and 2050 have been articulated in EO B-30-15 and EO S-3-05, respectively (see above). Executive orders are binding only on State agencies.

Achieving the Executive Orders' 2030 and 2050 GHG reduction goals will require systemic changes in how energy is produced and consumed through all sectors of the economy (as discussed in greater detail in the impact analysis below). Because the mix of technologies, strategies and policy choices the State will ultimately choose to implement to achieve the 2030 and 2050 goals is not readily ascertainable at this time, any accounting of future GHG emissions from an individual development project cannot reflect the scope and scale of reductions that may occur as the State transitions towards long-term goals. Furthermore, in absence of a State plan to achieve these long-term goals, it is difficult to identify the "fair share" of reductions to be applied at the local or project level.

The Association of Environmental Professionals (AEP) Climate Change Committee recommended in a 2015 white paper that CEQA analyses for multiple-phase projects with post-2020 development, such as City Place, not only "consider consistency with the 2020/AB 32 based framework, but also analyze the consequences of post-2020 GHG emissions in terms of their impacts on the reduction trajectory from 2020 toward 2050."[15] AEP further recommends that the "significance determination…should be based on consistency with "substantial progress" along a post-2020 trajectory."[16] The AEP white paper is advisory only and is not binding guidance or an adopted set of CEQA thresholds.

Consistent with the general scientific understanding that there will be a need for deeper reductions in GHG emissions in the post-2020 period, this EIR evaluates operational GHG emissions using two different metrics including (1) a BAAQMD-recommended efficiency threshold based on the 2020 reduction target in AB 32 and (2) an efficiency metric based on the 2030 reduction target in EO B-30-15 taking into account

[12] The Project is not included in the socioeconomic forecasts that underlie the City's CAP and thus is not considered eligible to tier from the City's CAP (Criterion 1). However, consistency with the CAP is analyzed in this impact analysis.
[13] Bay Area Air Quality Management District. 2010. *Proposed Thresholds of Significance*. May.
[14] Bay Area Air Quality Management District. 2010. *Proposed Thresholds of Significance*. May.
[15] Association of Environmental Professionals. 2015. *Beyond 2020: The Challenge of Greenhouse Gas Reduction Planning by Local Governments*. Draft. March 16.
[16] Association of Environmental Professionals. 2015. *Beyond 2020: The Challenge of Greenhouse Gas Reduction Planning by Local Governments*. Draft. March 16.

the need for GHG reductions to meet the near-term reduction targets in AB 32 and the need for greater reductions beyond the AB 32 target in the post-2020 period.

- Project emissions are compared to BAAQMD's 4.6 MT of CO_2e per service population efficiency threshold. Emissions in excess of BAAQMD's thresholds could impede attainment of statewide GHG reduction targets for 2020 established under AB 32.
- Project emissions are compared to a "substantial progress" efficiency indicator of 2.7 MT CO_2e per service population. The substantial progress efficiency indicator was calculated for 2030 based on the GHG reduction goal established under EO B-30-15 (40 percent reduction below 1990 levels by 2030, taking into account the 1990 emissions levels and the projected 2030 statewide population and employment levels). Emissions in excess of the "substantial progress" efficiency indicator of 2.7 MT CO2e per service population could conflict with the trajectory of long-term GHG reduction goals. Although a similar metric was not calculated for 2050, the analysis of substantial progress through 2030 on a trajectory toward 2050 reduction targets is used in this EIR to disclose consistency of the Project with the long-term reductions called for in EO-S-03-05.[17]

Table 3.5-3 summarizes the operational GHG thresholds and the substantial progress efficiency metric considered in this EIR.

Table 3.5-3. Operational GHG Thresholds/Substantial Progress Efficiency Metrics

Analysis Condition	Threshold/Metric	Basis
2020 Development (Phases 1–3)	4.6 MT CO_2e per service population	BAAQMD-adopted threshold based on AB 32
2030 Development (Full Build)	4.6 MT CO_2e per service population	BAAQMD-adopted thresholds based on AB 32
	2.7 MT CO_2e per service population	EO B-30-15 (40% reduction below 1990 levels)[18]

Climate Change Effects

The California Second District Court of Appeals has held that while an EIR must analyze the environmental effects that may result from a project, an EIR is not required to examine the effects of the environment, such as sea level rise, on a project (see *Ballona Wetlands Land Trust v. City of Los Angeles*, 201 Cal. App. 4th 455). In its decision, the Court called into question the validity of portions of the State CEQA Guidelines that require consideration of impacts of the environment on a project. The Ballona decision potentially eliminates the need for lead agencies in the second appellate district to consider the impacts of climate change on proposed projects. The Ballona decision did not, however, call into question the State CEQA Guidelines amendments enacted in 2010 that establish how GHG emissions are to be analyzed and mitigated under CEQA.

[17] Achieving the 2030 and 2050 GHG reduction goals of the Executive Orders will require systemic changes in how energy is produced and consumed through all sectors of the economy (as discussed in greater detail in the discussion of the AB 32 Scoping Plan and Executive Orders). Because the mix of technologies, strategies, and policies the State will ultimately choose to implement to achieve the 2030 and 2050 goals is not readily ascertainable at this time, it is not possible to account for the scope and scale of reductions that will occur as a result of State regulations in the future.

[18] Calculation of 2.7 MT of CO_2e is based on State land use sector emissions being 40 percent below 1990 levels, combined with the forecast population and employment levels in 2030.

A second case, *California Building Industry Association vs. Bay Area Air Quality Management Distr*ict (CBIA vs. BAAQMD), has been taken up on appeal to the California Supreme Court. This case concerns the question of toxic air contaminant thresholds for new receptors in an existing polluted area. Depending on the Supreme Court's ruling, it may resolve the question of whether environmental effects on a project are or are not a matter for CEQA, which may have ramifications when deciding whether the effects of climate change on a project, such as sea level rise, are or are not a matter for CEQA.

Unless binding legislation or a Supreme Court ruling overturns the Ballona decision, it remains as precedent with respect to CEQA, supporting the premise that CEQA does not need to examine environmental impacts on a project.

In this EIR, a qualitative discussion regarding the issue has been provided below using the following criteria; however, significance determinations regarding the effects of climate change on the Project and its occupants have not been made, in light of the Ballona ruling:

- Would the Project place people or structures at substantial risk of harm due to predicted climate change effects?

Methods for Analysis

Construction

Construction of the Project would generate short-term emissions of CO_2, CH_4, and N_2O. Direct emissions would originate from mobile and stationary construction equipment exhaust, as well as employee and haul truck vehicle exhaust. These sources were evaluated using methodologies consistent with CalEEMod (version 2013.2.2), ARB's EMFAC2014 model, and the methods summarized in Section 3.4, *Air Quality.* Indirect GHG emissions from water use for fugitive dust control were estimated using water consumption data provided by the City[19] and recycled water emission factors from the CEC.[20]

Excavation and regrading could release CH_4 from landfill soil that is underlain by refuse. Although landfill CH_4 is currently routed through a gas collection system, CH_4 may be released during grading if it temporarily removes the landfill cap and/or disrupts the gas collection system in specific parts of the landfill. Potential CH_4 releases were estimated by determining the number of acres of landfill that would be exposed during construction as well as the number of days for such exposure and then applying a CH_4 release factor, which is based on current CH_4 generation at the landfill and the acreage involved.

Operation

Construction of the Project would demolish an existing golf course, tennis courts, maintenance facility, clubhouse, restaurant and banquet facility, restroom building, fire station, and three office buildings. Operation of these facilities currently generates GHG emissions, which would be eliminated and then replaced with operational emissions associated with the Project. The difference in operational emissions between the Project and the existing uses represents the net impact of the Project analyzed in this analysis.

Sources of operational emissions include vehicle exhaust, energy usage, area sources,[21] water consumption, and waste and wastewater generation. Emissions generated by these sources were taken

[19] Related Companies. 2015.
[20] California Energy Commission. 2006. *Refining Estimates of Water-Related Energy Use in California*. December.
[21] "Area sources" include fireplace hearths, consumer products, architectural coatings and landscaping equipment.

into account when analyzing long-term operational impacts associated with the Project. Emissions under both Schemes A and B, as well as existing conditions, were estimated using CalEEMod. Vehicle trip information was obtained from the Project's traffic impact assessment (see Section 3.3, *Transportation/Traffic*). Traffic data for the Project accounts for trip reductions associated with proximity to public transit use. CalEEMod default values for trip lengths were used. However, CalEEMod default values for electricity and water consumption and waste generation were replaced with Project-specific assumptions based on information provided by the Project Developer.[22]

The analysis of Project emissions assumes implementation of water reduction strategies, including the use of low-flow fixtures for faucets, water closets, and urinals. In addition, landscaping on the Project site would be supplied by recycled water, and the plants would be drought tolerant. Combined implementation of water conversation strategies was assumed to reduce indoor water demand by 10 percent and outdoor water demand by 20 percent.[23] It is anticipated that recycling programs would also divert at least 50 percent of Project waste from regional landfills.[24]

The Project Developer would pursue LEED for Neighborhood Development (LEED ND) certification for the proposed City Center, LEED v2009 Gold for the proposed commercial buildings, and LEED v2009 Silver for the proposed residential buildings. On-site solar proposed as part of the Project design was assumed to reduce electricity consumption by 10 percent.[25] Additional energy efficiency measures would need to be pursued to meet LEED certification, but specific details on the type and anticipated reductions are currently unknown. Accordingly, the analysis does not account for any additional energy efficiency benefits associated with LEED certification.

CalEEMod modeling also accounts for State actions to reduce GHG emissions, including Pavley I, ARB's Low Carbon Fuel Standard, and the Renewable Portfolio Standard. Emissions benefits achieved by Pavley II/Advanced Clean Cars were added to the modeling assuming a 2 percent reduction in light-duty vehicle emissions.

Scheme Analysis

As described in Chapter 2, *Project Description*, this EIR analyzes two schemes: Scheme A and Scheme B, which represent a variety of uses and site plans that could be included with implementation of the Project. Both schemes would encompass up to 9.16 million gross square feet (gsf) of development. Construction activity and associated emissions are therefore anticipated to be similar between the schemes. Accordingly, the construction analysis presents one impact assessment for both schemes.

Although construction activity is anticipated to be similar for both schemes, differences in the gross square footage of residential and commercial land uses would influence long-term operational emissions. More housing is proposed under Scheme A, which could result in higher GHG emissions from operational sources. Conversely, more commercial uses are proposed under Scheme B, which could result in higher mobile source emissions. Given the differences in land use scenarios, operational impacts under both schemes are evaluated in this section.

[22] Related Companies. 2015.
[23] Hill, H., L. Matthiessen, J. Leys, and C. Tang. 2015. *Memo regarding Santa Clara City Place EIR.* January 30.
[24] Hill, H., L. Matthiessen, J. Leys, and C. Tang. 2015. *Memo regarding Santa Clara City Place EIR.* January 30.
[25] Camille, Bill. Related Santa Clara. May 15, 2015—email message to Laura Yoon, ICF International.

Impacts and Mitigation Measures

Impact GHG-1: Greenhouse Gas Emissions. The Project would generate GHG emissions, either directly or indirectly, that would have a significant impact on the environment. (SU)

Construction

Construction of the Project would generate direct emissions of CO_2, CH_4, and N_2O from mobile and stationary construction equipment exhaust, as well as employee and haul truck vehicle exhaust. Indirect emissions would be generated from water use for fugitive dust control. CH_4 will be released during grading activities that disturb landfill soil that is underlain by refuse.

Estimated construction emissions associated with the Project are summarized in Table 3.5-4. Model output and calculation spreadsheets are provided in Appendix A.

Table 3.5-4. Estimated Construction GHG Emissions[a]

Year	CO_2	CH_4[b]	N_2O	Other[c]	CO_2e
2017	3,339	9	<1	65	3,634
2018	4,133	<1	<1	182	4,323
2019	3,778	1	<1	162	3,964
2020	2,600	<1	<1	114	2,720
2021	1,107	<1	<1	33	1,150
2022	1,100	<1	<1	43	1,147
2023	1,572	<1	<1	49	1,628
2024	902	<1	<1	27	934
2025	1,799	11	<1	59	2,145
2026	817	<1	<1	24	846
2027	1,295	5	<1	40	1,470
2028	875	<1	<1	29	908
2029	1,097	3	<1	35	1,204
2030	475	<1	<1	22	497
Total	**24,890**	**28**	**1**	**885**	**26,570**

[a] metric tons (MT) per year.
[b] CH_4 emissions are nearly entirely due to fugitive emissions from the landfill during construction.
[c] Emissions associated with on-road gasoline vehicles, including CH_4, N_2O, and HFCs.

As shown in Table 3.5-4, Project construction would generate 26,570 MT CO_2e over the projected 15-year construction period. This is equivalent to the emissions of approximately 5,600 passenger vehicles for a single year.[26] Amortized over 30 years, the construction emissions would be the equivalent of 886 MT CO_2e/year. The construction emissions are primarily the result of diesel-powered construction equipment and heavy-duty haul trucks. Grading activities that disturb landfill soil that is underlain by refuse will release CH_4. These emissions would be limited to the grading and excavation periods. As required by Mitigation Measure HAZ-2.1 (see Section 3.11, *Hazards and Hazardous Materials*) monitoring

[26] U.S. Environmental Protection Agency. 2014. *Greenhouse Gas Equivalencies Calculator*. Last Revised: April 16, 2014. Available: http://www.epa.gov/cleanenergy/energy-resources/calculator.html#results. Accessed: May 28, 2015.

and protective measures included in the *Waste Management Plan* (Appendix H of the Post Closure Land Use Plan) would be implemented that would help to minimize and reduce CH_4 through a landfill collection/extraction system.

As discussed above, BAAQMD's CEQA Guidelines do not identify a GHG emission threshold for construction-related emissions. However, they do recommend implementation of BMPs to help control and reduce GHG emissions. As discussed in Chapter 2, *Project Description*, the Project includes a construction and demolition (C&D) plan where over 90 percent of projected demolition materials would be recycled at the Zanker Material Processing center in San Jose. Air quality mitigation would require that BAAQMD-recommended basic construction mitigation measures include limiting idling times to two minutes or less, limiting vehicle speeds to 15 mph or less, and performing proper equipment maintenance and tuning in accordance with manufacturer specifications (see Mitigation Measure AQ-2.4 in Section 3.4, *Air Quality*). Consistent with the City's CAP Measure 5.2 and BAAQMD's CEQA Guidelines, the Project would also implement Mitigation Measure GHG-1.1, which requires 30 percent of construction equipment to switch from conventional technologies to hybrid, compressed natural gas, electric, biodiesel, or renewable diesel. Implementation of the C&D plan and compliance with Mitigation Measure AQ-2.4 and GHG-1.1 would reduce GHG emissions shown in Table 3.5-4 and ensure that construction-related GHG emissions are consistent with the City's CAP and BAAQMD-recommended BMPs.[27]

Operation

Project operation would generate direct and indirect GHG emissions. Sources of direct emissions include mobile vehicle trips, natural gas combustion, and landscaping activities. Indirect emissions would be generated by electricity consumption, waste and wastewater generation, and water use. Similar emissions sources are currently operating on the Project site at the golf course and office buildings. Emissions generated by these uses represent existing conditions, against which the Project must be evaluated.

Estimated operational emissions under existing and Project conditions (Scheme A and Scheme B) are summarized in Table 3.5-5. The difference in operational emissions between the Project and the existing uses represents the net impact of the Project. All Project structures were conservatively assumed to be fully occupied immediately following construction.

As discussed above, Project operational emissions account for emissions benefits achieved through proximity to public transit, on-site solar photovoltaic (PV) array, and implementation of water and waste reduction programs. Additional reductions may be achieved through LEED measures that reduce energy consumption and encourage alternative transportation (e.g., bicycling and walking); however, emissions benefits were not quantified or included in the analysis because the specific strategies that would be pursed to achieve LEED certification are currently unknown.

Significance Conclusion

As shown in Table 3.5-5, Project annual emissions (including both operational emissions and amortized construction emissions) would not exceed BAAQMD efficiency-based thresholds, which are derived from the AB 32 reduction target for 2020. Operational emissions would be ***less than significant*** when measured with use of an AB 32 reduction target only.

[27] Impacts of Mitigation Measures AQ-2.4 and GHG-1.1 are not explicitly quantified because BAAQMD has not adopted a mass emissions threshold for construction. For reference, electric-powered equipment can reduce GHG emissions by up to 70 percent and CNG by 20 percent, depending on the type of equipment and carbon-intensity of electric power. Diesel HPR (renewable biodiesel) has been shown to reduce tailpipe GHGs by 40 percent without engine modifications.

Table 3.5-5. Estimated Operational GHG Emissions, Full Build-out[a]

Condition/Source	CO_2	CH_4	N_2O	CO_2e
Existing				
Mobile Sources	2,229	<1	<1	2,232
Area Sources	0	<1	<1	0
Energy Sources	1,207	<1	<1	1,212
Waste Generation	58	3	<1	153
Water Consumption	188	1	<1	236
Total Existing[b]	*3,682*	*5*	*<1*	*3,834*
Scheme A				
Mobile Sources	65,366	2	<1	65,418
Area Sources	27	0	<1	27
Energy Sources	22,941	2	1	23,124
Waste Generation	1,674	99	<1	4,445
Water Consumption	433	14	<1	922
Subtotal Scheme A[b]	*90,440*	*117*	*1*	*93,937*
Amortized Construction Emissions (30 years)				*863*
Total Scheme A[b]	--	--	--	*94,799*
Scheme B				
Mobile Sources	72,687	2	1	72,745
Area Sources	9	0	<1	9
Energy Sources	24,133	2	1	24,323
Waste Generation	1,819	108	<1	4,830
Water Consumption	435	14	<1	930
Subtotal Scheme B[b]	*99,083*	*126*	*1*	*102,837*
Amortized Construction Emissions (30 years)				*863*
Total Scheme B[b]	--	--	--	*103,700*
Net Emissions Scheme A				
Mass Emissions				90,965
Emissions per Service Population[c]				<u>3.2</u>
Net Emissions Scheme B				
Mass Emissions				99,866
Emissions per Service Population[d]				<u>3.4</u>
Current BAAQMD Efficiency Threshold (MT/Service Population)				4.6
2030 "Substantial Progress" Efficiency Metric (MT/Service Population)				2.7

Notes: Exceedances of applicable thresholds are shown in <u>underline.</u>
[a] Metric tons/year.
[b] Values may not add due to rounding.
[c] Assumes a service population of 28,030 (3,270 residents plus 24,760 net new jobs).
[d] Assumes a service population of 29,200 (480 residents plus 28,720 net new jobs).

Project GHG emissions would exceed the 2030 "substantial progress" efficiency metric. Because the Project is not expected to be fully built until 2030, it is appropriate to evaluate the Project with a 2030 metric that takes into account the long-term reductions needed to abate the more consequential aspects of climate change. As discussed above, while the State has a plan to achieve the AB 32 2020 target in the AB 32 Scoping Plan and the myriad adopted regulations to support AB 32, the State currently does not have a plan to achieve a 2030 or 2050 goal and thus any calculation of post-2020 emissions cannot take into account future State or federal actions that may be taken to achieve long-term reductions. As discussed below in the analysis of consistency with the goals of EO B-30-15 and S-03-05, the achievement of long-term GHG reduction targets will require substantial change in terms of how energy is produced and consumed, as well as other substantial economy-wide changes, many of which can only be implemented by the State and federal government. For example, the recently adopted SB 350 requires that renewable energy comprise 50 percent of the electricity supply by 2030. This has not been incorporated into the Project emissions estimates for comparison with the 2030 efficiency threshold. In addition, placing the entire burden of meeting long-term reduction targets on local government or new development would be disproportionate and likely ineffective. Nevertheless, given the Project's level of emissions compared to the 2030 "substantial progress" metric and the fact that there is not yet a plan for achieving a 2030 or 2050 goal, the Project would result in a ***significant*** impact on GHG emissions.

MITIGATION MEASURES. Mitigation Measure GHG-1.1 would require the use of alternative fuels for 30 percent of the construction equipment that uses diesel fuel, consistent with BAAQMD's recommended BMPs for construction GHGs. Mitigation Measure GHG-1.2 would reduce operational GHG emissions. The measure includes strategies derived directly from the City's CAP. In addition, Mitigation Measure TRA-1.1 would require the number of Project office and residential trips to be reduced, which would reduce mobile-source emissions. Nevertheless, even with implementation of these mitigation measures, Project operational emissions would exceed the 2030 substantial progress efficiency metric, and impacts would remain ***significant and unavoidable***. It is possible that future State regulations, not yet adopted, may make it possible for Project emissions to be less than the 2030 efficiency metric, but it would be speculative to make such a conclusion now and in advance of the adoption of such regulations.

GHG-1.1: *Utilize Alternative Fuels during Construction.* Require construction contractors to use alternative fuels in at least 30 percent of the construction equipment that uses diesel fuel. Alternative fuels may include electricity, compressed natural gas (CNG), biodiesel (B-20), or renewable diesel, such as diesel high-performance renewable (HPR).

GHG-1.2: *Operational GHG Emissions Reduction Measures.* The Project Developer shall implement the operational GHG emissions reduction strategies described below:

1. Energy Efficiency: The Project's energy efficiency shall be 15 percent better than the 2013 Title 24 requirements or shall meet the Title 24 requirements that are applicable at the time of issuance of the building permits for individual phases, whichever is more stringent (Climate Action Plan [CAP] Measure 2.1).[28]

2. On-site Solar Energy: The Project already includes on-site PV solar to meet 10 percent of electricity demand. The Project shall obtain renewable energy electricity corresponding to 29 percent[29] of on-site electricity demand by 2030 through a combination of on-site solar,

[28] The CEC intends for residential buildings in 2020 and later to be ZNE and commercial buildings in 2030 or later to be ZNE, but because pending regulations are not yet adopted, this cannot be assumed in this analysis.

[29] CAP measure 1.1 requires the City's utility (SVP) to replace coal power within its portfolio with natural gas by 2020 and includes a stretch goal to replace the coal power with a combination of 50% natural gas and 50%

purchase of renewable energy, or other measures. (CAP Measure 2.4). This requirement may be phased in as follows: 2020 – 10%; 2025 – 25%; 2030 – 29%). If the Project Developer can demonstrate, to the City's satisfaction, that through Project design, adopted State or federal regulations, or other assured actions that the Project's emissions overall will meet the 2030 metric identified in this document without the implementation of this particular measure of its full implementation, then this measure (or its full implementation) may be waived by the City.

3. Food Waste: All retail restaurants shall be required to participate 100 percent in any extant City food waste programs and any that may be developed in the future (CAP Measure 4.1).
4. Electrical Landscaping Equipment: The Project shall include installation of electrical outlets near all maintained landscaping areas to allow for the use of electrical landscaping equipment (CAP Measure 5.1).
5. Electrical Vehicle Charging/Preferential Parking (CAP Measure 6.3). The Project shall provide preferential parking in all parking lots for electric vehicles and shall also provide charging equipment, as follows;
    a) Residential Use: A total of 10 percent of the required parking spaces shall be provided with a listed cabinet, box, or enclosure and connected to a conduit that links the parking spaces to the electrical service in a manner approved by the building and safety official. Of the listed cabinets, boxes, or enclosures provided, 50 percent shall have the necessary electric vehicle supply equipment installed to provide active charging stations that are ready for use by residents. The remainder shall be installed at such time as they are needed for use by residents. Electrical vehicle batteries and charging technology may change substantially over the next 15 years. As such, the City shall have the discretion to modify the specific requirements for this measure over time, provided that 10 percent of the spaces have electrical service and 5 percent have active charging, depending on what the technology at the time requires.
    b) Commercial Use: New commercial uses shall provide the electrical service capacity necessary as well as all conduits and related equipment necessary to serve 2 percent of the parking spaces with charging stations in a manner approved by the City's Building Official. Of these parking spaces, 50 percent shall initially be provided with the equipment necessary to function as online charging stations upon completion of the Project. The remainder shall be installed at such time as they are needed for use by customers, employees, or other users. Electrical vehicle batteries and charging technology may change substantially over the next 15 years. As such, the City shall have the discretion to modify the specific requirements for this measure over time, provided that two percent of the spaces have electrical service and one percent have active charging, depending on what the technology at the time requires.

renewable energy by 2035. Thus the CAP stretch goal is to increase renewable energy within its portfolio from 2020 to 2035. The 29 percent value for the mitigation above was calculated as the difference between the CAP Measure 1.1 reduction amount for the stretch goal for 2035 (71%) and the CAP Measure 1.1 reduction amount for 2020 (42%). As discussed in text, the Project has less than significant impact in comparison to the BAAQMD service population efficiency threshold based on the AB 32 target for 2020. Since the EIR finds that the project's emissions are significant for the period after 2020, the use of the difference in the CAP Measure 1.1 between 2020 and 2035 is appropriate to the impact identified for the Project.

6. Shade Trees: Where surface parking lots are not covered by PV solar, shade trees shall be planted to reduce urban heat island effects on adjacent buildings (CAP Measure 7.1).
7. Urban Cooling: Any uncovered parking lots or spaces shall use light-colored pavement (CAP Measure 7.2).

Estimated operational emissions with implementation of Mitigation Measures GHG-1.2 and TRA-1.1 are summarized in Table 3.5-6. The analysis includes emissions benefits achieved by strategies 1 through 3 in Mitigation Measure GHG-1.2. Strategies 4 through 8 would achieve additional GHG savings, although reductions have not been explicitly quantified since they depend either on program participation or the efficiency of other supporting strategies. While reductions associated with strategies 4 through 8 have not been quantified, they are anticipated to be minor compared to savings achieved by strategies 1 through 3.[30]

As shown in Table 3.5-6, with implementation of the identified mitigation strategies, the Project's emissions would not exceed current BAAQMD significance thresholds (based on consistency with AB 32 target for 2020) but would exceed the substantial progress efficiency metric for 2030. Therefore, even with mitigation, the Project would contribute GHG emissions to the post-2020 period that would be inconsistent with the long-term need for GHG reductions beyond 2020.

Discussion of Offsets as Mitigation

Among the measures that the State CEQA Guidelines recommend be considered for mitigation of the significant effect of a project's GHG emissions are "[o]ff-site measures, including offsets that are not otherwise required…" (State CEQA Guidelines Section 15126.4(c)(3)).

Pursuant to AB 32, ARB has promulgated the California Cap-and-Trade Program Regulation (Cap-and-Trade Program). The Cap-and-Trade Program covers the major sources of GHG emissions in California, including refineries, power plants, industrial facilities, and suppliers of transportation fuels. It imposes an enforceable emissions cap over the economy as a whole that will steadily decline over time and thereby ensure emissions from the capped sectors are reduced to the extent needed to meet the statewide goal set by AB 32 of reducing emissions to 1990 levels by 2020.

Covered entities subject to the Cap-and-Trade Program need to surrender a compliance instrument for each ton of their GHG emissions. Compliance instruments consist of allowances, which are tradable permits issued by ARB in an amount equivalent to the declining cap, and offset credits, which reflect additional voluntary GHG emission reductions occurring outside the cap (e.g., by forestry projects that sequester additional carbon). Offset credits may be used by covered entities for up to 8 percent of their total compliance obligation. According to ARB, through 2020, a maximum of 232 million offset credits may be used to comply with the Cap-and-Trade Program. This limit on usage of offset credits was established to ensure that, overall, "a majority of reductions from the program come from sources covered by the program..."

[30] For example, approximately 0.162 kWh is saved per square meter of cool pavement (strategy 8). Assuming 15,000 gsf (50 parking spaces) of new pavement uses light-colored pavement, a total of 0.02 MT CO_2e would be reduced.

Table 3.5-6. Estimated Mitigated Operational GHG Emissions, Full Build-out[a]

Condition/Source	CO_2	CH_4	N_2O	CO_2e
Existing (refer to Table 3.5-6)	3,682	5	<1	3,834
Scheme A				
Mobile Sources	63,944	2	<1	63,996
Area Sources	27	<1	<1	27
Energy Sources	19,080	1	<1	19,230
Waste Generation	1,674	99	<1	4,445
Water Consumption	433	14	<1	922
Subtotal Scheme A[b]	85,159	116	*1*	88,620
Amortized Construction Emissions (30-year)				*863*
Total Scheme A[b]	--	--	--	89,482
Scheme B				
Mobile Sources	71,045	2	<1	71,102
Area Sources	9	<1	<1	9
Energy Sources	19,959	1	<1	20,114
Waste Generation	1,819	108	<1	4,830
Water Consumption	435	14	<1	930
Total Scheme B[b]	*91,014*	*3*	*1*	*96,984*
Amortized Construction Emissions (30-year)				*863*
Total Scheme B[b]	--	--	--	*97,847*
Net Emissions Scheme A				
Mass Emissions				85,648
Emissions per Service Population[c]				3.1
Net Emissions Scheme B				
Mass Emissions				94,013
Emissions per Service Population[d]				3.2
Current BAAQMD Efficiency Threshold (MT/Service Population)				4.6
2030 "Substantial Progress" Efficiency Metric (MT/Service Population)				2.7

Notes: Exceedances of applicable thresholds are shown in underline.
[a] Pounds per day.
[b] Values may not add due to rounding.
[c] Assumes a service population of 28,030 (3,270 residents plus 24,760 net new jobs).
[d] Assumes a service population of 29,200 (480 residents plus 28,720 net new jobs).

The vast majority of the Project's GHG emissions, after mitigation, result from mobile sources and energy. Transportation fuels, natural gas, and electricity derived from fossil fuels are covered by the Cap-and-Trade Program. Therefore, the vast majority of the Project's mobile and energy GHG emissions will already be accounted for in the Cap-and-Trade Program through the regulation of upstream electricity producers and fuel suppliers. Through participation in the Cap-and-Trade Program, those electricity producers and fuel suppliers will be required to mitigate their GHG emissions, including the vast majority of emissions attributable to the Project, to the extent needed to achieve AB 32's goal. They may do this by surrendering offset credits issued by ARB or achieving additional reductions from within the capped sectors, beyond the reductions already required by other elements of the AB 32 Scoping Plan.

Given that the State does not currently have an adopted plan to meet the post-2020 reduction targets in S-03-05 or B-30-15 and given that the current cap and trade system will be in effect for the post-2020 period (albeit currently limited by regulatory authority to supporting only the AB 32 reduction target), imposing GHG offsets as additional mitigation to meet the need for additional GHG reduction in the post-2020 period risks duplication of the economy-wide cap and trade GHG reductions and also risks going beyond the project's "fair-share" mitigation. As such, GHG offsets are not proposed as mitigation.

Impact GHG-2: Conflicts with Applicable Plans and Policies. The Project would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. (LTS for AB 32 Scoping Plan, LTS/M for Santa Clara CAP, SU for EO S-03-05 and B-30-15)

Two plans have been adopted for the purposes of reducing GHG emissions that are relevant to the Project: the AB 32 Scoping Plan and the City of Santa Clara CAP.[31] Project consistency with these two plans is reviewed below. In addition, the Project's consistency with EO S-03-05 and B-30-15 is also reviewed.

Consistency with AB 32 Scoping Plan

California adopted AB 32 in 2006, which codified the State's GHG emissions reduction targets for the future. ARB adopted the AB 32 Scoping Plan as a framework for achieving AB 32. The AB 32 Scoping Plan outlines a series of technologically feasible and cost-effective measures to reduce statewide GHG emissions, including (1) expanding energy efficiency programs, (2) increasing electricity production from renewable resources to at least 33 percent of the statewide electricity mix, (3) increasing automobile efficiency, (4) implementing the Low Carbon Fuel Standard, and (5) developing the Cap-and-Trade Program. As discussed above, the vast majority of the Project's GHG emissions—after mitigation—would result from mobile sources and energy. Multiple AB 32 Scoping Plan measures address GHG emissions from transportation fuels and energy. For example, the Cap-and-Trade Program, through the regulation of upstream electricity producers and fuel suppliers, will account for GHG emissions from the Project and require emissions from covered sectors to be reduced by the amount needed to achieve AB 32's 2020 goal. Likewise, the Low Carbon Fuel Standard requires a 10 percent reduction in the carbon intensity of transportation fuels by 2020 and therefore creates incentives for broader-scale deployment of alternative vehicle fuels, including electricity. Similarly, the State's Renewable Portfolio Standard mandates that the State's utilities dramatically increase (to 33 percent by 2020) the percentage of electricity sales that are generated by eligible renewable generation sources. Together, these elements of the AB 32 Scoping Plan will ensure that overall statewide emissions will be decreased to the extent necessary to achieve AB 32's emissions reduction goals. The Project does not impede implementation of any of these elements. Moreover, the Project's emissions do not exceed the BAAQMD thresholds, which are based on consistency with the AB 32 reduction target. The Project therefore would have a ***less-than-significant impact*** on consistency with the AB 32 Scoping Plan.

Consistency with City of Santa Clara Climate Action Plan

As described above, the City of Santa Clara adopted a CAP in 2013 to reduce community GHG emissions. Accordingly, the Project is evaluated for consistency with the CAP.

The consistency of the Project with the applicable measures in the City's CAP is analyzed in Table 3.5-7.

[31] As noted above, consistency with Plan Bay Area is discussed in Section 3.1, *Land Use and Planning*.

Table 3.5-7. Consistency of City Place Project with CAP Measures

No.	CAP Measure	Applicable?	Project Implementation	Consistent?
1.1	Coal free by 2020	No	Measure implemented by SVP.	NA
1.2	Renewable energy resources	No	Measure implemented by SVP.	NA
1.3	Utility-installed renewables	No	Measures implemented by SVP.	NA
2.1	Community electricity efficiency	Yes	MM GHG-1.2 requires Project to be 15% more energy efficient than 2013 Title 24 and/or meet Title 24 standards in effect at the time of building permits (whichever is more stringent).	Yes
2.2	Community natural gas efficiency	Yes	MM GHG-1.2 requires Project to be 15% more energy efficient than Title 24.	Yes
2.3	Data centers	No	No data centers.	NA
2.4	Customer-installed solar	Yes	Project includes proposed 10% of electricity demand met by PV solar. MM GHG-1.2 required expansion to 29% of renewable energy and/or PV solar.	Yes
2.5	Municipal Energy Efficiency	No	Only applies to municipal actions.	NA
2.6	Municipal renewables	No	Only applies to municipal actions.	NA
3.1	Urban Water Management Plan (UWMP) Plan targets	Yes	Project includes proposed 10% reduction of indoor water use and 20% outdoor use, and will comply with SB X 7-7.	Yes
4.1	Food Waste	Yes	MM GHG-1.2 requires 100% participation in food waste programs for Project restaurants.	Yes
4.2	Increased Waste Diversion	Yes	Project includes a C&D waste diversion of 90% and will divert 50% or better of operational waste.	Yes
5.1	Lawn and Garden Equipment	Yes	MM GHG-1.2 requires installation of electrical outlets to allow for landscape lawn & garden use electricity.	Yes
5.2	Alternative construction Fuels	Yes	MM GHG-1.1 requires use of alternative fuels (30% min) for construction diesel equipment.	Yes
6.1	Travel Demand Management (TDM) program	Yes	The CAP measure calls for VMT reduction due to land use type, location and TDM. The Project includes mixed use, is located adjacent to transit stations and corridors and MM-TRA-1.1 requires feasible TDM. The land use type proposed by this Project was not anticipated in the CAP and thus the City proposes to amend the CAP to include a VMT reduction target specific to the type	Yes, with CAP Amendment.

Table 3.5-7. Consistency of City Place Project with CAP Measures

No.	CAP Measure	Applicable?	Project Implementation	Consistent?
			of land use proposed by this project. With the proposed CAP amendment, the Project would be consistent with this measure.	
6.2	Municipal TDM	No	Only applies to municipal VMT.	NA
6.3	Electric Vehicle parking	Yes	MM GHG-1.2 requires preferential parking and charging stations for electric vehicles.	Yes
7.1	Urban forestry	Yes	City requirements mandate 2:1 replacement for tree removal. MM GHG-1.2 requires planting of shade trees in surface parking lots where PV solar not installed.	Yes
7.2	Urban cooling	Yes	MM GHG-1.2 requires that any uncovered parking lots/spaces use light-colored or permeable pavement.	Yes

Note:
NA = not applicable.

As shown in Table 3.5-7, with mitigation, the Project would implement all applicable measures in the City's CAP. CAP Measure 6.1 requires specified VMT reduction requirements for different General Plan land use designations in different portions of the City to be achieved through TDM programs and other means. Because the Project approvals would include amending the General Plan land use designations to add a new designation, Measure 6.1 of the CAP would also be amended to add specific VMT reduction requirements, which would be applicable to this new land use designation. Specifically, the amendment would require projects with this designation to achieve a 10 percent VMT reduction, including reductions related to project location, project design, and TDM. As discussed in Section 3.3, *Transportation/Traffic*, with implementation of Mitigation Measure TRA-1.1, the Project would achieve a total VMT reduction of 11 percent because of its location near transit, its mixed-use character, and the implementation of TDM measures. With the CAP amendment, the Project would be consistent with the CAP measures.

As noted previously, the Project is not consistent with the socioeconomic assumptions contained in the City's CAP, which are based on the existing General Plan. The Project would result in mixed-use development on areas not designated for residential or commercial development and would result in substantially higher employment than anticipated in the existing General Plan. However, as shown in Table 3.5-8, because the existing CAP includes more reductions than are necessary to meet the CAP target of 15 percent below 2008 levels, the addition of City Place emissions would not result in the City exceeding the CAP goal. Thus, the Project is considered consistent with the CAP with respect to GHG emissions reduction goals.

Table 3.5-8. Estimated 2020 Santa Clara GHG Emissions with and without the City Place Project

Scenario	Emissions (MT CO_2e/year)	Notes
2008 City Emissions	1,854,300	Estimated emissions
2020 CAP Goal	1,576,200	15 percent below 2008
2020 City Emissions w/o City Place	1,420,200	Assumes CAP implementation
Project Analysis without Mitigation		
2020 City Place Emissions	91,000 to 100,000	Scheme A to Scheme B (see Table 3.5-5)
2020 City Emissions with City Place	1,511,000 to 1,520,000	Combined emissions
Relative to 2020 CAP Goal	*-56,000 to -65,000*	*Under CAP goal for 2020*
Project Analysis with Mitigation Measure GHG-1.2		
2020 City Place Emissions	86,000 to 94,000	Scheme A to Scheme B (see Table 3.5-6)
2020 City Emissions with City Place	1,506,000 to 1,514,000	Combined emissions
Relative to 2020 CAP goal	*-62,000 to -70,000*	*Under CAP goal for 2020*

With Mitigation Measures GHG-1.2 and TRA-1.1, the Project would be consistent with the City's CAP measures and would not impede achievement of the City's CAP's GHG reduction target. Thus, impacts related to CAP consistency would be ***less than significant with mitigation.***

Consistency with Executive Orders EO S-3-05 and EO B-30-15

As discussed above, EO B-30-15 established an interim GHG reduction target of 40 percent below 1990 levels by 2030, and EO S-3-05 established a long-term goal of reducing statewide GHG emissions to 80 percent below 1990 levels by 2050. Achieving these long-term GHG reduction policies will require systemic changes in how energy is produced and used.

There a number of studies that discuss potential mechanisms for limiting California's economy-wide emissions to the equivalent of 40 percent below the 1990 level by 2030 and 80 percent below the 1990 level by 2050. For instance, ARB and other State agencies commissioned Energy + Environmental Economics (E3) to develop GHG reduction scenarios for 2030 that would set the State on the course toward its 2050 GHG reduction goal.[32] Other studies include a report by the California Center for Science and Technology (CCST),[33] a California Department of Transportation report that discusses GHG emission reductions from the transportation sector alone,[34] and a study published in *Science* that analyzes the

[32] Energy + Environmental Economics. 2015. *Summary of the California State Agencies' PATHWAYS Project: Long-term Greenhouse Gas Reduction Scenarios*. January 26. Available: http://www.energy.ca.gov/commission/fact_sheets/documents/E3_Project_Overview_20150130.pdf; see also Energy + Environmental Economics. 2015. *Pathways to Deep Decarbonization in the United States*. May 13. Available: www.arb.ca.gov/research/lectures/speakers/williams/williams.pdf (modeling results for United States assuming 80 percent reduction in GHG emissions by 2050 compared with 1990 levels).

[33] California Center for Science and Technology. 2012. *California's Energy Future – Portraits of Energy Systems for Meeting Greenhouse Gas Reduction Targets.* September. Available: http://www.ccst.us/publications/2012/2012ghg.pdf.

[34] California Department of Transportation. 2015. *California Transportation Plan 2040*. March. Draft. Available: http://www.dot.ca.gov/hq/tpp/californiatransportationplan2040/Documents/index_docs/CTP_ReportPublicDraft_03022015.pdf.

changes that will be required to reduce GHG emissions to 80 percent below 1990 levels by 2050.[35] In general, these studies reach similar conclusions. Deep reductions in GHG emissions can be achieved only with significant changes in electricity production, transportation fuels, and industrial processes (e.g., decarbonizing electricity production, electrifying transportation, implementing widespread adoption of low-carbon or no-carbon transportation fuels, electrifying non-transportation direct fuel uses, increasing energy efficiency, avoiding waste emissions, increasing carbon sequestration, replacing high global warming potential gases, and other measures).

The systemic changes that will be required to achieve the 2030 and 2050 GHG reduction goals set forth by executive order will require significant policy, technical, and economic solutions. Decarbonization of the transportation fuel supply will require electric and plug-in hybrid electric vehicles to make up the vast majority of light-duty vehicles. Some changes, such as the use of biofuels to replace petroleum for aviation, cannot be accomplished without action by the federal government. Further, achieving the 2050 GHG reduction goals will require California to increase dramatically the amount of electricity that is generated by renewable generation sources and, correspondingly, advance significantly the deployment of energy storage technology and smart-grid strategies, such as price-responsive demand and the smart charging of vehicles. This would entail a significant redesign of California's electricity system.

In evaluating the Project's emissions for consistency with EO S-3-05 and EO B-30-15, it is important to note that many of these broad-scale shifts in how energy is produced and used are outside of the control of the Project. The changes necessitated by the State's long-term climate policy will require additional policy and regulatory changes, which are unknown at this time. As a consequence, the extent to which the Project's emissions and resulting impacts will be mitigated through implementation of such state-wide (or nationwide) changes is not known. Furthermore, implementation of such additional policy and regulatory changes is in the jurisdiction of State-level agencies (e.g., ARB) and federal-level agencies, not the City or the Project. However, some of these measures (e.g., decarbonization, energy efficiency, reduced fossil-fuel-based VMT, etc.) can be facilitated, at least to some extent, through implementation of specific GHG reduction measures in large developments such as the Project. If no large development project constructed in California between now and 2030 or 2050 institutes measures to maximize energy efficiency or utilize renewable energy, the cumulative effect could impede attainment of the aggressive 2030 and 2050 reduction goals. The Project would be one of the larger mixed-use developments in the Bay Area. Mitigation Measures GHG-1.2 and TRA-1.1 require the Project to implement feasible GHG reduction measures within its control to facilitate attainment of the 2030 and 2050 GHG reduction goals of the executive orders.

As discussed under Impact GHG-1, the feasible mitigation is not adequate on its own to reduce Project GHG emissions to a level below the 2030 efficiency metric. As discussed above, because there will need to be large reductions achieved through State (and likely federal) action, the Project's actual emissions in 2030 may be less than those described in this document but, the specific value of heretofore unknown state (or federal) action cannot be presumed at this time and conclusions must be made with estimates of emissions presented in this document. Although it is possible that future state and federal actions may reduce project emissions below a level consistent with the 2030 and 2050 reduction targets in the executive orders, this cannot be known at this time and, thus out of an abundance of caution, it is conservatively assumed that the Project's emissions would be inconsistent with the goals in EO S-3-05 and EO B-30-15 and this impact is considered ***significant and unavoidable.***

[35] Science. 2012. *The Technology Path to Deep Greenhouse Gas Emissions Cuts by 2050: The Pivotal Role of Electricity.* James H. Williams, et al. (eds.). Available: http://www.sciencemag.org/content/335/6064/53.full (subscription service).

Impact GHG-3: Climate Change Effects on the Project (no significance determination)

As discussed above, the California Second District Court of Appeals has held that, although an EIR must analyze the environmental effects that may result from a project, an EIR is not required to examine the effects of the environment, such as sea level rise, on a project (see *Ballona Wetlands Land Trust v. City of Los Angeles*, 201 Cal. App. 4th 455). Based on this ruling, an analysis of the effects of flooding associated with sea level rise or other climate-change effects on the Project site is not required under CEQA. As such, the following is presented for informational purposes only, and no significance determination is made from the analysis.

As discussed above, several impacts on the environment are expected throughout California as a result of global climate change. The extent of these effects is still being defined as climate modeling tools become more refined. Regardless of the uncertainty in precise predictions, it is widely understood that substantial climate change is expected to occur in the future. Potential climate change impacts in the Bay Area include, but are not limited to, sea level rise, extreme heat events, increased water and energy consumption, and changes in species distribution and range.

As described in Section 3.10, *Hydrology and Water Quality*, certain low-lying parts of the Project site and parts of adjacent roadways providing access to the Project site may be susceptible to flooding influenced by climate-change induced sea level rise in the long run.

Other than sea level rise, a range of other potential climate change impacts may affect the Project, including increased temperatures and heat stress days. Separate from GHG emissions, the Project would not exacerbate these issues; rather, energy efficiency strategies associated with the Project could reduce potential heat-related climate change impacts on area residents. Likewise, although regional water supplies are subject to potential future climate change effects that could impact water supplies, the Project includes water-efficiency measures that would help alleviate demand for scarce statewide water resources.

This Page Intentionally Left Blank

3.6 Noise

This section describes the environmental and regulatory setting for noise in the City of Santa Clara as it pertains to the Project. It also describes the noise impacts, if any, that would result from implementation of the Project and provides mitigation for significant impacts.

Issues identified in response to the Notices of Preparation (NOPs) (Appendix 1) were considered in preparing this analysis. The NOP comments pertaining to noise include operational noise from the proposed development. This issue is addressed below.

Fundamentals of Environmental Noise and Vibration

Overview of Noise and Sound

Noise is commonly defined as unwanted sound that annoys or disturbs people and potentially causes an adverse psychological or physiological effect on human health. Because noise is an environmental pollutant that can interfere with human activities, an evaluation of noise is necessary when considering the environmental impacts of a proposed project.

Sound is mechanical energy (vibration) transmitted by pressure waves over a medium such as air or water. Sound is characterized by various parameters, including the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level is the most common descriptor for characterizing the loudness of an ambient (existing) sound level. Although the decibel (dB) scale, a logarithmic scale, is used to quantify sound intensity, it does not accurately describe how sound intensity is perceived by human hearing. The human ear is not equally sensitive to all frequencies in the entire spectrum, so noise measurements are weighted more heavily for frequencies to which humans are sensitive in a process called *A-weighting*, written as *dBA* and referred to as *A-weighted decibels*. Table 3.6-1 defines sound measurements and other terminology used in this chapter, and Table 3.6-2 summarizes typical A-weighted sound levels for different noise sources.

In general, human sound perception is such that a change in sound level of 1 dB cannot typically be perceived by the human ear, a change of 3 dB is barely noticeable, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as doubling or halving the sound level as it increases or decreases, respectively.

Different types of measurements are used to characterize the time-varying nature of sound. These measurements include the equivalent sound level (L_{eq}), the minimum and maximum sound levels (L_{min} and L_{max}), percentile-exceeded sound levels (such as L_{10}, L_{20}), the day-night sound level (L_{dn}), and the community noise equivalent level (CNEL). L_{dn} and CNEL values differ by less than 1 dB. As a matter of practice, L_{dn} and CNEL values are considered to be equivalent and are treated as such. These measurements are defined in Table 3.6-1.

Table 3.6-1. Definition of Sound Measurements

Sound Measurements	Definition
Decibel (dB)	A unitless measure of sound on a logarithmic scale that indicates the squared ratio of sound pressure amplitude with respect to a reference sound pressure amplitude. The reference pressure is 20 micropascals.
A-Weighted Decibel (dBA)	An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
C-Weighted Decibel (dBC)	The sound pressure level in decibels as measured using the C-weighting filter network. The C-weighting is very close to an unweighted or *flat* response. C-weighting is used only in special cases (i.e., when low-frequency noise is of particular importance). A comparison of measured A- and C-weighted level gives an indication of lo- frequency content.
Maximum Sound Level (L_{max})	The maximum sound level measured during the measurement period.
Minimum Sound Level (L_{min})	The minimum sound level measured during the measurement period.
Equivalent Sound Level (L_{eq})	The equivalent steady-state sound level that in a stated period of time would contain the same acoustical energy.
Percentile-Exceeded Sound Level (L_{xx})	The sound level exceeded *xx* % of a specific time period. L_{10} is the sound level exceeded 10% of the time, and L_{90} is the sound level exceeded 90% of the time. L_{90} is often considered to be representative of the background noise level in a given area.
Day-Night Level (L_{dn})	The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
Community Noise Equivalent Level (CNEL)	The energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the A-weighted sound levels occurring during the period from 7:00 p.m. to 10:00 p.m. and 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
Vibration Velocity Level (or Vibration Decibel Level, VdB)	The root-mean-square velocity amplitude for measured ground motion expressed in dB.
Peak Particle Velocity (Peak Velocity or PPV)	A measurement of ground vibration, defined as the maximum speed (measured in inches per second) at which a particle in the ground is moving relative to its inactive state. PPV is usually expressed in inches/second.
Frequency: Hertz (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure.

Table 3.6-2. Typical A-weighted Sound Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	—110—	Rock band
Jet flyover at 1,000 feet		
	—100—	
Gas lawnmower at 3 feet		
	—90—	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	—80—	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower at 100 feet	—70—	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	—60—	
		Large business office
Quiet urban daytime	—50—	Dishwasher in next room
Quiet urban nighttime	—40—	Theater, large conference room (background)
Quiet suburban nighttime		
	—30—	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	—20—	
		Broadcast/recording studio
	—10—	
	—0—	

Source: California Department of Transportation. 2013. *Technical Noise Supplement to the Traffic Noise Analysis Protocol*. September. Available: http://www.dot.ca.gov/hq/env/noise/pub/TeNS_Sept_2013A.pdf. Accessed: February 9, 2015.

For a point source, such as a stationary compressor or a piece of construction equipment, sound attenuates (lessens in intensity), based on geometry, at a rate of 6 dB per doubling of distance. For a line source, such as free flowing traffic on a freeway, sound attenuates at a rate of 3 dB per doubling of distance perpendicular to the source.[1] Atmospheric conditions, including wind, temperature gradients, and humidity, can change how sound propagates over distance and can affect the level of sound received at a given location. The degree to which the ground surface absorbs acoustical energy also affects sound propagation. Sound that travels over an acoustically absorptive surface such as grass attenuates at a greater rate than sound that travels over a hard surface such as pavement. The increased attenuation is typically in the range of 1 to 2 dB per doubling of distance. Barriers such as buildings or topographic features that block the line of sight between a source and receiver also increase the attenuation of sound over distance.

[1] California Department of Transportation. 2013. *Technical Noise Supplement to the Traffic Noise Analysis Protocol*. September. Available: http://www.dot.ca.gov/hq/env/noise/pub/TeNS_Sept_2013A.pdf. Accessed: February 9, 2015.

Community noise environments are generally perceived as *quiet* when the 24-hour average noise level is below 45 dBA, *moderate* in the 45 to 60 dBA CNEL range, and *loud* above 60 dBA CNEL. Very noisy urban residential areas are usually around 70 dBA CNEL. Along major thoroughfares, roadside noise levels are typically between 65 and 75 dBA CNEL. Incremental changes of 3 to 5 dB in the existing 1-hour L_{eq}, or the CNEL, are commonly used as thresholds for an adverse community reaction to a noise increase. However, there is evidence that incremental thresholds in this range may not be sufficiently protective in areas where noise-sensitive uses are located and CNEL is already high (i.e., above 60 dBA). In these areas, limiting noise increases to 3 dB or less is recommended.[2] Noise intrusions that cause short-term interior noise levels to rise above 45 dBA at night can disrupt sleep. Exposure to noise levels greater than 85 dBA for 8 hours or longer can cause permanent hearing damage.

Overview of Ground-borne Vibration

Operation of heavy construction equipment, particularly pile-driving equipment and other impact devices (e.g., pavement breakers), create seismic waves that radiate along the surface of and downward into the ground. These surface waves can be felt as ground vibration. Vibration from the operation of this type of equipment can result in effects that range from annoyance for people to damage for structures. Variations in geology and distance result in different vibration levels, including different frequencies and displacements. In all cases, vibration amplitudes decrease with increased distance.

Perceptible ground-borne vibration is generally limited to areas within a few hundred feet of construction activities. As seismic waves travel outward from a vibration source, they cause rock and soil particles to oscillate. The actual distance that these particles move is usually only a few ten-thousandths to a few thousandths of an inch. The rate or velocity (in inches per second) at which these particles move is the commonly accepted descriptor of vibration amplitude, referred to as peak particle velocity (PPV).

Vibration amplitude attenuates over distance. This is a complex function of how energy is imparted into the ground and the soil or rock conditions through which the vibration is traveling. The following equation is used to estimate the vibration level at a given distance for typical soil conditions.[3] PPV_{ref} is the reference PPV at 25 feet (Table 3.6-3).

$$PPV = PPV_{ref} \times (25/\text{Distance})^{1.5}$$

Table 3.6-3 summarizes typical vibration levels generated by construction equipment[4] at the reference distance of 25 feet and other distances, as determined with use of the attenuation equation above. Tables 3.6-4 and 3.6-5 summarize the guidelines developed by the California Department of Transportation (Caltrans) for damage and annoyance potential from the transient and continuous vibration that is usually associated with construction activity. The activities that are typical of continuous vibration include the use of excavation equipment, static compaction equipment, tracked vehicles, vehicles on a highway, vibratory pile drivers, pile-extraction equipment, and vibratory compaction equipment. The activities that are typical of single-impact (transient) or low-rate, repeated impact vibration include drop balls, blasting, and the use of impact pile drivers, "pogo stick" compactors, and crack-and-seat equipment.[5]

---

[2] Federal Transit Administration. 2006. *Transit Noise and Vibration Impact Assessment*. FTA-VA-90-1003-06. Office of Planning and Environment.

[3] Ibid.

[4] Ibid.

[5] California Department of Transportation. 2004. *Transportation and Construction-Induced Vibration Guidance Manual*. June. Available: http://www.dot.ca.gov/hq/env/noise/pub/vibrationmanFINAL.pdf. Accessed: February 28, 2014.

Table 3.6-3. Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 Feet	PPV at 50 Feet	PPV at 75 Feet	PPV at 100 Feet	PPV at 175 Feet
Pile driver (sonic/vibratory)	0.734	0.2595	0.1413	0.0918	0.0396
Hoe ram	0.089	0.0315	0.0171	0.0111	0.0048
Large bulldozer	0.089	0.0315	0.0171	0.0111	0.0048
Loaded trucks	0.076	0.0269	0.0146	0.0095	0.0041
Jackhammer	0.035	0.0124	0.0067	0.0044	0.0019
Small bulldozer	0.003	0.0011	0.0006	0.0004	0.0002

Source: Federal Transit Administration. 2006. *Transit Noise and Vibration Impact Assessment*. FTA-VA-90-1003-06. Office of Planning and Environment

Table 3.6-4. Vibration Damage Potential Threshold Criteria Guidelines

	Maximum PPV (in/sec)	
Structure and Condition	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: California Department of Transportation. 2004. *Transportation and Construction-Induced Vibration Guidance Manual*. June. Available: http://www.dot.ca.gov/hq/env/noise/pub/vibrationmanFINAL.pdf. Accessed: February 28, 2014.

Note: Transient sources create a single, isolated vibration event (e.g., blasting or drop balls). Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Table 3.6-5. Vibration Annoyance Potential Criteria Guidelines

	Maximum PPV (in/sec)	
Human Response	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Source: California Department of Transportation. 2013. *Transportation and Construction Vibration Guidance Manual*. September. Available: <http://www.dot.ca.gov/hq/env/noise/pub/TCVGM_Sep13_FINAL.pdf>.

Note: Transient sources create a single, isolated vibration event (e.g., blasting or drop balls). Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Ground-borne vibration can also be quantified by the root-mean-square (RMS) velocity amplitudes, which is useful for assessing human annoyance. The RMS amplitude is expressed in terms of the velocity level in decibel units (VdB). The background vibration velocity level in residential areas that are not located near any appreciable vibration source is typically around 50 VdB or lower. The vibration velocity level threshold of perception for humans is approximately 65 VdB. Most perceptible indoor vibration is caused by sources within buildings, such as the operation of mechanical equipment, movement of people, or the slamming of doors. Typical outdoor sources of perceptible ground-borne vibration are heavy construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration from traffic is rarely perceptible.

Table 3.6-6 summarizes the typical ground-borne vibration velocity levels and average human response to vibration that may be anticipated when a person is at rest in quiet surroundings. If the person is engaged in any type of physical activity, vibration tolerance increases considerably. The duration of the event has an effect on human response, as does its daily frequency of occurrence. Generally, as the duration and frequency of occurrence increase, the potential for adverse human response increases.

Table 3.6-6. Typical Levels of Ground-borne Vibration

Human or Structural Response	Vibration Velocity Level (VdB)	Typical Sources (50 feet from source)
Threshold for minor cosmetic damage to fragile buildings	100	Blasting from construction project
		Bulldozer or heavy-tracked construction equipment
Difficulty in reading computer screen	90	
		Upper range of commuter rail
Threshold for residential annoyance for occasional events (e.g., commuter rail)	80	Upper range of rapid transit
Threshold for residential annoyance for frequent events (e.g., rapid transit)		Typical commuter rail Bus or truck over bump
	70	Typical rapid transit
Approximate threshold for human perception of vibration; limit for vibration-sensitive equipment		Typical bus or truck on public road
	60	
		Typical background vibration
	50	

Source: Federal Transit Administration. 2006. *Transit Noise and Vibration Impact Assessment*. FTA-VA-90-1003-06. Office of Planning and Environment.

Ground-borne noise is a secondary component of ground-borne vibration. When a building structure vibrates, noise is radiated into the interior of the building. Typically, this is a low-frequency sound that can be perceived as a low rumble. The magnitude of the sound depends on the frequency characteristic of the vibration and the manner in which the room surfaces in the building radiate sound. Ground-borne noise is quantified by the A-weighted sound level inside the building. The sound level accompanying vibration is generally 25 to 40 dBA lower than the vibration velocity level in VdB. Ground-borne vibration levels of 65 VdB can result in ground-borne noise levels of up to 40 dBA, which can disturb

sleep. Ground-borne vibration levels of 85 VdB can result in ground-borne noise levels of up to 60 dBA, which can be annoying to daytime noise-sensitive land uses such as schools.[6]

Table 3.6-7 summarizes the criteria developed by the Federal Transit Administration (FTA) for assessing ground-borne vibration from train passages. The criteria vary, depending on the frequency of events.

Table 3.6-7. Ground-borne Vibration Impact Criteria

	Ground-borne Vibration Impact Level (VdB)		
Land Use Category	Frequent Events[a]	Occasional Events[b]	Infrequent Events[c]
Category 1: Buildings where vibration would interfere with interior operations	65 VdB[d]	65 VdB[d]	65 VdB[d]
Category 2: Residences and buildings where people normally sleep	72 VdB	75 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime uses	75 VdB	78 VdB	83 VdB
Theater	72 VdB	80 dBV	NA

Source: California Department of Transportation. 2013. *Transportation and Construction Vibration Guidance Manual*. September. Available: <http://www.dot.ca.gov/hq/env/noise/pub/TCVGM_Sep13_FINAL.pdf>.

Notes:

a. "Frequent Events" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.

b. "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this number of operations.

c. "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.

d. This criterion limit is based on levels that are acceptable for most moderately sensitive equipment, such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the heating, ventilation, and air-conditioning (HVAC) systems and stiffened floors.

[6] Federal Transit Administration. 2006. *Transit Noise and Vibration Impact Assessment*. FTA-VA-90-1003-06. Office of Planning and Environment.

Existing Conditions

Regulatory Setting

Federal, state, and local agencies regulate different aspects of environmental noise. Generally, the federal government sets noise standards for transportation-related noise sources that are closely linked to interstate commerce. These sources include aircraft, locomotives, and trucks. No federal noise standards are directly applicable to the Project. The state government sets noise standards for transportation noise sources such as automobiles, light trucks, and motorcycles. Noise sources associated with industrial, commercial, and construction activities are generally subject to local control through noise ordinances and general plan policies. Local general plans identify general principles that are intended to guide and influence development plans. The state and local noise policies and regulations that are applicable to the Project are described below.

California Code

Title 24 of the California Code of Regulations, Part 2, California Noise Insulation Standards, establishes minimum noise insulation standards to protect persons within new hotels, motels, dormitories, long-term care facilities, apartment houses, and dwellings other than single-family residences. Under this regulation, interior noise levels that are attributable to exterior noise sources cannot exceed the 45 day-night level (L_{dn}) in any habitable room. Where such residences are located in an environment in which exterior noise is 60 L_{dn} or greater, an acoustical analysis is required to ensure that interior levels do not exceed the 45 L_{dn} interior standard.

Local

City of Santa Clara General Plan

The City of Santa Clara General Plan (General Plan) contains a number of policies that pertain to the effects of noise on land uses. Policies that are relevant to the Project are included below. The General Plan also outlines the levels of exterior noise that are considered "normally acceptable," "conditionally acceptable with required design and insulation to reduce noise levels," and "normally unacceptable" for residential, educational, recreational, commercial, industrial, and open space land uses (subject to further regulation by City Code). For residential uses, exterior noise levels of 55 A-weighted decibels (dBA) L_{dn} are considered normally acceptable, while levels between 55 dBA L_{dn} and 70 dBA L_{dn} are considered conditionally acceptable as long as reduction measures are implemented to reduce interior noise to 45 dBA. Noise levels above 70 dBA L_{dn} are considered normally unacceptable for residential land uses. For commercial land uses, the limits of exterior noise that are considered normally acceptable and unacceptable are 65 and 75 dBA L_{dn}, respectively, and levels between 65 dBA L_{dn} and 75 dBA L_{dn} are considered conditionally acceptable as long as reduction measures are implemented to reduce interior noise to 50 dBA L_{dn}.

Policy 5.8.7-P5. Require new development to implement appropriate measures to reduce the negative effects, such as noise and vibration, of rail and freight services.

Goal 5.10.6-G1. Noise sources restricted to minimize impacts in the community.

Goal 5.10.6-G2: Sensitive uses protected from noise intrusion.

Goal 5.10.6-G3: Land use, development, and design approvals that take noise levels into consideration.

Policy 5.10.6-P1. Review all land use and development proposals for consistency with the General Plan compatibility standards and acceptable noise exposure levels defined on Table 5.10-1.

Policy 5.10.6-P2. Incorporate noise attenuation measures for all projects that have noise exposure levels greater than General Plan "normally acceptable" levels, as defined on Table 5.10-1.

Policy 5.10.6-P3. New development should include noise control techniques to reduce noise to acceptable levels, including site layout (setbacks, separation and shielding), building treatments (mechanical ventilation system, sound-rated windows, solid-core doors, and baffling) and structural measures (earthen berms and soundwalls).

Policy 5.10.6-P4. Encourage the control of noise at the source through site design, building design, landscaping, hours of operation, and other techniques.

Policy 5.10.6-P5. Require noise-generating uses near residential neighborhoods to include solid walls and heavy landscaping along common property lines and to place compressors and mechanical equipment in sound-proof enclosures.

Policy 5.10.6-P6. Discourage noise-sensitive uses, such as residences, hospitals, schools, libraries, and rest homes, from areas with high noise levels, and discourage high noise-generating uses from areas adjacent to sensitive uses.

Policy 5.10.6-P7. Implement measures to reduce interior noise levels and restrict outdoor activities in areas subject to aircraft noise in order to make Office/Research and Development uses compatible with the Norman Y. Mineta San José International Airport land use restrictions.

Policy 5.10.6-P8. Continue to encourage safe and compatible land uses within the Norman Y. Mineta San José International Airport Noise Restriction Area.

Policy 5.10.6-P9. Work with the Norman Y. Mineta San José International Airport to implement mitigation from aircraft noise to the fullest extent possible.

Policy 5.10.6-P11. Develop and include noise reduction measures with improvements and extensions of City streets.

Santa Clara City Code

Chapter 9.10 of the City Code applies to the regulation of noise and vibration. The purpose of the noise ordinance is to protect the public welfare by limiting unnecessary, excessive, and unreasonable noise or vibration. Section 9.10.040 specifies the exterior noise limits that apply to land use zones within the City. Noise from construction activities is not subject to the City's noise limits, provided that the activities occur between the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday and 9:00 a.m. and 6:00 p.m. on Saturdays. Construction is not permitted within 300 feet of residentially zoned properties on holidays or Sundays. Table 3.6-8 shows the exterior noise limits of the City Code.

Table 3.6-8. Santa Clara City Code Schedule A Exterior Sound or Noise Limits

Receiving Zone Zoning Category	Time Period	Maximum Noise Level (dBA)
Category 1		
Single-family and duplex residential (R1, R2):	Commencing at 7:00 a.m. and ending at 1:00 p.m. that evening	55
	Commencing at 10:00 p.m. and ending at 7:00 a.m. the following morning	50
Category 2		
Multiple-family residential, public space (R3, B):	Commencing at 7:00 a.m. and ending at 10:00 p.m. that evening	55
	Commencing at 10:00 p.m. and ending at 7:00 a.m. the following morning	50
Category 3		
Commercial, Office (C, O):	Commencing at 7:00 a.m. and ending at 10:00 p.m. that evening	65
	Commencing at 10:00 p.m. and ending at 7:00 a.m. the following morning	60
Category 4		
Light Industrial (ML, MP):	Anytime	70
Heavy Industrial (MH):	Anytime	75

Santa Clara County Comprehensive Land Use Plan for Norman Y. Mineta San José International Airport

The Comprehensive Land Use Plan (CLUP) for San José International Airport (SJC) includes several policies that pertain to noise compatibility and are relevant to the Project, as listed below.[7] The CLUP also summarizes land use compatibility standards from the General Plan for the impact area of SJC. These standards include prohibiting "any significant new residential development in the adverse noise environment created by the SJC (65 CNEL and over)."

Policy N-1. The Community Noise Equivalent Level (CNEL) method of representing noise levels shall be used to determine if a specific land use is consistent with the CLUP.

Policy N-2. In addition to the other policies herein, the Noise Compatibility Policies presented in Table 4-1 (Table 3.6-9 in this environmental impact report [EIR]) shall be used to determine if a specific land use is consistent with this CLUP.

[7] The southwest portion of the Project site (portions of Parcels 4 and 5) is located within the airport's 65 dB CNEL contour.

Table 3.6-9. Noise Compatibility Policies from San José International Airport Comprehensive Land Use Plan[8]

	CNEL					
Land Use Category	55–60	60–65	65–70	70–75	75–80	80–85
Residential (low-density single-family, duplex, mobile homes)	*	**	***	****	****	****
Residential (multi-family, condominiums, townhouses)	*	**	***	****	****	****
Transient lodging (motels, hotels)	*	*	**	****	****	****
Schools, libraries, indoor religious assemblies, hospitals, nursing homes	*	***	****	****	****	****
Auditoriums, concert halls, amphitheaters	*	***	***	****	****	****
Sports arenas, outdoor spectator sports, parking	*	*	*	**	***	****
Playgrounds, neighborhood parks	*	*	***	****	****	****
Golf courses, riding stables, water recreation areas, cemeteries	*	*	*	**	***	****
Office buildings, business commercial and professional, retail	*	*	**	***	****	****
Industrial, manufacturing, utilities, agriculture	*	*	*	***	***	****

* Generally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise-insulation requirements. Mobile homes may not be acceptable in these areas. Some outdoor activities may be adversely affected.

**Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise-reduction requirements is made and needed noise insulation features are included in the design. Outdoor activities may be adversely affected.

Residential: Conventional construction, but with closed windows and fresh-air supply systems or air-conditioning, will normally suffice.

*** Generally Unacceptable: New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise-reduction requirements must be made and needed noise insulation features must be included in the design. Outdoor activities are likely to be adversely affected.

**** Unacceptable: New construction or development shall not be undertaken.

Policy N-3. Noise impacts shall be evaluated according to the Aircraft Noise Contours presented on Figure 5.[9]

Policy N-4. No residential or transient lodging construction shall be permitted within the 65 dB CNEL contour boundary unless it can be demonstrated that the resulting interior sound levels will be less than 45 dB CNEL and there are no outdoor patios or outdoor activity areas associated with the residential portion of a mixed-use residential project or a multi-unit residential project. (Soundwall noise mitigation measures are not effective in reducing noise generated by aircraft flying overhead.)

[8] Santa Clara County. 2011. *Comprehensive Land Use Plan Santa Clara County – Norman Y. Mineta San José International Airport.* Table 4.1. Available: http://www.sccgov.org/sites/planning/PlansPrograms/ALUC/Documents/ALUC_20110525_SJC_CLUP.pdf>. Accessed: February 9. 2015.

[9] The 65 dB CNEL noise contour, and its relation to the Project site, is shown in Figure 3.6-2.

Policy N-5. All property owners within the Airport Influence Area who rent or lease their property for residential use shall include in their rental/lease agreement with the tenant, a statement advising that they (the tenants) are living within a high noise area and the exterior noise level is predicted to be greater than 65 dB CNEL in a manner that is consistent with current state law including AB 2776 (2002).

Policy N-6. Noise level compatibility standards for other types of land uses shall be applied in the same manner as the above residential noise level criteria. Table 4-1 (Table 3.6-9 in this document) presents acceptable noise levels for other land uses in the vicinity of the Airport.

Policy N-7. Single-event noise levels (SENL) from single aircraft overflights are also to be considered when evaluating the compatibility of highly noise-sensitive land uses such as schools, libraries, outdoor theaters, and mobile homes. Single-event noise levels are especially important in areas that are regularly overflown by aircraft but may not produce significant CNEL contours, such as the down-wind segment of the traffic pattern, and airport entry and departure flight corridors.

Environmental Setting

Surrounding Land Uses

Locations where people reside or where the presence of noise could adversely affect the use of the land are generally considered sensitive land uses. Typical sensitive receptors include residents, school children, hospital patients, and the elderly. Other receptors (such as office workers, customers in commercial establishments, and attendees at indoor entertainment venues, for example) can also be sensitive to noise levels that exceed general plan noise limits for their respective land use types.

The land uses surrounding the Project site are diverse, consisting of offices, the Santa Clara Convention Center, the Great America Amusement Park, Levi's Stadium, industrial uses, and residences. In addition, the land uses currently existing at the site include the Santa Clara All-Purpose Landfill, Santa Clara Golf & Tennis Club, Santa Clara Fire Station 10, Santa Clara P.A.L. Track, Ameresco Methane Plant, surface parking lots, and the Eastside Storm Retention Basin. The land uses that are considered sensitive include the following:

- Residential neighborhood south of Tasman Drive and east of Lafayette Street—the nearest residence is approximately 300 feet southeast of Parcels 4 and 5.
- Santa Clara Youth Soccer Park, 200 feet directly south of Parcel 5 (and Tasman Drive).
- Kathryn Hughes Elementary School and Hughes Preschool, approximately 800 feet southeast of Parcels 4 and 5 and the Great America Amtrak/Altamont Commuter Express (ACE) train station.
- Residential neighborhood east of Guadalupe River Trail and south of State Route (SR) 237—the nearest residences are approximately 500 feet east of the Parcel 1 and 2 boundaries.
- Mobile home community north of SR-237—the nearest residences are approximately 685 feet north of the Parcel 1 boundary.

Existing Noise Levels

Short-Term Noise Monitoring

Short-term measurements of 15 minutes in duration were conducted in the Project vicinity to characterize the existing noise environment. Measurements were conducted on March 24, 2015.

ICF International selected the noise monitoring sites to characterize existing ambient noise levels at representative locations in the Project area near new and existing noise-sensitive land uses and other land uses. In general, the short-term monitoring sites were selected to characterize noise levels at commercial and other non-residential land uses on and adjacent to the Project site. Table 3.6-10 summarizes the results of the short term monitoring study. Figure 3.6-1 shows the locations of the short-term noise monitoring sites for this analysis.

Table 3.6-10. Summary of Short-term Sound Level Measurements

Site #	Location	Start Time	L_{eq}
ST-1	Outdoor plaza at 2600 Great America Way	14:29	63.7
ST-2	Parking lot of the Santa Clara P.A.L. BMX track	10:49	58.6
ST-3	Northern parcel of Santa Clara Golf & Tennis Club golf course	12:49	62.3
ST-4	Southern parking lot of 5451 Great America Parkway	14:58	62.9
ST-5	Approx. 550 feet north of clubhouse at Santa Clara Golf & Tennis Club	16:03	61.2
ST-6	Parking lot, south of 2346 Calle Del Mundo	12:32	67.4
ST-7	Between Guadalupe River Trail and Oakcrest Estates	13:50	61.6

Long-Term Noise Monitoring

Continuous (24-hour) ambient noise measurements were conducted between March 23 and 25, 2015, at locations around and on the Project site. In general, the locations of the long-term measurements were selected to characterize noise levels at new and existing residential areas. Four long-term measurements were conducted by Illingworth & Rodkin in October 2014, within Parcel 5, for a separate project. The area where that project was potentially going to be located (Parcel 5) subsequently became part of the Project. The results of the long-term measurements conducted by Illingworth & Rodkin are thus included in the setting for the Project to enhance the discussion of the existing noise environment.

Table 3.6-11 summarizes the results of all relevant long-term noise measurements conducted in the Project vicinity. Figure 3.6-1 shows the locations of the long-term noise monitoring sites for this analysis, including those used by Illingworth & Rodkin in October 2014.

Graphics ... 00333.14 (6-17-2015) tm

Figure 3.6-1
Noise Monitoring Locations
City Place Santa Clara

Table 3.6-11. Summary of Long-term Sound Level Measurements

Site #	Location	L_{dn}
LT-1	Between Guadalupe River Trail and Stonegate Apartments	61.8
LT-2	Near grassy area at Lamplighter Mobile Home Park	62.2
LT-3	Near grassy area and sandbox at apartment homes along Avenida De Guadalupe	64.8
LT-4	East side of Santa Clara Golf & Tennis Club golf course	63.3
LT-5[a]	Approximately 40 feet from the center of Stars and Stripes Drive near the north boundary of Parcel 5	66–67
LT-6[a]	North of the existing City of Santa Clara parking garage and west of the Santa Clara Golf & Tennis Club's tennis courts	62–63
LT-7[a]	Approximately 45 feet from the center of Stars and Stripes Drive, 210 feet from the Union Pacific Railroad, and 280 feet from the center of Lafayette Street	67–71
LT-8[a]	Approximately 140 feet from the center of Tasman Drive at Centennial Boulevard, north of Levi's Stadium	69–71

Note:
a. Measurements conducted by Illingworth & Rodkin in October 2014 for the Centennial Gateway Project.

Traffic Noise Modeling

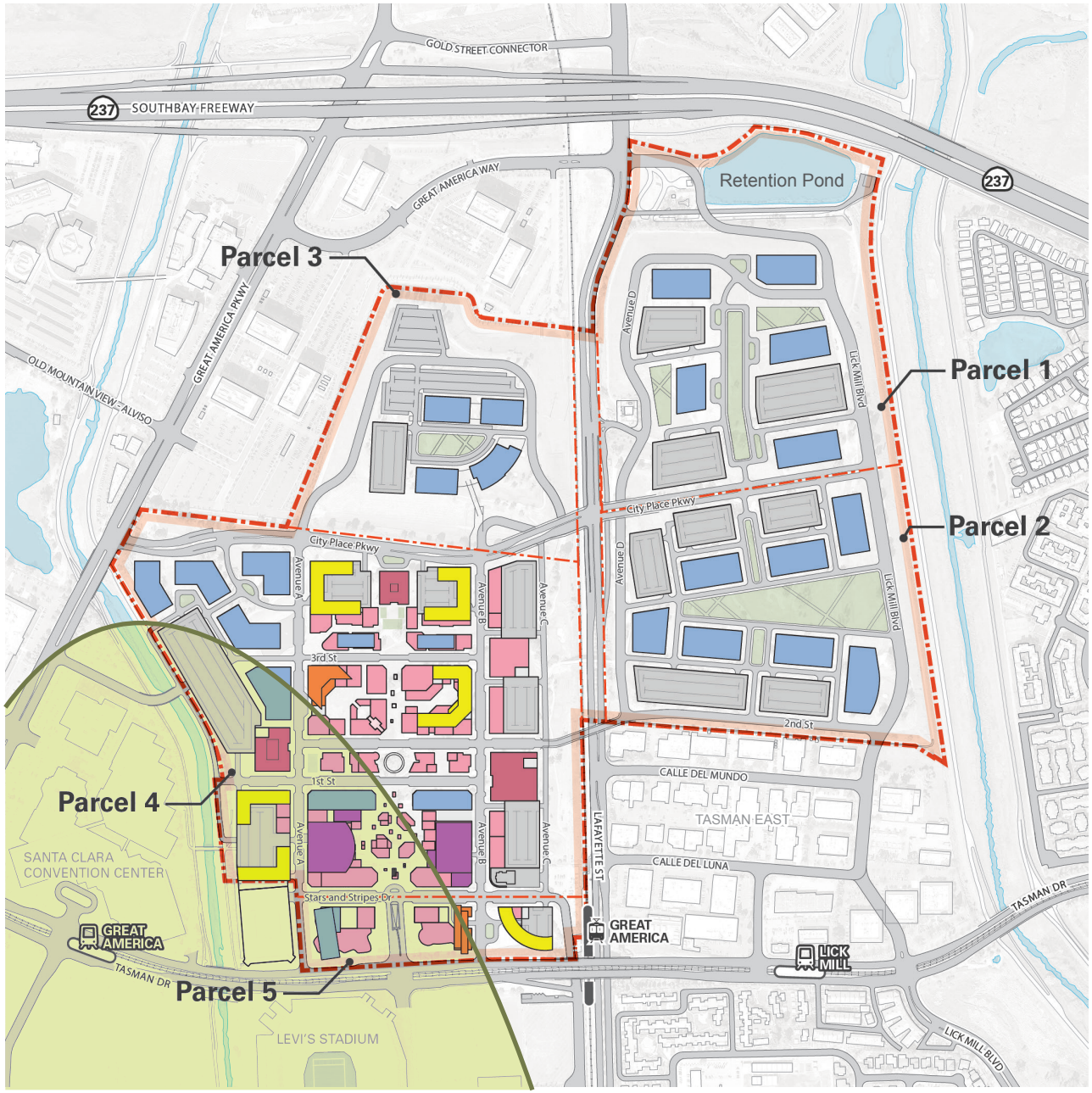
Existing traffic noise conditions have also been characterized with traffic noise modeling. Traffic data provided in the Project traffic study prepared by Fehr & Peers[10] and the Federal Highway Administration (FHWA) Traffic Noise Model (TNM) were used to model traffic noise along 30 roadway segments in the Project area. Refer to the Impacts and Mitigation Measures section, below (specifically, Table 3.6-14 and Table 3.6-15), for the existing traffic volumes for the modeled roadway segments and the traffic noise modeling results for these segments under existing conditions.

Aircraft Operations Overflight Noise

SJC is located approximately 2.7 miles southeast of the Project site.[11] The Project site is located within several of the airport's flight tracks, and the southwest portion of the Project site (portions of Parcels 4 and 5) is located within the airport's 65 dB CNEL contour.[12] Figure 3.6-2 shows the 65 dB CNEL contour in relation to the Project site.

Moffett Federal Airfield is located approximately 3.5 miles west of the Project site. The Project site is not located within a flight track or the 65 dB CNEL contour described in the CLUP for this airfield.[13]

[10] Fehr & Peers. 2015. *City Place Santa Clara Transportation Impact Analysis*. September, 2015.
[11] City of San José. 2010. *Norman Y. Mineta San José International Airport Master Plan Project*. San José, CA.
[12] Santa Clara County. 2011. *Comprehensive Land Use Plan Santa Clara County – Norman Y. Mineta San José International Airport*. Available: <http://www.sccgov.org/sites/planning/PlansPrograms/ALUC/Documents/ALUC_20110525_SJC_CLUP.pdf>. Accessed: February 9. 2015.
[13] Santa Clara County. 2012. *Comprehensive Land Use Plan Santa Clara County – Moffett Federal Airfield*. Available: <http://www.sccgov.org/sites/planning/PlansPrograms/ALUC/Documents/ALUC_20121128_NUQ_CLUP_adopted.pdf>. Accessed: February 9. 2015.



CNEL dBs

65

LEGEND

Land Uses

- Podium Residential
- Retail Anchor
- Retail and F & B
- Hotel
- Entertainment
- Office

Boundaries

- Site
- Parcel

0 400 800 1,200 1,600

Feet

N

Source: RTKL, 2015.

Graphics ... 00333.14 (6-29-2015) tm

Figure 3.6-2
San José Airport Noise Contours
City Place Santa Clara

Rail Noise

Amtrak, Capital Corridor, and ACE operate in the Union Pacific Railroad (UPRR) right-of-way and provide service to the Project area at the Great America Station located at Lafayette Street and Tasman Drive. Freight trains also utilize the tracks. The track runs along Lafayette Street, immediately adjacent to the Project site. The Noise Element of the General Plan states that the trains traveling on the track produce a sound level of 64 CNEL at a distance of 100 feet.[14]

The Santa Clara Valley Transportation Authority (VTA) operates several light rail stops along Tasman Drive to the south of the Project site, including the Champion Station, Lick Mill Station, and Great America Station. Using methods specified by FTA[15] operation of the light rail along Tasman Drive is estimated to produce a sound level of 63 Ldn at 50 feet based on 91 daytime (7:00 a.m. to 10:00 p.m.) passages and 19 nighttime (10:00 p.m. to 7:00 a.m.) passages.

Existing Ground-borne Vibration Levels

The most common sources of ground-borne vibration are construction activities, roadway truck traffic, and trains. In the Project vicinity, a number of rollercoasters and other entertainment rides at Great America Amusement Park could cause ground vibration. At the closest point, the distance between Great America Amusement Park and the Project site is more than 2,100 feet; therefore, vibration at the Project site would not be detectable from this source. Passenger vehicle traffic does not typically cause noticeable ground vibration. Other traffic-related sources of ground vibration near the Project site include large trucks that make deliveries to the site. Large delivery trucks typically generate ground-borne vibration velocity levels of around 63 VdB at 50 feet from the source.[16] As described above, the vibration velocity level threshold of perception for humans is approximately 65 VdB. Therefore, existing traffic vibration, including delivery truck vibration, is neither distinctly nor generally perceptible.

The UPRR Coast Subdivision is a single track that runs north–south through the middle of the Project site. Because of the proximity of the Project site to the UPPR tracks, new land uses at the Project site could be affected by ground vibration from trains (up to 30 per day) that pass by on the track.

The following is a summary of activity on the track:[17]

- Eight events from ACE service per weekday (four westbound trips in the morning and four eastbound trips in the afternoon/evening),
- Fourteen events from Amtrak's Capitol Corridor service per day (seven westbound trips and seven eastbound trips),
- Two events from Amtrak's Coast Starlight service (one northbound trip in the evening and one southbound trip in the morning), and
- Up to six freight trains.

---

[14] City of Santa Clara. 2011. *City of Santa Clara 2010-2035 General Plan Final EIR*. Available: <http://santaclaraca.gov/index.aspx?page=1263>. Accessed August 21, 2015.

[15] Federal Transit Administration. 2006. *Transit Noise and Vibration Impact Assessment*. Washington D.C. <http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf>

[16] Federal Transit Administration. 2006. *Transit Noise and Vibration Impact Assessment*. FTA-VA-90-1003-06. Office of Planning and Environment.

[17] Earth Tech. 2006. *Bay Area Regional Rail Plan, Technical Memorandum 4a Conditions, Configurations, and Traffic on Existing System*. November 15.

Train speeds on the line are up to 70 mph for passenger trains and 60 mph for freight trains.[7] The ground-borne vibration level at 100 feet from locomotive-powered passenger or freight trains traveling at 65 mph has been estimated using methods recommended by FTA. Assuming the train has standard vehicle suspension and fully round wheels and is traveling on track that is not worn or corrugated, the predicted vibration level is 80 VdB at 100 feet travelling at a speed of 65 mph.[18]

Environmental Impacts

This section describes the impact analysis related to noise for the Project. It describes the methods used to determine the impacts of the Project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion, when necessary.

Thresholds of Significance

In accordance with Appendix G of the California Environmental Quality Act (CEQA) Guidelines, the Project would have a significant effect if it would result in any of the conditions listed below.

- Expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies.
- Expose persons to or generate excessive ground-borne vibration or ground-borne noise levels.
- Result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project.
- Result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project.
- Be located within an airport land use plan area or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport and expose people residing or working in the Project area to excessive noise levels.
- Be located in the vicinity of a private airstrip and expose people residing or working in the Project area to excessive noise levels.

Methods for Analysis

Short-term and long-term noise-level measurements were taken at representative locations in the vicinity of the Project area where new land uses would be located and where noise-sensitive land uses are currently located (see Tables 3.6-10 and 3.6-11 and Figure 3.6-1). Noise measurements were conducted to characterize the noise environment that new land uses would be exposed to and document the baseline ambient noise that existing noise-sensitive land uses currently experience. Traffic noise in the Project vicinity was modeled by using PM Peak-Hour traffic volumes from Section 3.3, *Transportation*, and the FHWA Traffic Noise Model. Significant operational traffic noise impacts were identified where Project noise levels would exceed local land use noise standards for the affected land use and the Project would increase existing traffic noise levels by 3.0 dBA or more (3 dBA is the threshold level for most people to notice a change in noise).

[18] Federal Transit Administration. 2006. *Transit Noise and Vibration Impact Assessment*. FTA-VA-90-1003-06. Office of Planning and Environment.

The primary source of operational ground vibration would be large trucks that make deliveries to the Project site. Operational ground-borne vibration is not assessed in further detail because, as discussed above, ground vibration from this source would not be noticeable to sensitive land uses on the site.

Noise levels associated with Project-related construction activities are evaluated by summing the noise levels of the three loudest pieces of equipment that would operate on the Project site. Assuming that the three loudest pieces of equipment would operate simultaneously is a worst-case scenario because it is unlikely that more than the three pieces of equipment would operate at the same time at the same location. A list of construction equipment that is expected to be used was provided by the Project Developer. The three loudest equipment pieces would be the grader, scraper, and auger drill rig, according to the noise reference levels in FHWA's Road Construction Noise Model User's Guide.[19] The sum of the equipment noise is then compared to the applicable noise standards.

Vibration from construction equipment is assessed by using the source levels and criteria in Tables 3.6-3, 3.6-4, and 3.6-5. Noise from stationary sources includes noise generated by residential activity and commercial and other non-residential uses. This would be limited primarily to noise generated by HVAC equipment. Specific information regarding the HVAC equipment that would be used on the Project site is not available. Therefore, information regarding typical equipment has been used to evaluate potential impacts.

Events at Levi's stadium would be a source of noise that could affect new sensitive land uses at the Project site. Noise impacts resulting from this source were evaluated using the analysis and conclusions from the 2009 49ers Stadium Project Environmental Impact Report (Stadium EIR).

The evaluation of aircraft overflight noise was based on the CLUP for SJC.[20]

The exposure of new uses on the Project site to ground-borne vibration from passing trains on the UPRR track was evaluated using methods specified in FTA's Transit Noise and Vibration Impact Assessment.[21]

Scheme Analysis

As described in Chapter 2, *Project Description*, this EIR analyzes two schemes: Scheme A and B. These schemes represent a variety of uses and site plans that could be included with implementation of the Project. Both schemes would include up to 9.16 million gross square feet (gsf) of development. Construction noise is anticipated to be similar among the schemes. Accordingly, the construction noise impacts would be the same for both Scheme A and Scheme B.

Because the land use design between Scheme A and Scheme B differs, the operational noise impacts vary between the two schemes. The differences in operational noise impacts between Scheme A and Scheme B are discussed individually in the impact discussions below.

---

[19] Federal Highway Administration. 2006. *Roadway Construction Noise Model User's Guide*. Available: <http://www.fhwa.dot.gov/environment/noise/construction_noise/rcnm/rcnm.pdf>. January. Washington, DC.

[20] Santa Clara County. 2011. *Comprehensive Land Use Plan Santa Clara County – Norman Y. Mineta San José International Airport*. Available: <http://www.sccgov.org/sites/planning/PlansPrograms/ALUC/Documents/ALUC_20110525_SJC_CLUP.pdf>. Accessed: February 9. 2015.

[21] Federal Transit Administration. 2006. *Transit Noise and Vibration Impact Assessment*. FTA-VA-90-1003-06. Office of Planning and Environment.

Impacts Not Evaluated in Detail

Noise Associated with Private Airstrips. The Project area is not located in the vicinity of a private airstrip and would not expose people to excessive aircraft noise from a private airstrip. Therefore, ***no impact*** would occur and this topic is not discussed in further detail below.

Impacts and Mitigation Measures

Impact NOI-1: Exposure to Excessive Noise Levels. The Project would expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies. (SU)

Impact NOI-1a: Construction Noise Impacts on Off-Site Land Uses. (LTS/M)

Construction of the Project would require the equipment shown in Table 3.6-12. For each equipment type in Table 3.6-12, the corresponding acoustical usage factor and the L_{max} value at a distance of 50 feet from the source are shown.

Table 3.6-12. Typical Construction Noise Emission Levels

Equipment	Acoustical Use Factor[a]	L_{max} at 50 feet (dBA)[b]
Auger drill rig	20%	84
Backhoe	40%	78
Compactor (ground)	20%	83
Compressor (air)	40%	78
Concrete mixer truck	40%	79
Concrete pump truck	20%	81
Crane	16%	81
Dozer	40%	82
Dump truck	40%	76
Excavator	40%	81
Flat-bed truck	40%	74
Front-end loader	40%	79
Grader	40%	85
Man lift	20%	75
Paver	50%	77
Scraper	40%	84

Source: Federal Highway Administration. 2006. *Roadway Construction Noise Model User's Guide*. Available: <http://www.fhwa.dot.gov/environment/noise/construction_noise/rcnm/rcnm.pdf>. January. Washington, DC.

Notes:

[a.] These factors represent the percentage of time that each equipment type is operating at full power during the time that the equipment is in use.

[b.] These values represent the loudest noise levels generated by each equipment type at a distance of 50 feet.

A reasonable worst-case noise level resulting from construction of the Project was evaluated by summing the noise levels of the three loudest pieces of equipment that are likely to be operating at the same time (grader, scraper, and auger drill rig). For this, the FHWA reference noise levels from the Road Construction Noise Model User's Guide (see Table 3.6-12) were used. The combined maximum noise level (L_{max}) and combined average noise level (L_{eq}) were determined to be 89 dBA and 84 dBA at 50 feet, respectively. This level of noise is a conservative scenario because it assumes that the three loudest equipment pieces would be operating in the same location simultaneously, which would be an unlikely event. This scenario and the resulting noise impacts would be applicable to Scheme A and Scheme B because, as discussed above, the duration and type of construction activity are anticipated to be similar for both schemes.

Table 3.6-13 shows the estimated sound levels from construction activities as a function of distance, based on the calculated point-source attenuation over "soft" (i.e., acoustically absorptive) ground. At the nearest sensitive land use (the Santa Clara Youth Soccer Park), which is 200 feet south of Parcel 5, the L_{eq} sound level would be 69 dBA. At the nearest residences, which is a neighborhood located 300 feet from the Project boundary, the L_{eq} sound level would be 66 dBA. At the neighborhood east of the Guadalupe River Trail, Kathryn Hughes Elementary School and Hughes Preschool, and the mobile home community north of SR-237, the L_{eq} sound levels would be 59 dBA, 56 dBA, and 54 dBA, respectively.

Table 3.6-13. Calculated Construction Noise Emission Levels

Distance between Source and Receiver (feet)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated L_{max} Sound Level (dBA)	Calculated L_{eq} Sound Level (dBA)
50	0	0.0	89	84
100	-6	-1.5	82	77
200	-12	-3.0	74	69
266	*-15*	*-3.6*	*71*	*66*
300	-16	-3.9	70	65
400	-18	-4.5	67	62
500	*-20*	*-5.0*	*64*	*59*
600	-22	-5.4	62	57
685	*-23*	*-5.7*	*61*	*56*
700	-23	-5.7	60	56
800	*-24*	*-6.0*	*59*	*54*
900	-25	-6.3	58	53
1000	-26	-6.4	57	52
1,200	-28	-6.9	55	50
1,400	-29	-7.2	53	48
1,600	-30	-7.5	52	47
1,800	-31	-7.8	50	46
2,000	-32	-8.0	49	44
2,500	-34	-8.5	47	42
3,000	-36	-8.9	45	40

Note:
Numbers in italics indicate the distance between the Project boundary and sensitive land uses, as discussed under Surrounding Land Uses in the Environmental Setting.

The noise levels resulting from construction of the Project would temporarily exceed the City Code noise limits at sensitive land uses during non-exempt hours. Commercial, office, and industrial uses near the Project site would also experience noise that would exceed the applicable City Code noise limits for these land uses. Thus, construction noise impacts on off-site land uses would be ***significant***.

MITIGATION MEASURE. Implementing Mitigation Measure NOI-1.1 would result in the development of a construction noise control plan that would ensure that construction activities would comply with the City Code. The construction noise control plan would allow construction that could affect new and existing residential land uses or be located within 300 feet of residential areas to occur only during the hours specified in the City Code. The construction noise control plan would also require the construction contractor to implement best management practices to reduce construction-generated noise at surrounding land uses in the Project vicinity and within the Project site where necessary to comply with the City Code noise limits. Construction-related noise impacts on off-site receptors would be ***less than significant with mitigation***.

NOI-1.1: Prepare and Implement a Construction Noise Control Plan to Reduce Construction Noise at Adjacent Land Uses. The Project Developer shall develop a noise control plan that requires that the Project construction activities comply with the City Code noise limits. The requirements and limitations specified in the plan shall be determined by phase and/or parcel and/or subsections of a parcel or phase. The construction noise control plan shall require the following:

- Construction activities that have the potential to generate noise that is detectable at adjacent residential land uses or within 300 feet of a residentially zoned property shall occur only during the times listed below. Activities that would result in no detectable noise at adjacent land uses, such as interior painting, would not be limited by the hours below.
  - Between 7:00 a.m. and 6:00 p.m. Monday through Friday.
  - Between 9:00 a.m. and 6:00 p.m. on Saturdays.
  - No duration in time on holidays or Sundays.
- Construction contractors shall specify noise-reducing construction practices that will be employed to reduce construction noise for construction activities that would occur outside of the prohibited hours specified in the City Code and that would have the potential to exceed the receiving zone noise limits specified in the City Code. The measures determined by the Project Developer shall be reviewed and approved by the City prior to the issuance of building permits. Measures that can be used to limit noise include, but are not limited to, those listed below.
  - Locating construction equipment as far as feasible from noise-sensitive uses.
  - Requiring that all construction equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation.
  - Not idling inactive construction equipment for prolonged periods (i.e., more than 2 minutes).
  - Prohibiting gasoline or diesel engines from having unmuffled exhaust systems.
  - Using noise-reducing enclosures around noise-generating equipment that has the potential to disturb nearby off-site land uses, or where otherwise necessary, to comply with the City Code noise limits for receiving zones.

Impact NOI-1b: Construction Noise Impacts on On-Site Land Uses. (LTS/M)

Construction noise would also affect new land uses that are associated with the Project because new residential and commercial land uses would be occupied while construction is still occurring on other parts of the Project site. It is not currently possible to determine the overlap between where and when construction will occur and where and when land uses will be occupied. As a result, it is conservatively assumed that new residential and commercial land uses could be exposed to the noise levels shown in Table 3.6-13, which would result in construction noise that would temporarily exceed the City Code noise limits during non-exempt hours. Thus, construction noise impacts on on-site land uses would be ***significant***.

MITIGATION MEASURES. Implementing Mitigation Measure NOI-1.1 would result in the development of a construction noise control plan that would ensure that construction activities comply with the City Code by allowing construction that could affect residential land uses or be located within 300 feet of residential areas to occur only during the hours specified in the City Code. The construction noise control plan would also require the construction contractor to implement best management practices to reduce construction-generated noise at surrounding land uses within the Project site where necessary to comply with the City Code noise limits. Construction-related noise impacts on on-site receptors would be ***less than significant with mitigation***.

Impact NOI-1c: Operational Noise Impacts to Off-Site Land Uses. (SU)

The Project would lead to an increase in traffic in the vicinity of the Project site. Section 3.4, *Transportation*, provides data for 125 intersections in the general vicinity of the Project; however, many of these intersections and associated roadway segments were either located far away from the Project site (where Project traffic would have little effect) or were not located near noise-sensitive land uses. Section 3.4, *Transportation*, presents traffic volumes for all Project and cumulative scenarios for 30 roadway segments that are located relatively close to the Project site and in proximity to residences or other noise-sensitive land uses. Section 3.4, *Transportation*, presents trip generation rates and traffic volumes for Scheme B of the Project because this scheme would result in a larger number of overall vehicle trips; therefore, the peak-hour volumes for Scheme B represent the worst-case traffic scenario and the worst-case traffic noise scenario for the Project.

Noise impacts associated with increased traffic volumes generated by the Project were evaluated by using a spreadsheet that relies on the FHWA Traffic Noise Model. This spreadsheet calculates the traffic noise level at a fixed distance from the centerline of a roadway based on the peak-hour traffic volume, roadway speed, and vehicle mix that is predicted to occur under each condition. The vehicle mix (i.e., the proportion of automobiles, trucks, buses, and other vehicles) for future and Project-related traffic was adjusted according to the assumptions used by Fehr & Peers in the traffic modeling for the Project. Generally, the percentage of medium-sized trucks under existing conditions ranged from 0 percent to 3 percent, and the percentage of heavy trucks ranged from 0 percent to 2 percent; the vehicle mix was similar for Year 2040 conditions, ranging from 1 percent to 4 percent for medium-sized trucks and 0 percent to 3 percent for heavy trucks. Posted vehicle speeds were used in the modeling. Traffic noise was evaluated in terms of how Project-related traffic noise increases could affect existing noise-sensitive land uses along the analyzed segments.

Traffic noise levels were modeled using peak hour traffic volumes, which resulted in peak hour traffic noise levels. Approximate L_{dn} values were developed from these peak hour noise levels based on trends apparent in the long-term on-site noise measurements.[22]

The Project would result in significant impacts related to traffic noise along a roadway segment if the resulting traffic noise level exceeds the applicable land use compatibility standard for the adjacent land use (55 L_{dn} for residential uses and 65 L_{dn} for commercial uses) and the project-related increase is 3.0 dB or greater. Twenty seven segments were identified with a potential for significant impacts to occur. An initial analysis was conducted using a reference distance of 50 feet from each roadway segment centerline to further focus the analysis. This analysis indicated that significant impacts could potentially occur along the following roadway segments (additional data is presented in Appendix 3.6):

- Tasman Drive between Centennial Boulevard to Calle Del Sol
- Great America Parkway between SR-237 to Yerba Buena Way/Great America Way
- Great America Parkway between Yerba Buena Way/Great America Way to Old Mountain View Alviso Road
- Lafayette Street between SR-237 to Great America Way
- Lafayette Street between Calle Del Mundo to Tasman Drive
- Lafayette Street between Tasman Drive to Hogan Drive
- Lafayette Street between Hogan Drive to Hope Drive
- Lafayette Street between Agnew Road to Palm Drive

The analysis along these eight segments was then further refined beyond the typical reference distance by adjusting the receiver location to the actual distance where the closest receiver along the segment is located. In addition, the effect of existing noise from traffic on SR 237 and trains traveling on the UPRR tracks and the VTA light rail tracks was considered when considering impacts from Project noise on receptors along these eight segments. The incremental increase in noise associated with the Project above existing conditions would be less when taking into account these sources of existing noise than when only considering existing traffic noise along roadways. As the background level noise increases, an individual project's increment to overall noise levels decreases.

The results in Table 3.6-14 indicate that the Project would result in a significant noise impact only along one roadway segment (Lafayette Street between Tasman Drive and Hogan Drive) once the analysis factors in the baseline train noise and SR 237 noise and the actual receptor location along the eight potentially significant locations. Impacts at this one roadway segment would be ***significant.***

[22] Long-term 24-hour noise measurements were conducted near the Project site, as discussed above; in general, the peak-hour noise captured during the long-term measurement was up to approximately 2 dBA lower than the total L_{dn} for each 24-hour measurement. Therefore, the 1-hour L_{eq} modeling results were converted into L_{dn} values by adding 2 dBA to each L_{eq} result.

Table 3.6-14. Existing and Existing plus-Project Noise Levels at Actual Distance to Off-Site Receptors along Potentially Significant Segments

Roadway	Segment	Approx. Distance to Nearest Receptor (feet)	Receptor Land Use Type	Existing L_{dn} at Receptor Distance	Existing plus-Project L_{dn} at Receptor Distance	Difference	Significant Impact?
Tasman Drive	Centennial Boulevard to Calle Del Sol	105	R	70.0	72.8	2.8	No
Great America Parkway	SR-237 to Yerba Buena Way/Great America Way	200	O	73.5	74.6	1.1	No
Great America Parkway	Yerba Buena Way/Great America Way to Old Mountain View Alviso Road	80	O	73.4	75.6	2.2	No
Lafayette Street	Great America Way to Future Driveway	340	O	72.3	72.6	0.3	No
Lafayette Street	Calle Del Mundo to Tasman Drive	50	O	66.0	68.5	2.6	No
Lafayette Street	Tasman Drive to Hogan Drive	55	R	71.0	74.0	3.0	**Yes**
Lafayette Street	Hogan Drive to Hope Drive	55	R	71.3	74.0	2.8	No
Lafayette Street	Agnew Road to Palm Drive	190	R	67.0	69.1	2.2	No

Notes:
Modeled one-hour LEQ values were conservatively converted into L_{dn} values by adding 2 dBA to each L_{EQ} result (based on trends in the 24-hour noise measurements).
Bold = significant impact, R = residential, O = office, NA = not applicable

MITIGATION MEASURE. Implementation of Mitigation Measure NOI-1.2 could reduce this impact on off-site receptors along the east side of Lafayette Street between Tasman Drive and Hogan Drive to a less-than-significant level. A soundwall at this location has been preliminarily determined to be feasible by the City. However, future obstacles related to design of the wall could present themselves which might make implementation infeasible. As such, because it is not completely certain that the soundwalls could be constructed, this impact is disclosed as potentially ***significant and unavoidable***.

NOI-1.2: Implement Off-Site Traffic Noise Reduction Measures. The Project Developer shall implement off-site traffic noise reduction measures along the east side of Lafayette Drive between Tasman Drive and Hogan Drive such that the Project-related increase in traffic noise for noise receptors is less than 3 dBA. The Project Developer shall construct a solid barrier between the roadway and adjacent residential uses along Lafayette Drive between Tasman Drive and Hogan Drive. The barrier shall be designed to provide shielding between areas of frequent human use (i.e., residence backyards) and the roadway. This would result in approximately 1,000 feet of noise barriers along this segment. One effective approach would be to replace the existing privacy fences at single family residences with a solid barrier that is at least 6 feet high. The Project Developer shall prepare an off-site noise control plan that identifies the location, design, and effectiveness of the specific treatments to be implemented. This plan shall be submitted to the City for review and approval prior to the issuance of building permits. The off-site noise improvements shall be completed before Project operations commence.

Impact NOI-1d: Operational Noise Impacts on On-Site Land Uses. (SU)

Traffic, Light-Rail, and Train Noise

New residential and commercial uses would be located in proximity to Lafayette Street, Tasman Drive, Centennial Boulevard, and Great America Parkway and would be exposed to existing roadway, heavy-rail, and light-rail noise as well as traffic noise from the Project.

New residential land uses would be exposed to traffic roadway, light-rail, and heavy-rail operational noise, as follows:

- Eastern portion of Parcel 5: Under Scheme A and Scheme B, residential uses would be located approximately 200 feet, at the nearest, from the UPRR tracks that bisect the Project site and close to Layette Street and Tasman Drive. Existing noise levels at this location are 67 to 71 dBA L_{dn}, as indicated by the data for noise monitoring site LT-7 in Table 3.6-11. This is reflective of the influence of existing roadway, heavy-rail, and light-rail noise. As shown in Appendix 3.6, existing plus-Project traffic on Tasman Drive and Lafayette Street near Parcel 5 would result in L_{dn} values of 76.0 and 73.6, respectively. Thus, exterior noise levels would exceed the normally acceptable level of 55 dBA L_{dn} and may exceed the unacceptable level of 70 dBA $L_{dn,}$ depending on the exact location of the residential land uses in Parcel 5.
- Southwestern side of Parcel 4: Under Scheme A, residential uses would be located on the southwestern side of Parcel 4 at a location approximately 1,500 feet from the UPRR tracks and Lafayette Street and approximately 400 feet from Tasman Drive. Existing noise levels at the western side of this location are approximately 62 to 63 dBA L_{dn}, as indicated by noise monitoring site LT-6 in Table 3.6-11, which is reflective of the influence of existing roadway, heavy-rail, and light-rail noise. Noise levels on the eastern side of this location (about 200 feet to

the east) would be about the same or slightly higher (less than 1 dB higher) because the UPRR tracks and Lafayette Street would be slightly closer. On either side exterior noise levels would exceed the residential normally acceptable level of 55 dBA $L_{dn.}$ North side of Parcel 4, Avenue A: Under Scheme A, residential uses would be located along Avenue A, approximately 1,200 feet west of the UPRR tracks/Lafayette Street and more than 1,000 feet north of Tasman Drive. No long-term monitoring was done at this location, although the short-term monitoring measurement near this location was 61 dBA, indicating that this site would have exterior noise levels that would exceed the residential normally acceptable level of 55 dBA $L_{dn.}$

- North side of Parcel 4, Avenue B: Under Scheme A, residential uses would be located along Avenue B, approximately 600 feet west of the UPRR tracks/Lafayette Street and approximately 1,000 feet north of Tasman Drive. No long-term monitoring was done at this location, but noise levels would be about the same or slightly higher (less than 1 dB higher) than noise levels along Avenue B due to the closer proximity to the UPRR tracks and Lafayette Street. This indicates that exterior noise levels may exceed the normally acceptable level of 55 dBA L_{dn} for residential use.

New commercial land uses would be exposed to roadway, heavy-rail, and light-rail noise- as follows:

- Parcel 5: The long-term noise monitoring site closest to Tasman Drive is LT-8, which is 140 feet away. This distance represents the Project's closest commercial building to Tasman Drive. Existing noise levels measured at this location were 69 to 71 dBA L_{dn}. This level of noise would exceed the City's normally acceptable noise level of 65 dB CNEL for office, commercial, and hotel land uses. In addition, roadway noise along Tasman Drive, as shown in Appendix 3.6, would increase from 73 to 76 dBA with the Project at 50 feet from the roadway. The light rail along Tasman Drive would also continue to contribute noise along the southern edge of the Project site. Exterior noise levels would exceed the commercial normally acceptable level of 65 dBA L_{dn}.
- Parcels 3 and 4 west of Lafayette Street/Parcels 1 and 2 east of Lafayette Street: Commercial and retail uses located in proximity to Lafayette Street would be exposed to rail and roadway noise. However, these areas are elevated above the railway and roadway, which may attenuate some of the noise levels. No long-term noise monitoring was done along this corridor. With respect to long-term monitoring location LT-7, which is influenced primarily by existing roadway and railway noise along Lafayette Street, existing noise levels approximately 210 feet from the railway would be 67 to 71 dBA. The Project would also increase traffic noise levels from 67 to 72 dBA at 50 feet along this portion of Lafayette Street. Depending on the local effect of topography, commercial uses along Lafayette Street and the UPRR tracks may be exposed to exterior noise levels that would exceed the commercial normally acceptable level of 65 dBA L_{dn}.

Noise impacts from traffic, heavy-rail and light-rail operations on the proposed on-site land uses would be ***significant*** because they would exceed City noise standards for residential and commercial uses.

MITIGATION MEASURE. Implementation of Mitigation Measure NOI-1.3 would reduce interior noise impacts from roadway, heavy-rail, and light-rail noise to ***less-than-significant*** levels for on-site residences, hotels, and office and commercial land uses through the installation of sound-rated windows, sound-rated exterior walls, and other potential treatments where feasible. As discussed below, noise treatments would be required only if subsequent design-level noise evaluations indicate that residential and/or commercial noise standards would actually be exceeded. However, exterior noise levels, such as from balconies or open areas, particularly for residential uses, will not be mitigated to a less-than-significant level because of the inability to shield exterior levels from all adjacent traffic

and rail noise. Soundwall barriers were considered for the residential area on the east side of Parcel 5, but the residential units would be built above parking on the lower floors; thus, a soundwall would not effectively shield outside areas from traffic or rail noise along Tasman Drive or Lafayette Street. Similar feasibility constraints exist for other commercial and residential parts of the Project near roadway and rail sources of noise. Because soundwalls (or other solid noise barriers) are not considered feasible to fully mitigate on-site impacts, impacts related to exterior noise in residential areas are considered ***significant and unavoidable***.

NOI-1.3: *Prepare and Implement a Noise Control Plan to Reduce Interior Noise at Sensitive Land Uses.* The Project Developer shall conduct a design-level acoustic study that identifies exterior noise levels for residential and commercial uses on the Project site. This study shall take into account existing, Project, and reasonably foreseeable future noise sources (such as proposed increases in passenger rail service along the Lafayette Street corridor). Where this study finds that the exterior noise level would exceed the residential compatibility standard of 55 dBA L_{dn} or the commercial incompatibility standard of 65 dBA L_{dn}, the Project Developer shall prepare a design-level operational noise control plan to provide acceptable interior noise levels. This plan shall identify all Project features and treatments that will be implemented to ensure that the Project is in compliance with the interior noise standards listed in the City's General Plan and City Code as well as the standards specified for new construction within the CLUP for SJC.

The study and plan shall be developed by an acoustical design professional. Design features and treatments will be identified to ensure that interior noise levels at new proposed uses are in compliance with the noise standards. The report shall be submitted to the City for review and approval prior to the issuance of building permits for the Project. Depending on the noise exposure for a particular site, such treatments may include, but are not limited to, those listed below, as recommended by the acoustical design professional.

- Construction of enclosures around noise-generating mechanical equipment at commercial uses.
- Use of setbacks from noise sources to maximum attenuation of noise over distance.
- Installation of noise-reducing treatments in new buildings, including:
  - High-performance, sound-rated double-glazed windows,
  - Sound-rated doors,
  - Sound-rated exterior wall construction,
  - Special acoustical details for vents,
  - Acoustical caulking at all exterior façade penetrations,
  - Sound-rated roof and ceiling constructions, and
  - Adequate mechanical ventilation so that windows and doors may be kept closed at the discretion of the building occupants to control environmental noise intrusion.

Non-Transportation Sources Noise Impacts on On-Site Receptors

Noise from non-transportation sources would include on-site noise generated by residences; commercial and other non-residential uses, including HVAC equipment; and minor building-related sources. Depending on the size of the equipment, HVAC equipment can produce sound levels in the

range of 70 to 75 dBA at 50 feet.[23] Because the Project would locate commercial uses adjacent to residential uses, stationary sources associated with commercial uses could result in noise levels that would exceed the City Code exterior noise limits of 55 and 50 dBA in residential areas for day and nighttime hours, respectively. The noise impact associated with the exposure of new residences to stationary sources of noise is therefore significant. This impact would be the same under Scheme A and Scheme B because residential land uses would be located adjacent to commercial land uses under both schemes. Implementation of Mitigation Measure NOI-1.3 would ensure that potential interior noise impacts would be addressed through design and would reduce this impact to a ***less-than-significant*** level because, unlike impacts from traffic and rail noise, noise levels from on-site equipment can be effectively controlled/shielded.

Events at Levi's Stadium, which is adjacent to the Project site, are a considerable noise source in the Project area. Concerts, football games, and other sporting events would result in elevated noise in areas surrounding the stadium. The 2009 Stadium EIR concluded that noise from events at the stadium would result in a significant impact on surrounding neighborhoods. The area of the noise impacts, shown in Figure 3.6-3, includes Parcels 4 and 5 of the Project site, which includes areas where new residential, commercial, and hotel land uses would be constructed. The Stadium EIR concluded that noise during sporting events at the stadium would exceed background levels by 19 to 24 dBA. Thus, residents and hotel occupants at the Project site would be exposed to elevated noise levels during periods when the stadium hosts major events, resulting in a ***significant*** impact.

MITIGATION MEASURE. On-site operational noise impacts on on-site commercial and residential receptors could be mitigated through implementation of Mitigation Measure NOI-1.3 (see discussion above), which would reduce impacts to ***less than significant***.

Stadium noise impacts would affect residential and hotel uses under both Scheme A and Scheme B. Noise from the stadium would occur at an elevation that would be higher than the ground level. Therefore, it would not be feasible to mitigate noise from the stadium at outdoor residential areas using soundwalls. The only feasible mitigation would be the building acoustical treatments included in Mitigation Measure NOI-1.3 (see discussion above); however, these treatments would not mitigate stadium noise at the outdoor residential recreational areas. Operational noise impacts during stadium events would remain ***significant and unavoidable*** even with mitigation.

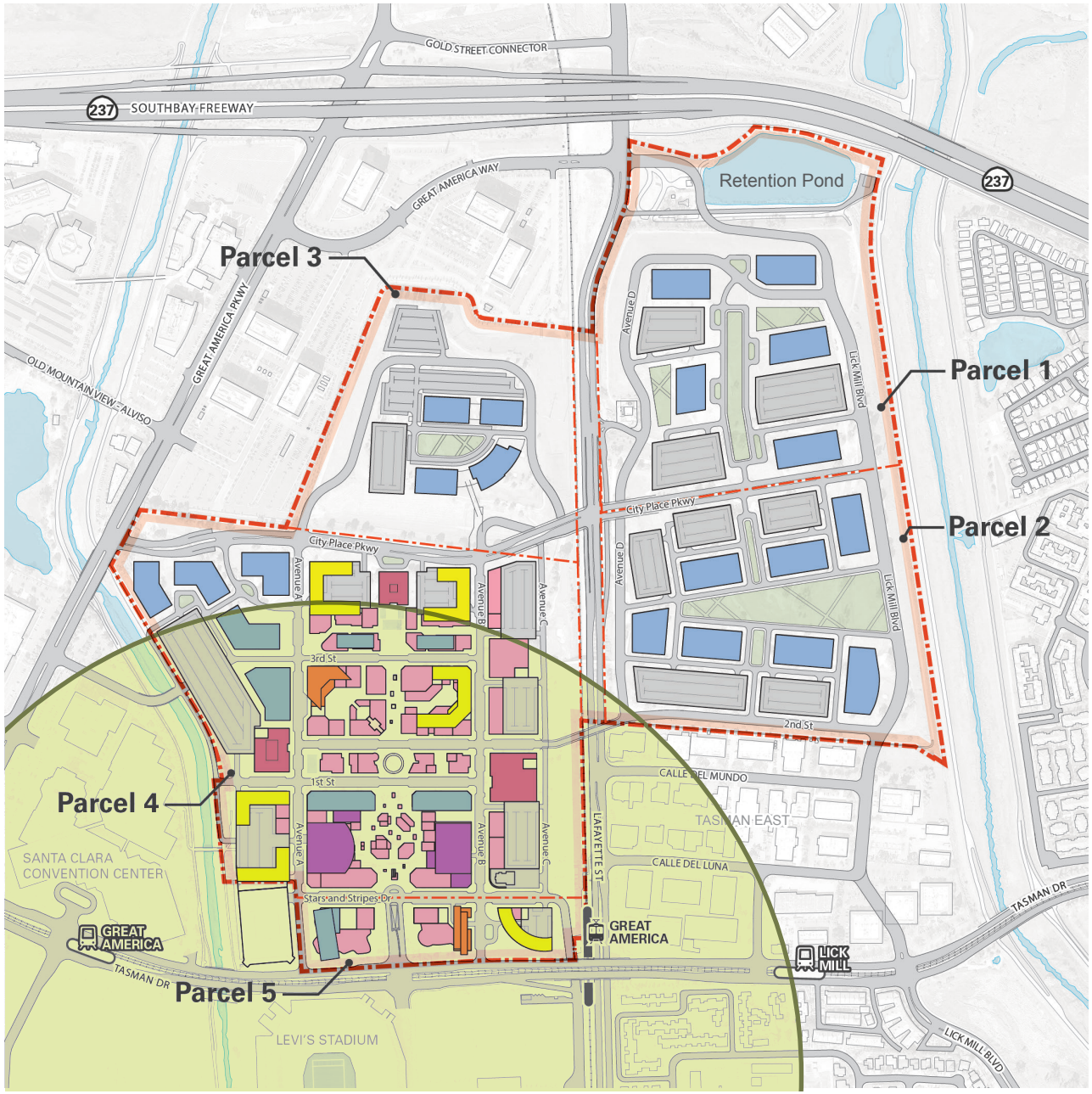
Impact NOI-2: Exposure to Ground-borne Vibration and Noise Levels. The Project could expose persons to or generate excessive ground-borne vibration or ground-borne noise levels. (LTS/M)

This impact discussion addresses issues related to ground-borne vibration from construction activity and light- and heavy-rail train passages. Ground-borne vibration generated by traffic traveling on roadways is usually below the threshold of perception at adjacent land uses, unless there are severe discontinuities in the roadway surface. This analysis assumes that roadways in the Project area are or will be reasonably maintained, with no severe discontinuities. Therefore, no analysis of vibration generated by the Project's operational traffic is provided. Construction- and rail-related vibration is discussed below.

Impact NOI-2a: Construction Vibration Impacts on Off-Site Receptors. (LTS)

As discussed above, construction activities for both Scheme A and Scheme B would be similar; therefore, construction vibration impacts would be the same for both schemes.

[23] Hoover and Keith. 2000. *Noise Control for Buildings, Manufacturing Plants, Equipment, and Products*. Houston, TX.



Noise impact area where stadium noise would substantially exceed typical background noise levels

LEGEND

Land Uses

- Podium Residential
- Retail Anchor
- Retail and F & B
- Hotel
- Entertainment
- Office

Boundaries

- Site
- Parcel

0 400 800 1,200 1,600

Feet

N

Base map: RTKL, 2015.

Graphics ... 00333.14 (7-22-2015) tm

Figure 3.6-3

Noise Impact Area from 2009 49ers Stadium Project Environmental Impact Report

City Place Santa Clara

Construction of the Project would require impact devices that are associated with substantial vibrational impacts (e.g., pile drivers, impact hammers/hoe rams, and jackhammers). Pile driving, if required, would occur in Parcel 5. Use of other vibration-generating equipment, such as jackhammers, could occur on all parcels.

Ground-borne vibration rarely causes damage to normal buildings. Potential damage to extremely fragile historic buildings could occur at 0.08 PPV (see Table 3.6-3). The expected PPV for a pile driver at 100 feet would slightly exceed this potential damage threshold. There are no extremely fragile historic buildings located within 100 feet of where pile driving would occur (Parcel 5). Therefore, Project construction would not result in impacts on surrounding buildings.

As shown in Table 3.6-3, the PPV values at 50 feet for a pile driver and jackhammer are 0.2595 and 0.0124 PPV, respectively. Based on Table 3.6-5, the PPV value for a pile driver at a distance of 50 feet would be considered more than strongly perceptible but less than severe. In addition, the operation of heavy-duty, non-impact construction equipment could also generate localized ground-borne vibration and noise at buildings adjacent to the construction site. The PPV values at 50 feet for some of the non-impact equipment required for Project construction (e.g., large bulldozer, loader truck, small bulldozer) would be 0.0315, 0.0269, and 0.0011 PPV, respectively. The ground vibration levels that would be generated by a large bulldozer and a loaded truck would be between Caltrans' annoyance-potential characterizations of "barely perceptible" and "distinctly perceptible" (see Table 3.6-5).

The nearest existing off-site land uses that could be considered sensitive to ground vibration are located approximately 300 feet from the Project site. At this distance, ground vibration from pile driving, jackhammering, and non-impact construction activities would be less than distinctly perceptible and not considered excessive. There are several off-site office and industrial land uses along the southern border of Parcel 2 as well as west of Parcel 4. Some office and industrial uses may contain equipment that is sensitive to vibration. However, because vibration generated by non-impact equipment would be well below the damage threshold for extremely fragile historic buildings and below the "distinctly perceptible" annoyance threshold at 50 feet, it is anticipated that construction vibration impacts would not substantially affect the office and industrial uses in Parcel 2 and Parcel 4. Thus, construction vibration impacts on off-site receptors would be ***less than significant***.

Impact NOI-2b: Construction Vibration Impacts on On-Site Receptors. (LTS/M)

New residences constructed as part of the Project could be inhabited while construction is still occurring at the Project site. These new residences would be located closer to construction activities than existing residences. However, it is unlikely that there would be residents living on the Project site while construction equipment would be operating in the immediate vicinity because the areas immediately around the residential uses would most likely need to be largely developed before residents could move in. Pile driving, if it occurs within 175 feet of new residences on the Project site, would be considered distinctly perceptible. Thus, pile driving could result in ground vibration that disturbs new residences, and this impact is ***significant***.

New office uses constructed as part of the Project could be occupied while construction is still occurring at the Project site. These new office uses could be located closer to construction activities than existing commercial land uses adjacent to the Project site. However, it is unlikely that office uses would be occupied while construction equipment would be operating in the immediate vicinity because the areas around the commercial uses would most likely need to be largely developed before offices could be occupied. It is possible that ground vibration could be perceptible if pile driving were to occur within 175 feet of new commercial uses. These vibration impacts would be temporary, occurring only when

construction is happening within 175 feet of active commercial uses, if at all. Thus, pile driving could disturb occupants of new commercial uses and/or affect vibration-sensitive equipment. This impact is ***significant***.

MITIGATION MEASURE. Implementation of Mitigation Measure NOI-2.1 would mitigate vibration impacts on new residential and commercial uses by requiring pile driving that would occur 175 feet or less from residential or commercial buildings to be conducted prior to those buildings being occupied. Mitigation Measure NOI-2.1 would reduce this impact to ***less than significant with mitigation***.

NOI-2.1: *Restrict Pile Driving.* Pile driving occurring 175 feet or less from new residential or commercial buildings shall be conducted prior to those buildings being occupied by future occupants.

Impact NOI-2c: Existing Light Rail Vibration Impacts on On-Site Receptors. (LTS)

The Valley Transportation Authority's (VTA's) Mountain View to Winchester light-rail track is located immediately south of the Project site in the center of Tasman Drive. The current design for the Project indicates that residential development would be located approximately 140 feet from the centerline of the existing light rail on Tasman Drive. Light-rail train passages on the track have the potential to affect proposed residential uses along Tasman Drive. There are currently up to 110 light-rail train passages per day on the track.[24]

Vibration impacts for a similar light-rail line were assessed in the 2014 (Final) Vasona Light Rail Extension Project Supplemental EIR (SEIR)/Environmental Assessment (EA). The vibration analysis in the SEIR/EA for the Vasona Light Rail Extension Project analyzed impacts from up to approximately 125 light-rail train passages per day; the report concluded that the light rail could generate vibration levels of 66 to 68 VdB at a distance of 100 feet. Because the proposed residences under Scheme A and Scheme B would be located approximately 100 feet (or more) north of this existing rail line, vibration levels at the proposed residences are expected to be no greater than 68 VdB. Because this level would be below the FTA criterion for frequent vibration exposure at Category 2 land uses (including residences) of 72 VdB, as described in Table 3.6-7 of this report, vibration impacts from the existing light rail would be ***less than significant*** for Scheme A and Scheme B.

Impact NOI-2d: Existing Train Vibration Impacts on On-Site Receptors. (LTS/M)

As discussed above, there are up to 24 passenger train passages and up to six freight train passages per day on the UPRR track that bisects the Project site. New office buildings and retail uses would be located as close as 250 feet from the tracks under Scheme A and Scheme B. New residential uses under both schemes would be located as close as 200 feet from the tracks. Entertainment uses could be within approximately 600 feet of the tracks and may include a movie theater, an entertainment center (bowling, arcade, bar, and/or restaurant combination), nightclubs, a performance venue (e.g., a jazz club or comedy club), and/or other themed entertainment venues.

The number of current train passages at the Project site (i.e., up to 30 per day) is characterized as "occasional," according to FTA's 2006 *Transit Noise and Vibration Impact Assessment*. The vibration impact criterion is therefore 78 VdB for institutional uses, 80 VdB for a theater, and 75 VdB for residential uses. The ground vibration level at the new office buildings and retail uses (250 feet from the track) is estimated to be 70 VdB, and the vibration level at the nearest residences (200 feet from the

[24] Santa Clara Valley Transportation Authority. 2013. *Route Map and Schedule – 902 Mountain View to Winchester*. Available: <http://www.vta.org/routes/rt902>. Accessed: June 8. 2015.

track) is estimated to be 74 VdB.[25] These predicted vibration levels are below the impact thresholds. However, given the uncertainties in the analysis and the fact that the predicted residential vibration level is within 1 dB of the residential impact criterion, this impact is conservatively considered to be ***significant*** for the residential land uses proposed in the eastern portion of Parcel 5 under both schemes.

MITIGATION MEASURE. Implementation of Mitigation Measure NOI-2.2 would reduce this impact to ***less-than-significant level with mitigation***.

NOI-2.2: Prepare and Implement a Vibration Control Plan to Reduce Vibration from the UPRR Railroad for Sensitive Land Uses. The Project Developer shall prepare a design-level operational vibration control plan that identifies all Project features and treatments that would be implemented to ensure that the Project is in compliance with the vibration standards recommended by the FTA relative to railway operational vibration associated with UPRR operations. The plan shall be prepared when new uses would be located within the following screening distances, as recommended by FTA (FTA 2006):

- Category 1: Buildings where vibration would interfere with interior operations (600 feet).
- Category 2: Residences and buildings where people normally sleep (200 feet).
- Category 3: Institutional land uses with primarily daytime use (120 feet).

The plan shall take into account current and future expected passenger and freight rail service levels adjacent to the Project site. The plan shall be developed by an acoustical design professional and shall include a detailed investigation of ground-borne train vibration that considers site-specific train vibration source and propagation conditions and the actual building designs. The design features and treatments shall be identified to ensure that vibration levels at new proposed uses are in compliance with FTA standards. The report shall be submitted to the City for review and approval prior to the issuance of building permits for the Project. Depending on the vibration exposure for a particular site, such treatments may include, but are not limited to, those listed below, as recommended by the acoustical design professional.

- Increased setbacks of noise-sensitive uses from the train track.
- Foundation isolation systems to reduce the transmission of vibration into buildings with noise-sensitive uses that are near the tracks.

Impact NOI-3: Permanent Increase in Ambient Noise Level. The Project would result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project. (SU)

This impact is addressed through the impact analysis under Impact NOI-1 and was determined to be ***significant and unavoidable*** with mitigation.

[25] Federal Transit Administration. 2006. *Transit Noise and Vibration Impact Assessment*. FTA-VA-90-1003-06. Office of Planning and Environment.

Impact NOI-4: Temporary or Periodic Increases in Ambient Noise Level. The Project could result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project (LTS/M)

This impact is addressed through the impact analysis under Impact NOI-1 and was determined to be ***less than significant with mitigation***.

Impact NOI-5: Exposure of People to Noise from Airports. The Project would be located within an airport land use plan area or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport and would expose people residing or working in the Project area to excessive noise levels. (SU)

As discussed in Environmental Setting, the Project is located 2.7 miles from SJC. Although the Project is located more than 2 miles from the airport, the Project area is included within the 65 dB CNEL contour boundary in the CLUP for the airport. Policy N-4, included in the Regulatory Setting, above, indicates that residential construction is not permitted within the 65 dB CNEL contour boundary unless it can be demonstrated that interior noise levels would be less than 45 dB CNEL and that there would be no outdoor residential activity areas within this noise contour. Although located within the 65 dB CNEL noise contour, as shown in Figure 3.6-2, interior noise levels at new residential areas would be reduced to less than 45 dB CNEL through Mitigation Measure NOI-1.3. However, the noise contour shown in Figure 3.6-2 indicates that proposed outdoor residential uses on the southwest portion of Scheme A could be exposed to aircraft noise within the 65 dB CNEL contour, resulting in a ***significant*** impact.

MITIGATION MEASURE. Implementation of Mitigation Measure NOI-1.3 (discussed above) would reduce interior noise levels for residential uses to 45 dB CNEL or less. However, because the Project would include outdoor residential areas located within the airport's 65 dB CNEL contour, it would result in a land use that is not compatible with the CLUP. Consequently, this impact would be ***significant and unavoidable***.

Cumulative Impacts

The geographic context for the analysis of cumulative construction noise impacts and stationary-source operational noise impacts is generally very small (a few hundred feet) because noise diminishes rapidly with distance (6 dBA per doubling of distance for point and stationary sources). For cumulative operational noise impacts, specifically from traffic, the geographic context is generally larger; thus, the overall growth of a city or jurisdiction is considered when assessing potential cumulative impacts.

Impact C-NOI-1: Cumulative Exposure to Excessive Noise. The Project would expose persons to or generate noise levels, in combination with cumulative development, in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies. (SU)

Cumulative Construction Noise Impacts on Off-Site Land Uses. (LTS/M)

With regard to cumulative construction noise impacts, the closest planned land use project is Tasman East located south of Parcel 2 and east of Parcels 4 and 5 along Tasman Drive, near the intersection of Tasman Drive and Calle del Sol. This area is identified in the City's General Plan for future development of up to 4,100 residential dwelling units. It is not known if construction in Tasman East would coincide with the Project, but there is potential for construction on both projects to occur at the same time and

for cumulative construction noise effects to occur. As discussed under Impact NOI-1a, construction activity associated with the Project would generate noise that could affect existing adjacent land uses. However, with implementation of Mitigation Measure NOI-1.1 construction noise impacts are expected to be less than significant. Specific construction noise mitigation measures that could be applied at the Tasman East project are not known at this time but noise mitigation measures would be required in order to ensure compliance with applicable City noise standards. Given this, and the fact that construction noise is highly localized, it is not anticipated that significant cumulative construction noise impacts would occur.

ACE and the Capitol Corridor Joint Powers Authority are planning to add a second track to the UPRR corridor (within the UPRR right-of-way), along Lafayette Street, and expand the Great American Station. This construction would occur directly adjacent to the City Place Santa Clara Project. The ACE/Capitol Corridor work in combination with City Place Santa Clara Project work would result in cumulative construction noise impacts north of Tasman Drive and south of SR-237 (because the City Place Santa Clara Project is north of Tasman Drive) where construction from both projects would overlap. North and south of this zone, City Place Santa Clara Project construction would not occur. In this cumulative impact zone, there are no immediately adjacent existing residential receptors. In the future, there would be new adjacent residents in the eastern part of Parcel 5. The railway improvements, which are currently in the planning phase, would be subject to CEQA and/or National Environmental Policy Act (NEPA) review. Construction controls, similar to those proposed for the Project, are likely. For these reasons, cumulative development in the Project vicinity would not result in the exposure of people to a substantial temporary increase in ambient noise levels during construction, and the Project's contribution would be ***less than significant***.

Cumulative Increase in Operational Stationary Noise Impacts. (LTS)

The implementation of cumulative development projects would also have the potential to increase ambient noise by creating new operational noise sources (such as HVAC equipment, parking lots, etc.). No land use projects with stationary sources are located in proximity to the Project (all are more than 800 feet away) to contribute to a cumulative operational noise impacts from stationary noise sources; therefore, potential cumulative impacts related to stationary noise sources would be ***less than significant***.

Cumulative Operational Mobile Noise Impacts on Off-Site Receptors. (SU)

With regard to operational mobile noise effects, future regional growth in the Project vicinity would result in increases in mobile noise sources that would cumulatively increase mobile source noise. In general, a project would result in a significant cumulative noise impact if noise levels at existing sensitive land uses were to increase substantially (3.0 dBA L_{dn} or more above existing traffic noise levels without the Project) and if the Project were to make a cumulatively considerable contribution to the overall increase in traffic noise levels. A cumulatively considerable contribution is defined as an increase of 1 dBA L_{dn} or more that is attributable solely to the Project, as observed at an existing sensitive land use.

Modeling results for cumulative traffic noise levels indicate that, when considering traffic noise only, traffic noise would increase by between 1.2 and 5.4 dBA L_{dn} along the analyzed roadway segments.[26]

[26] The analysis was conducted using a two-step process. First, the Project-related traffic noise levels were determined and segments that would not experience an increase of 3.0 dBA L_{dn} or more were screened out from further analysis. The remaining segments were then analyzed in greater detail taking into account existing background noise from SR 237 and local rail activity in addition to local roadway traffic.

Cumulative traffic only noise increases, compared with existing noise levels, would be 3.0 dBA or greater along 15 segments. As described in Appendix 3.6, at a distance of 50 feet, the Project's contribution to overall cumulative traffic noise only increases would be greater than 1 dBA L_{dn} at 11 of the 15 segments with a 3.0 dBA of greater cumulative traffic noise only increase in the cumulative year 2040.

- Tasman Drive between Centennial Boulevard and Calle Del Sol
- Agnew Road – De La Cruz Boulevard between Montague Expressway and Greenwood Drive
- Great American Parkway between SR-237 and Yerba Buena Way/Great America Way
- Great American Parkway between Yerba Buena Way/Great America Way and Old Mountain Road
- Lafayette Streetbetween SR-237 and Great America Way
- Lafayette Streetbetween Great America Way and future driveway (south)
- Lafayette Street between Calle Del Mundo and Tasman Drive
- Lafayette Streetbetween Tasman Drive and Hogan Drive
- Lafayette Street between Hogan Drive and Hope Drive
- Lafayette Streetbetween Hope Drive and Agnew Road
- Lafayette Streetbetween Agnew Road and Palm Drive

These 11 segments were further assessed to determine if specific noise receptors would be affected, given the actual distances to potential sensitive uses.

Background noise from traffic on SR 237 and trains traveling on the UPRR and VTA light rail tracks was also included in the further assessment. ACE is planning to increase the number of daily commuter trains from eight, at present, to 12 in the near term and 20 in the long term with its "ACEforward" project, which is currently in the environmental review phase. The Capitol Corridor is planning to increase the number of daily commuter trains from 14, at present, to 22 in the near term and 30 in the long-term. However, because the ACE and Capitol Corridor projects are only in the early phases of their environmental review, specific details on how rail operations may change in the future and what locomotive fleet will be employed are not available, and thus cumulative noise increases due to future expanded rail operation are not included in the analysis as lacking such data, it would be speculative to identify the cumulative contribution of these future rail expansion plans.[27]

Including the two daily Amtrak Coast Starlight trains, the number of daily passenger trains passing through the Project site along Lafayette Street could increase from 24, at present, to as many as 52 in the long term, which would represent more than a doubling of current passenger train traffic. It is also possible that freight train traffic may increase through the Project site, but it is difficult to predict future freight train traffic levels because UPRR is a private commercial railroad operator and does not disclose its future freight plans. As such, train noise assumptions included in this analysis are based on existing train noise levels.

[27] While the increased number of trains proposed is known, the specific schedule of trains and, critically, the actual future fleet is not identified in the available public documents from ACE and Capitol Corridor for the proposed service expansions Both the timing and the locomotive characteristics can influence the noise contributions from train service expansion.

Including the background train noise (which, for this analysis, only includes existing train noise) and the cumulative traffic noise increases, Table 3.6-15 shows the noise levels under cumulative year 2040 conditions at the actual nearest receptor for these 11 segments.

The results in Table 3.6-15 indicate that there are four roadway segments where significant cumulative noise impacts are predicted to occur and where the Project's contribution to those impacts is cumulatively considerable (e.g. ≥1 dBA). These segments include:

- Agnew Road/De La Cruz Boulevard between Montague Expressway and Greenwood Drive.
- Lafayette Street between Calle Del Mundo and Tasman Drive.
- Lafayette Street between Tasman Drive and Hogan Drive.
- Lafayette Street between Hogan Drive and Hope Drive.

As noted above, it is possible that cumulative noise levels along Lafayette Street will be higher due to passenger rail or freight rail expansion in the future, however, the project's contribution to such noise would not be higher than disclosed in this analysis. Moreover, lacking specific data on the noise of such cumulative projects, it would be speculative to determine the project's contribution to such cumulative noise levels beyond the approach in this analysis.

Thus, the project would have a considerable contribution to significant cumulative noise increases at these four locations above, which is considered a ***significant*** impact.

MITIGATION MEASURE. Implementation of Mitigation Measure NOI-1.2 (described above) would require the Project Developer to construct a soundwall to reduce noise levels along one roadway segment (Lafayette Street from Tasman Drive to Hogan Drive) with direct (Project-related) traffic noise impacts. This measure would potentially eliminate the cumulatively considerable contribution to the significant cumulative impact along this segment but, for reasons discussed above, the impact at this roadway segment is considered significant and unavoidable.

The City has determined that development of soundwalls along the other three roadway segments noted above would be infeasible due to inconsistency with General Plan policies and the limitation of soundwalls to reduce noise levels for occupants of buildings above the ground floor. Appendix 3.6 contains information regarding the City's determination of infeasibility. Therefore, the Project's contribution to the cumulative traffic noise impact would remain considerable at the three locations where soundwalls were determined to be infeasible. This cumulative contribution is considerable and thus is considered ***significant and unavoidable*.**

Cumulative Traffic and Rail Noise Impacts on On-Site Receptors. (SU)

Cumulative rail and traffic noise along Tasman Drive, Lafayette Street, and Great America Parkway would result in significant cumulative noise increases. Cumulative traffic noise levels along Great America Parkway are shown in Table 3.6-15. The combined rail and traffic noise levels along Lafayette Street and Tasman Drive would be higher than those shown for cumulative traffic noise alone in Table 3.6-15. These levels would exceed General Plan limits for commercial and residential use for new uses close to the adjacent roads and rail lines. The cumulative increases would be more than 3.0 dBA. This is considered a ***significant*** cumulative impact on on-site receptors. In addition, the Project would add some stationary noise sources, principally new HVAC equipment. Furthermore, portions for the Project near Levi's Stadium would be exposed to periodic noise from large events.

Table 3.6-15. Cumulative Year 2040 and Cumulative Year 2040 plus-Project Noise Levels at Actual Distance to Off-Site Receptors

Roadway	Segment	Approximate Distance to Nearest Receptor (feet)	Receptor Land Use Type	Existing L_{dn} at Nearest Receptor	Cumulative L_{dn} at Nearest Receptor	Cumulative plus-Project L_{dn} at Nearest Receptor	Cumulative Increase (Difference between Existing and Cumulative plus Project)	Significant Cumulative Impact?	Project Contribution to Noise Level	Cumulatively Considerable Contribution?
Tasman Drive	Centennial Boulevard to Calle Del Sol	105	R	70.0	71.5	72.9	2.9	No	1.3	NA
Agnew Road – De La Cruz Boulevard	Montague Expressway to Greenwood Drive	50	R	65.2	70.6	71.6	**6.4**	**Yes**	**1.0**	**Yes**
Great America Parkway	SR-237 to Yerba Buena Way/Great America Way	200	O	70.9	73.8	74.5	**3.6**	**Yes**	**.7**	No
Great America Parkway	Yerba Buena Way/Great America Way to Old Mountain Road	80	O	74.6	74.1	75.8	1.2	No	1.7	NA
Lafayette Street	SR-237 to Great America Way	No Existing Receptor	NA	NA	NA	NA	NA	NA	NA	NA
Lafayette Street	Great America Way to future driveway (south)	340	O	72.3	72.5	72.6	0.2	No	.1	NA
Lafayette Street	Calle Del Mundo to Tasman Drive	50	O	66.0	71.8	74.9	**8.9**	**Yes**	**3.0**	**Yes**

Table 3.6-15. Cumulative Year 2040 and Cumulative Year 2040 plus-Project Noise Levels at Actual Distance to Off-Site Receptors

Roadway	Segment	Approximate Distance to Nearest Receptor (feet)	Receptor Land Use Type	Existing L_{dn} at Nearest Receptor	Cumulative L_{dn} at Nearest Receptor	Cumulative plus-Project L_{dn} at Nearest Receptor	Cumulative Increase (Difference between Existing and Cumulative plus Project)	Significant Cumulative Impact?	Project Contribution to Noise Level	Cumulatively Considerable Contribution?
Lafayette Street	Tasman Drive to Hogan Drive	55	R	71.0	72.3	75.0	**4.0**	**Yes**	**2.7**	**Yes**
Lafayette Street	Hogan Drive to Hope Drive	50	R	71.3	73.0	75.4	**4.2**	**Yes**	**2.4**	**Yes**
Lafayette Street	Hope Drive to Agnew Road	60	R	72.1	72.7	74.8	2.6	No	2.1	NA
Lafayette Street	Agnew Road to Palm Drive	190	R	67.0	68.0	69.6	2.6	No	1.6	NA

Notes:

Traffic noise was modeled using AM or PM Peak-Hour traffic volumes (whichever was higher); in this case, this was the PM Peak Hour, with the exception of the Great American Parkway from Yerba Buena Way to Old Mountain Road, which had much higher AM Peak-Hour with-Project traffic volumes.

Modeled 1-hour L_{eq} values were conservatively converted into L_{dn} values by adding 2 dBA to each L_{eq} result (based on trends in the 24-hour noise measurements).

Bold = significant impact, R = residential, O = office, NA = not applicable

The Project contributes in three ways to cumulative noise impacts on new receptors: (1) by locating new receptors such that they would be subject to cumulative noise levels, (2) by increasing traffic noise on adjacent roadways; and (3) by including new stationary noise sources. This contribution to cumulative noise impacts on on-site receptors is considered a ***significant*** cumulative impact**.**

MITIGATION MEASURE. With Mitigation Measure NOI-1.3 (discussed above), the design-level noise study and plan would need to take into account expected cumulative noise levels when evaluating the need for interior noise treatments. It is considered feasible to design noise treatments that address the effects of cumulative noise and result in acceptable interior noise levels, but it is not always feasible to address exterior noise levels because a project may be unable to provide a physical barrier between all exterior activity areas and cumulative noise sources. With implementation of this measure, cumulative impacts on interior noise levels for new land uses would be mitigated to a less-than-significant level, but cumulative impacts related to exterior noise levels would remain ***significant and unavoidable*****.**

Impact C-NOI-2: Cumulative Exposure to Ground-borne Vibration and Noise Levels. The Project could expose persons to or generate excessive ground-borne vibration or ground-borne noise levels, in combination with cumulative development. (LTS/M)

Cumulative Construction Vibration Impacts to On- and Off-Site Receptors. (LTS)

Cumulative impacts related to construction vibration would not occur; as described previously (in the discussion for Impact NOI-2), there would be no direct Project effects on off-site receptors related to construction vibration because the worst-case estimated ground vibration levels would be between the Caltrans annoyance-potential characterizations of "barely perceptible" and "distinctly perceptible" at a distance of 50 feet. Because the nearest off-site existing land uses that could be considered sensitive to ground vibration are located 300 feet from the Project site, and the nearest cumulative projects are more than 800 feet away from the Project, cumulative impacts on off-site receptors related to construction vibration would be ***less than significant***.

As discussed under Impact NOI-2, there could be construction impacts on on-site residential receptors under certain circumstances. The only project that could also affect on-site residential receptors would be construction of the second track by the ACE/Capitol Corridor and modification of the Great America Station along Lafayette Street near the proposed residences on Parcel 5. The exact nature of rail project construction has not been defined because this project is still going through environmental review at present. However, the possibility of vibration-generating effects from construction of that project and pile-driving activity on Parcel 5 for this Project affecting the residences at the same time is remote. Furthermore, Mitigation Measure NOI-2 requires any Project pile driving to be conducted before residential occupation if the pile driving is closer than 175 feet to the residence. Thus, with mitigation, the Project would not contribute considerably to any cumulative vibration effects on on-site residences, and this impact is ***less than significant***.

Cumulative Operational Vibration Impacts on On- and Off-Site Receptors. (LTS/M)

As discussed above, ground-borne vibration generated by traffic traveling on roadways is usually below the threshold of perception at adjacent land uses, unless there are severe discontinuities in the roadway surface. This analysis assumes that roadways in the Project area are or will be reasonably maintained, with no severe discontinuities. Therefore, cumulative vibration generated by Project operational traffic

would not result in a cumulative impact, and the Project's increase in traffic would not contribute considerably to a cumulative impact. This cumulative impact is ***less than significant***.

For on-site commercial and residential receptors along Lafayette Street, the number of train vibration events would be higher than existing plus-Project conditions if the proposed passenger rail service increases were to be realized. As noted above, if all proposed service increases come to fruition, passenger rail passbys would increase from 24, at present, to 52 passbys per day. Increased service would not increase the level of vibration exposure (vibration is not cumulative like noise), but it would increase the number of vibration events. The FTA guidance for noise and vibration analysis includes a vibration impact criterion regarding a doubling (or more) of vibration events above existing levels. Thus, the cumulative increase in passenger train service could ultimately result in a significant increase in the number of vibration events. Although the Project would not contribute to a cumulatively significant vibration impact on off-site receptors, the Project would contribute considerably to the cumulative impact by bringing new receptors into proximity with the UPRR railway alignment, which would make possible a ***significant*** cumulative vibration impact.

MITIGATION MEASURE. As noted in Mitigation Measure NOI-2.1 (discussed above), the design-level vibration plan would need to take into account the expected increase in cumulative train vibration events when evaluating the need for vibration controls. It is considered feasible to design vibration treatments to address cumulative vibration levels and frequency. Thus, with the implementation of Mitigation Measure NOI-2.1, the Project would not contribute to a cumulatively significant vibration impact relative to on-site receptors, and this cumulative impact is ***less than significant with mitigation***.

Secondary Impact Analysis for Soundwall Mitigation Measure (Mitigation Measure NOI-1.2)

Overview

As described in Mitigation Measure NOI-1.2, a soundwall could be installed along the east side of Lafayette Street between Tasman Drive and Hogan Drive, between the roadway and the adjacent residential uses. A soundwall at this location has been preliminarily determined to be feasible by the City. The soundwall would replace the existing privacy fences at single-family residences with a solid barrier that is at least 6 feet high. The soundwall would be located in an existing urbanized setting. Construction-related environmental impacts associated with the soundwall would be temporary and limited to the areas of ground disturbance for the duration of the construction period. Post-construction, all potentially disturbed areas adjacent to the soundwall would presumably be restored to pre-disturbance conditions, including landscaping and tree replacement. The focus of this secondary impact analysis for the soundwall is footprint-based impacts associated with potential ground disturbance. The soundwall would not result in population-driven impacts, because the soundwall would not result in the generation of new residents or employees. It is possible that construction of a soundwall could be categorically excluded from CEQA. However, since the construction of the soundwall along Lafayette Street between Tasman Drive and Hogan Drive is tied to impacts of the Project, its impacts are being fully evaluated in this analysis.

In this analysis of the secondary impacts, specific mitigation measures have been identified for the soundwall. The soundwall's impacts and recommended associated mitigation measures to reduce, eliminate, or avoid significant impacts are provided in Table ES-1 of the Executive Summary.

Land Use

The proposed soundwall is not located within the boundaries of a Habitat Conservation Plan (HCP) or Natural Community Conservation Plan (NCCP). The soundwall would be within or immediately adjacent to existing right-of-way (ROW), and would not physically divide an established community, because the soundwall would replace existing privacy fencing and would not introduce new features that would change access for adjacent residences. Furthermore, because the soundwall would be within or immediately adjacent to existing ROW, the soundwall would not conflict with any applicable land use plans, policies, or regulations. The proposed soundwall would result in a ***less-than-significant impact*** related to land use.

Aesthetics

There are no designated scenic vistas or State Scenic Highways in the vicinity of the proposed soundwall. The proposed soundwall would be within or immediately adjacent to existing ROW. The existing privacy fencing along Lafayette Street between Tasman Drive and Hogan Drive varies in material and height; in many areas, the existing privacy fencing is higher than 6 feet. The existing privacy fencing would be replaced with a continuous solid barrier that would be at least 6 feet high. Therefore, it is unlikely that the installation of the proposed soundwall would introduce a new feature that is inconsistent with the existing visual character of the surrounding area. Architectural review of the soundwall would be conducted through review and approval of the Development Area Plan by the Planning Commission and City Council. This would ensure that the general appearance of the structure would be consistent with the character of the adjacent neighborhood. Therefore, the soundwall's impact on the existing visual character of the surrounding area would be ***less than significant.***

Some trees would be removed to accommodate the proposed soundwall. Tree removal is considered a ***potentially significant*** aesthetic impact.

The soundwall would not include lighting, because street lighting currently exists along Lafayette Street. Although the materials for the soundwall are currently unknown, it is unlikely that the materials would include reflective coatings that would result in a glare impact. Therefore, there would be no new sources of light or glare, and there would be ***no impact***.

MITIGATION MEASURE. Implementation of Mitigation Measure SW-BIO-1 (see discussion under biological resources below) would require tree replacement at a minimum of 2:1. This would reduce potential aesthetic impacts related to tree removal to ***less than significant with mitigation***.

Transportation

The proposed soundwall would not result in the creation of any traffic-generating uses or any changes to existing traffic configurations or operations. The soundwall would not conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system or with an applicable congestion management program. The soundwall would replace existing privacy fencing, and would not result in a change in air traffic patterns.

Construction of the proposed soundwall could necessitate temporary lane or street closures, resulting in impacts on traffic. Temporary impacts on public transit, bicycle, or pedestrian facilities and emergency access could also occur if construction of the soundwall significantly changes access for these users, which is considered a ***potentially significant*** impact.

MITIGATION MEASURE. Implementation of Mitigation Measure SW-TRA-1 would require the preparation and implementation of a Construction Traffic Control Plan. Therefore, this measure would reduce potential traffic impacts during soundwall construction to ***less than significant with mitigation***.

SW-TRA-1: Prepare and Implement a Construction Traffic Control Plan. Prior to issuance of grading permits, the construction contractor will develop the traffic control plan in accordance with the City's policies and submit for approval. The plan will be implemented throughout the course of construction and may include, but will not be limited to, the following elements:

- Limit truck access to the soundwall site during peak commute times (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.).
- Require that written notification be provided to contractors regarding appropriate routes to and from the soundwall and the weight and speed limits on local roads that would be used to access the soundwall site.
- Provide access for emergency vehicles at all times.
- Provide adequate parking for construction workers, site visitors, and inspectors as feasible.
- Maintain bicycle and pedestrian access and circulation during Project construction where safe to do so. If construction encroaches on a bike lane, warning signs will be posted that indicate that bicycles and vehicles are sharing the roadway. If construction encroaches on a sidewalk, a safe detour will be provided for pedestrians at the nearest crosswalk.
- Require traffic controls in the vicinity of the soundwall, including flagpersons with bright orange or red vests and using a "Stop/Slow" paddle to control oncoming traffic.
- Post standard construction warning signs in advance of the construction area and at any soundwall that provides access to the construction area.
- Repair or restore the road right-of-way to its original condition or better upon completion of the work.

Air Quality

The proposed soundwall would not result in the creation of a structure or source that would emit long-term, operational air pollutant emissions and would not conflict with applicable air quality plans. Air pollutant emissions would be limited to the duration of the construction period and would be temporary in nature. Construction-related air pollutant emissions associated with the soundwall would depend on the type of construction equipment used and the duration of construction activities. Construction of the soundwall could generate significant air pollutant emissions. The use of diesel-powered vehicles and equipment during construction could create localized odors, but these odors would be temporary and would dissipate in the outdoor construction environment. The location of the proposed soundwall is in proximity to sensitive receptors (i.e., adjacent residences, Kathryn Hughes Elementary School, Fairway Glen Park, and the Santa Clara Youth Soccer Park). Therefore, air pollutant emissions from construction activities might affect sensitive receptors. Project construction air quality impacts would be considered ***potentially significant.***

MITIGATION MEASURES. Implementation of Mitigation Measure SW-AQ-1 would require Bay Area Air Quality Management District (BAAQMD) best management practices (BMPs) for fugitive dust. Mitigation Measure SW-AQ-2 would require BAAQMD BMPs for diesel exhaust emissions, which would reduce

criteria pollutant air emissions to a less-than-significant level. Given the limited scope of the construction activities associated with the soundwall, implementation of Mitigation Measures SW-AQ-1 and SW-AQ-2 should reduce potential exposure of sensitive receptors to toxic air contaminants during construction to a less-than-significant level. Therefore, these measures would reduce potential air quality impacts during soundwall construction to a ***less-than-significant level with mitigation***.

SW-AQ-1: Implement Measures to Reduce Construction-Related Dust Emissions. The Project Developer shall require all construction contractors to implement the specific construction mitigation measures below to reduce fugitive dust. Emission reduction measures shall include, at a minimum, the measures below. Alternative measures may be identified by the Project Developer or its contractor, as appropriate, provided that they are as effective as the measures below. Alternative measures shall be submitted to the City for approval.

- All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe. If water infiltration into landfill refuse layers is a concern, non-toxic soil stabilizers may be used instead.
- All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph for a period of 2 hours or more.
- Windbreaks (e.g., fences) shall be installed on the windward side(s) of actively disturbed areas of construction. Windbreaks shall have at maximum 50 percent air porosity.
- Exposed ground areas that are to be reworked more than 1 month after initial grading should be sown with fast-germinating native grass seed and watered appropriately until vegetation is established. If grass seeding is not feasible, then non-toxic soil stabilizers may be used.
- All construction trucks and equipment, including tires, involved in ground disturbance or transit through loose soil areas shall be washed off prior to leaving the site.
- Site accesses to a distance of 25 feet from the paved road shall be treated with a 6- to 12-inch compacted layer of wood chips, mulch, or gravel. Alternatively, a rumble plate may be used in place of chips, mulch, or gravel.
- Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than 1 percent.

SW-AQ-2: Implement Measures to Reduce Construction-Related Exhaust Emissions. The Project Developer shall require all construction contractors to implement the specific construction mitigation measures below to reduce equipment exhaust emissions. Emission reduction measures shall include, at a minimum, the measures below. Alternative measures may be identified by the Project Developer or its contractor, as appropriate, provided that they are as effective as the measures below. Alternative measures shall be submitted to the City for approval.

- Idling time of diesel powered construction equipment shall be limited to 2 minutes.
- The Project Developer shall ensure that all off-road diesel-powered equipment used during construction between 2017 and 2022 is equipped with U.S. Environmental Protection Agency (EPA) Tier 3 or cleaner engines, except for specialized construction equipment for which an EPA Tier 3 engine is not available. Consistent with advancements of the statewide fleet average, the Project Developer shall ensure that all off-road diesel-

powered equipment used during construction between 2023 and 2030 is equipped with EPA Tier 4 engines. This requirement will ensure that construction equipment remains cleaner than the fleet-wide average.

- The Project Developer shall ensure that all on-road heavy-duty diesel trucks with a gross vehicle weight rating (GVWR) of 19,500 pounds or greater used at the Project site comply with EPA 2007 on-road emissions standards for particulate matter of 10 micrometers or less (PM10) and nitrogen oxides (NO_X) (0.01 grams per brake horsepower-hour [g/bhp-hr] and 0.20 g/bhp-hr, respectively).
- Notwithstanding the above requirements, all construction equipment, diesel trucks, and generators shall meet the California Air Resources Board's most recent certification standard for off-road heavy-duty diesel engines and shall employ Best Available Control Technology for emission reductions of NO_X and particulate matter (PM) if more stringent than the requirements above.

Greenhouse Gas

The proposed soundwall would not result in the creation of a structure or source that would emit long-term, operational greenhouse gas (GHG) emissions. GHG emissions would be limited to the duration of the construction period and would be temporary in nature. Construction-related GHG emissions associated with the soundwall would depend on the type of construction equipment used and the duration of construction activities. Given the limited scope of the soundwall (approximately 0.4 mile long), it is anticipated that construction of the soundwall would not generate significant GHG emissions or conflict with applicable plans or policies adopted for the purpose of reducing GHG emissions. The proposed soundwall would result in ***less-than-significant*** impacts related to GHG emissions.

Noise

The soundwall has been identified as a mitigation measure to reduce traffic noise impacts on nearby sensitive receptors. The soundwall itself would not generate any noise or vibration that would affect nearby sensitive receptors. The soundwall would not expose people to excessive noise levels due to the proximity to a public or private airport. Noise impacts from the construction of the soundwall would be temporary and limited to the duration of the construction period. Noise from construction of the soundwall may surpass the normally acceptable noise levels, especially for the residents to the east of the proposed soundwall. Construction noise would occur due to the use of construction equipment and ground-disturbing activities may generate minor ground-borne vibration. Construction-related noise impacts associated with the proposed soundwall would depend on the type of construction equipment used and the duration of construction activities. All construction activities would be required to comply with Chapter 9.10 of the City Code, which regulates construction hours and equipment. Therefore, potential noise impacts would be ***less than significant***.

Cultural Resources

Construction of the proposed soundwall would not require the demolition of any existing structures, with the exception of existing privacy fencing, which is not a historic resource. Therefore, no historic resources would be affected. Ground-disturbing activities for the soundwall would be limited to areas within and immediately adjacent to the ROW. At this time, the presence of recorded or known archaeological resources, paleontological resources, or human remains in the vicinity of the proposed soundwall has not been evaluated. Although the site of the proposed soundwall has already been disturbed during the

construction of the existing residences and sidewalks, ground-disturbing activities may uncover, damage, or destroy unknown or unrecorded archaeological resources, paleontological resources, or human remains, which would be considered a ***potentially significant*** impact.

MITIGATION MEASURES. Implementation of Mitigation Measure SW-CR-1 would require the Lead Agency to conduct cultural resource investigations and prepare and implement a cultural resource treatment plan, if necessary. Mitigation Measure SW-CR-2 would require the contractor to stop work if cultural resources are encountered during ground-disturbing activities. Implementation of Mitigation Measure SW-CR-3 would require the contractor to stop work if human remains are encountered during ground-disturbing activities. Therefore, these measures would reduce potential cultural resource impacts during soundwall construction to ***less than significant with mitigation***.

SW-CR-1: Conduct Cultural Resource Investigations and Protect and Recover Significant Resources. The improvement Lead Agency shall conduct a cultural resource investigation of the areas of ground disturbance associated with the soundwall that includes a background records search (including a search of records from Sonoma State and historical societies, contact with Native American representatives identified by the Native American Heritage Commission [NAHC], and site pedestrian surveys) for the areas of ground disturbance from each roadway improvement. If significant known or suspected sites are discovered within the Project footprint and would be disturbed by the Project, then a cultural resource treatment plan shall be prepared, defining Project monitoring and resource recovery and curation requirements concerning any encountered cultural resources.

SW-CR-2: Stop Work if Cultural Resources Are Encountered during Ground-Disturbing Activities. In the event that cultural resources are encountered during ground-disturbing activities, all work within proximity of the find shall temporarily halt so that the archaeological monitor can examine the find and document its provenience and nature (e.g., withdrawings, photographs, written descriptions). The archaeological monitor shall then direct that the work proceed if the find is deemed to be insignificant, continue elsewhere, or cease until adequate mitigation measures are adopted. If the find is determined to be potentially significant, the archaeologist, in consultation with the appropriate jurisdiction, shall develop a treatment plan, which could include site avoidance, capping, or data recovery. If data recovery is determined to be appropriate, excavation shall target recovery of an appropriate amount of information from archaeological deposits to determine the potential of the resource to address specific research questions. If it occurs, data recovery shall emphasize the understanding of the archaeological deposit's structure, including features and stratification, horizontal and vertical extent, and content, including the nature and quantity of artifacts.

SW-CR-3: Stop Work if Human Remains Are Encountered during Ground-Disturbing Activities. If human remains are discovered (in either an archaeological or construction context), all work within proximity of the remains shall stop so that the archaeological monitor can examine the remains. The County Coroner shall be notified to make a determination as to whether the remains are of Native American origin. If the remains are determined to be Native American, the coroner shall notify the NAHC immediately. The NAHC shall notify those persons it believes are most likely descended from the deceased Native American. Once the NAHC identifies the most likely descendants, the descendants will make recommendations regarding proper burial, which will be implemented in accordance with Section 15064.5 (e) of the State CEQA Guidelines.

Biological Resources

The proposed soundwall would be within or immediately adjacent to existing ROW in an established urbanized setting. Construction of the proposed soundwall would not affect any native habitats, although urban street trees, shrubs, or associated landscaping could potentially be removed. The existing urbanized setting of the soundwall's location makes it unlikely that the soundwall would substantially affect any special-status species, special-status plants, associated habitat or other sensitive natural communities, or wildlife corridors because of the lack of suitable factors for these resources to exist. However, the soundwall would be adjacent to seasonal wetlands or seasonal drainages that exist in unpaved areas adjacent to the existing ROW.

There are no HCPs or NCCPs in the vicinity of the proposed soundwall.

The soundwall would require tree and shrub removal, which could affect native bird species that could be nesting in the trees and shrubs if construction occurs during the nesting/breeding season. Any tree or shrub removal occurring as part of construction of the soundwall could result in the loss of an active nest. The removal of trees could also conflict with the City's local tree preservation policies.. The loss of trees and potential active nests would be a ***potentially significant*** impact.

MITIGATION MEASURE. Implementation of Mitigation Measure SW-BIO-1 would require tree replacement at a minimum of 2:1. Implementation of Mitigation Measure SW-BIO-2 would require preconstruction nesting surveys prior to any tree removal. Implementation of Mitigation Measure SW-BIO-3 would require site-specific surveys for special-status species, sensitive habitats, wetlands/waters, and nesting birds and implementation on avoidance, minimization, and compensation measures where sensitive biological resources are encountered. Therefore, these measures would reduce potential biological resource impacts during soundwall construction to ***less than significant with mitigation***.

SW-BIO-1: *Replace Removed Trees on a 2:1 Basis.* The Project Developer shall replace all trees removed as part of soundwall construction at a minimum of 2:1, or more, as required by the local tree ordinance.

SW-BIO-2: *Preconstruction Surveys.* The Project Developer and its contractors shall avoid conducting vegetation removal during the migratory bird nesting season (February 1–August 31) if feasible. If construction activities must commence during the migratory bird nesting season, the Project Developer shall retain a qualified wildlife biologist to conduct a survey for nests of migratory birds. Surveys for nesting migratory birds shall occur within 3 days prior to the commencement of ground disturbance and vegetation removal.

If an active nest is discovered, a no-disturbance buffer zone around the nest tree or shrub (or, for ground-nesting species, the nest itself) shall be established. The no-disturbance zone shall be marked with flagging or fencing that is easily identified by the construction crew and shall not affect the nesting bird or attract predators to the nest location. In general, the minimum buffer zone widths shall be as follows: 50 feet (radius) for non-raptor ground-nesting species, 50 feet (radius) for non-raptor shrub- and tree-nesting species, and 300 feet (radius) for raptor species. Buffer widths may be modified based on discussion with the California Department of Fish and Wildlife (CDFW). Buffers shall remain in place as long as the nest is active or young remain in the area and are dependent on the nest. If a burrowing owl nest is identified during pre-construction surveys, no-activity buffers will adhere to the

recommendations in the 2012 California Department of Fish and Game Staff Report on Burrowing Owl Mitigation.[28]

SW-BIO-3: Site-Specific Surveys and Species/Habitat Avoidance, Minimization, and Compensation Measures. The Project Developer, in consultation with a qualified biologist, shall conduct a site-specific surveys for special-status species, sensitive habitats, wetlands and waters of the United States, and nesting birds. If found, the Project Developer and its contractor shall implement avoidance and minimization measures, where feasible. Where avoidance is not possible, the Project Developer shall compensate for lost habitat on a minimum 1:1 basis. Compensation for lost habitat will be determined in consultation with CDFW/U.S. Fish and Wildlife Service (USFWS), as appropriate. The Project Developer shall obtain all required permits from the U.S. Army Corps of Engineers (USACE), the Regional Water Quality Control Board, and CDFW and USFWS as appropriate. The Project Developer shall provide buffer fencing and species relocation, as necessary, if permitted by CDFW/USFWS. Additionally, if special-status species or habitats are identified during the site-specific surveys, a Worker Environmental Awareness Training Program for construction personnel will be conducted by a qualified biologist retained by the Project Developer. The program will provide workers with information on their responsibilities with regard to the special-status species. The training will provide a physical description of the special-status species that have potential to occur and be affected by construction activities to each construction crew prior to the initiation of the crew's construction activities. The worker awareness training will also provide details regarding each species' habitat and legal protections, a photo of relevant species, and contact information for the primary biologist.

Geology and Soils

The proposed soundwall would not expose structures or populations to new risks involving earthquake fault ruptures, seismic ground shaking, seismically related ground failures, or unstable geological units or soils. The soundwall would also not include the use of septic tanks or alternative wastewater disposal systems. Construction of the soundwall would include ground-disturbing activities that may potentially subject disturbed soils to erosion if exposed to wind or rainfall. Post-construction, all disturbed areas adjacent to the soundwall would be restored to pre-disturbance conditions. Regardless, construction of the soundwall would be required to implement strategies to reduce potential impacts, such as preparing and complying with a Stormwater Pollution Prevention Plan (SWPPP) as required by the State Water Resources Control Board's Construction General Permit, which would keep erosion impacts to a less-than-significant level.

Construction of the soundwall could disturb fill slopes/soils, and make them unstable. This impact is considered ***potentially significant***.

MITIGATION MEASURE. Implementation of Mitigation Measure SW-GEO-1 would require preparation of a geotechnical investigation that would evaluate potential risks related to geology and soils from construction of the soundwall. Therefore, it would reduce potential geologic and soil impacts during soundwall construction to ***less than significant with mitigation***.

[28] California Department of Fish and Game. 2012. *Staff Report on Burrowing Owl Mitigation*. State of California Natural Resources Agency. March 7. Available: http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html#Mammals.

SW-GEO-1: Prepare a Geotechnical Investigation. Prior to construction of the soundwall, the Project Developer shall prepare a geotechnical investigation to evaluate the potential for geologic, seismic, and soil risks. The geotechnical investigation shall include recommendations to abate any potential risks. If risks are identified, the Project Developer shall implement the recommendations included in the geotechnical investigation.

Hydrology and Water Quality

Construction of the soundwall could result in impacts on water quality through ground-disturbing activities that may have the potential to affect water quality though soil erosion and stormwater discharges of pollutants and sedimentation. The Project would be required to implement strategies to reduce potential impacts, such as preparing and complying with a SWPPP, as required by the State Water Resources Control Board's Construction General Permit, thereby ensuring that water quality impacts would be ***less than significant***.

The proposed soundwall would not expose structures or populations to new risks of flood hazards from 100-year flood areas, levee or dam failures, or inundations by seiche, tsunami, or mudflow.

Because the soundwall would be within or immediately adjacent to the ROW, it is likely that much of the soundwall would be on predominantly impervious surfaces that are currently covered by a paved roadway or sidewalk. Additional impervious surfaces in or adjacent to the soundwall location could be required. It is anticipated that the existing stormwater drainage facilities that serve the roadways will continue to be used. Because the soundwall could alter the existing drainage patterns on-site and create new impervious surfaces, the soundwall could create a substantial amount of stormwater runoff that could exceed the existing capacity of the stormwater drainage system and have water quality impacts. This is considered a ***potentially significant*** impact.

In addition, the soundwall could also result in significant impacts on adjacent seasonal wetlands.

MITIGATION MEASURE. Mitigation Measure SW-WQ-1 would require the preparation of a hydrology and water quality technical report that would evaluate drainage and stormwater conditions at the soundwall site and provide recommendations for drainage and stormwater controls to ensure that the soundwall would not substantially alter the existing drainage patterns of the affected area, deplete groundwater supplies, interfere with groundwater recharge, or degrade water quality. Therefore, it would reduce potential hydrology and water quality impacts during soundwall construction and operation to ***less than significant with mitigation***. Mitigation Measure SW-BIO-3 would ensure that wetlands would be avoided or wetland habitat would be compensated for at a 1:1 ratio. Implementation of this mitigation would reduce water resource impacts due to wetland disturbance to ***less than significant with mitigation***.

SW-WQ-1: Prepare a Hydrology and Water Quality Technical Report. Prior to construction of the soundwall, the Project Developer shall prepare a hydrology and water quality technical report to evaluate the existing drainage and stormwater conditions at the soundwall site. The technical report shall include recommendations for drainage and stormwater controls to minimize impacts related to changes in drainage patterns that would result from the soundwall. The Project Developer shall be required to implement the report's recommendations.

Hazards and Hazardous Materials

The proposed soundwall would not expose people to hazards caused by proximity to a public or private airport. Furthermore, the soundwall would not expose people to wildland fire hazards, because of the urbanized context of the soundwall. The soundwall would not result in the creation of structures or sources that would result in the long-term operational use or emissions of hazardous materials. Construction of the soundwall could result in temporary lane or street closures and temporarily interfere with an adopted emergency response plan or emergency evacuation plan, which would be a ***potentially significant*** impact.

Construction of the soundwall would also likely involve the use of potentially hazardous materials such as fuel, diesel/gasoline, motor oils, and hydraulic oils. These substances are generally used in construction and are not unique materials that would require additional handling protocols beyond manufacturers' specifications. It is unknown if the site of the soundwall is included on a list of hazardous materials sites; its construction could disturb hazardous materials, creating a hazard to the public, the environment, or schools within 0.25 mile, which is considered a ***potentially significant*** impact.

MITIGATION MEASURES. With implementation of Mitigation Measure SW-TRA-1, which requires preparation of a construction traffic control plan, potential impacts on emergency access would be ***less than significant with mitigation***. Implementation of Mitigation Measure SW-HAZ-1 would require the preparation of a Phase I Environmental Site Assessment of all disturbed and acquired property. Where the potential to encounter hazardous materials or waste is identified, a soil/groundwater handling plan that identifies proper disposal methods will be prepared and implemented. Therefore, it would reduce potential hazards or hazardous waste impacts during soundwall construction to ***less than significant with mitigation***.

SW-HAZ-1: Prepare a Phase I Environmental Site Assessment. Prior to construction of the soundwall, the Project Developer shall conduct a Phase I Environmental Site Assessment. Where the potential to encounter hazardous materials or waste is identified, the Project Developer shall prepare and implement a soil/groundwater handing plan that identifies measures to properly dispose of contaminated materials. Measures could include worker education and training, as appropriate, and site-specific controls to avoid risks to workers and adjacent residents or others.

Population and Housing

The proposed soundwall would not induce substantial population growth in the area either directly (by generating a population) or indirectly (through the extension of new roads). The construction of the proposed soundwall could result in the demolition of existing privacy fencing, but would not result in the demolition of existing structures that would displace housing or people. Therefore, the proposed soundwall would result in ***no impact*** on population and housing.

Public Services

The proposed soundwall would not develop any permanent structures that would generate a new population and increase the demand for fire protection, police protection, schools, parks, or recreational facilities. Construction activities could require the temporary closure of a lane on Lafayette Street, but this would not result in significantly delayed response times. Any such temporarily delayed response times would not trigger the need for new or expanded public facilities, resulting in ***less-than-significant*** impacts.

Utilities and Service Systems

The proposed soundwall would not develop any permanent structures that would generate a new population requiring domestic water, wastewater disposal and treatment, or solid waste collection services that would result in the expansion of these facilities. The new soundwall would not create substantial new impervious surfaces that would generate stormwater runoff requiring an expansion in the stormwater drainage system. Debris generated during the construction of the soundwall would be limited to the excess soil from ground-disturbing activities and the existing fencing. Soil debris and demolition waste would be taken to an approved waste disposal location, would comply with applicable construction and demolition waste diversion requirements, and would not exceed the sufficient permitted capacity of a landfill.

Regarding storm drain system impacts, see the discussion above under Hydrology and Water Quality.

Construction activities related to the soundwall could result in the relocation or temporary disruption of existing underground or overhead utilities, which is considered a ***potentially significant*** impact.

MITIGATION MEASURE. Implementation of Mitigation Measure SW-UT-1 would minimize utility disruptions by ensuring coordination with the appropriate utility providers. Therefore, it would reduce potential utility impacts during soundwall construction to ***less than significant with mitigation***.

SW-UT-1: Identify Underground and Overhead Utilities and Provide Coordination with Utility Providers. Prior to construction of the soundwall, the Project Developer shall identify all underground and overhead utilities within the footprint of the soundwall. If utilities are present, the Project Developer shall coordinate with the appropriate utility owners regarding utility shutoff during construction and relocation, as necessary.

Table 3.6-16. Summary of Secondary Impacts from Soundwall

Environmental Topic	Level of Significance
Land Use	LTS
Aesthetics	LTS/M
Transportation	LTS/M
Air Quality	LTS/M
Greenhouse Gas Emissions	LTS
Noise	LTS
Cultural Resources	LTS/M
Biological Resources	LTS/M
Geology and Soils	LTS/M
Hydrology and Water Quality	LTS/M
Hazards and Hazardous Materials	LTS/M
Population and Housing	NI
Public Services	LTS
Utilities and Services Systems	LTS/M

NI = No impact
LTS = Less than significant
LTS/M = Less than significant with mitigation

This Page Intentionally Left Blank

3.7 Cultural Resources

This section describes the regulatory and environmental setting for cultural resources on the City Place Santa Clara Project (Project) site and in the vicinity; discusses the known cultural resources within 0.5 mile of the Project site (i.e., the area most likely to be affected by the Project construction and operation); and provides information regarding the Native American correspondence conducted for the Project. It also describes impacts on cultural resources that could result from implementation of the Project. Mitigation measures are prescribed where feasible and appropriate.

No comments related to cultural resources were received in response to the Notices of Preparation (NOPs) (Appendix 1).

Existing Conditions

Regulatory Setting

Federal

National Historic Preservation Act, Section 106

The National Historic Preservation Act (NHPA) establishes the National Register of Historic Places (NRHP), and defines federal criteria for determining the historical significance of archaeological sites, historic buildings, and other resources. To be determined eligible for the NRHP, a potential historic property must meet one of four historical significance criteria, and must also possess sufficient deposition, and architectural or historic integrity to retain the ability to convey the resource's historic significance. Resources determined to meet these criteria are eligible for listing in the NRHP and are termed historic properties. A resource may be eligible at the local, State, or national level of significance.

A property is eligible for the NRHP if it possesses integrity of location, design, setting, materials, workmanship, feeling, and association, and it:

1. Is associated with events that have made a significant contribution to the broad patterns of our history;
2. Is associated with the lives of a person or persons of significance in our past;
3. Embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic value, or represents a significant and distinguishable entity whose components may lack individual distinction; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

A resource that lacks historic integrity or does not meet one of the NRHP criteria of eligibility is not considered a historic property, and effects on such a resource are not considered significant under the NHPA.

Paleontological Resources Preservation Act

The federal Paleontological Resources Preservation Act of 2002 was enacted to codify the generally accepted practice of limiting the collection of vertebrate fossils and other rare and scientifically significant

fossils to qualified researchers. These researchers must obtain a permit from the appropriate state or federal agency and agree to donate any materials recovered to recognized public institutions, where they will remain accessible to the public and to other researchers.

State

California Public Resources Code

Archaeological, paleontological, and historical sites are protected pursuant to a wide variety of State policies and regulations, as enumerated under the California Public Resources Code (PRC). Cultural and paleontological resources are recognized as nonrenewable resources and receive additional protection under the California PRC and the California Environmental Quality Act (CEQA).

- California PRC Sections 5020–5029.5 continued the former Historical Landmarks Advisory Committee as the State Historical Resources Commission. The commission oversees the administration of the California Register of Historical Resources (CRHR) and is responsible for the designation of State Historical Landmarks and Historical Points of Interest.
- California PRC Sections 5079–5079.65 define the functions and duties of the Office of Historic Preservation (OHP). The OHP is responsible for the administration of federally and State-mandated historic preservation programs in California and the California Heritage Fund.
- California PRC Sections 5097.9–5097.991 provide protection to Native American historical and cultural resources and sacred sites and identify the powers and duties of the Native American Heritage Commission (NAHC). These sections also require notification to descendants of discoveries of Native American human remains and provide for treatment and disposition of human remains and associated grave goods.

California Environmental Quality Act

CEQA requires projects to be assessed to determine their potential to affect historical resources. CEQA uses the term *historical resources* to include buildings, sites, structures, objects, or districts, each of which may have historical, pre-historical, architectural, archaeological, cultural, or scientific importance. If implementation of a project would result in significant effects on historical resources, CEQA states that alternative plans or mitigation measures must be considered; however, only significant historical resources need to be addressed (14 California Code of Regulations [CCR] 15064.5, 15126.4). Therefore, before impacts and mitigation measures can be identified, the significance of historical resources must be determined.

The State CEQA Guidelines define three ways that a property may qualify as a historical resource for the purposes of CEQA review.

1. The resource is listed in or determined eligible for listing in the CRHR.
2. The resource is included in a local register of historical resources, as defined in Section 5020.1[k] of the California PRC or identified as significant in a historical resource survey meeting the requirements of Section 5024.1[g] of the California PRC unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
3. The Lead Agency determines the resource to be significant, as supported by substantial evidence in light of the whole record (CCR, Title 14, Division 6, Chapter 3, section 15064.5[a]).

The State CEQA Guidelines also establish the criteria for CRHR eligibility as the standard for the significance of historical resources and find that cultural resources that meet the criteria of eligibility for

the CRHR are significant historical resources. A historical resource may be eligible for inclusion in the CRHR if it meets any of the following conditions:

A. The resource is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.

B. The resource is associated with the lives of persons important in our past.

C. The resource embodies the distinctive characteristics of a type, period, region, or method of construction or represents the work of an important creative individual or possesses high artistic values.

D. The resource has yielded, or may be likely to yield, information important in prehistory or history.

Properties that are listed in or eligible for listing in the NRHP are considered eligible for listing in the CRHR (PRC Section 5024.1[d][1]) and, thus, are significant historical resources for the purpose of CEQA.

According to CEQA, a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant impact on the environment (14 CCR 15064.5[b]). Under CEQA, a substantial adverse change in the significance of a resource means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historical resource would be materially impaired. Actions that would materially impair the significance of a historic resource are any actions that would demolish or adversely alter the physical characteristics that convey the property's historical significance and qualify it for inclusion in the CRHR or in a local register or survey that meet the requirements of PRC Sections 5020.1[k] and 5024.1[g].

CEQA includes in its definition of *historical resources* "any object [or] site … that has yielded or may be likely to yield information important in prehistory" (State CEQA Guidelines Section 15064.5[3]), which is typically interpreted as including fossil materials and other paleontological resources. In addition, destruction of a "unique paleontological resource or site or unique geologic feature" constitutes a significant impact under CEQA (State CEQA Guidelines Appendix G). Treatment of paleontological resources under CEQA is generally similar to treatment of cultural resources, requiring evaluation of resources in a project's area of potential affect; assessment of potential impacts on significant or unique resources; and development of mitigation measures for potentially significant impacts, which may include monitoring, combined with data recovery and/or avoidance.

Local

City of Santa Clara General Plan

The City of Santa Clara's (City's) current general plan contains goals and policies relating to the development and preservation of cultural resources in the city. General plan policies relevant to the Project are as follows:

Goal 5.6.3-G1. Protection and preservation of cultural resources, as well as archaeological and paleontological sites.

Goal 5.6.3-G2. Appropriate mitigation in the event that human remains, archaeological resources, or paleontological resources are discovered during construction activities.

Policy 5.6.3-P1. Require that new development avoid or reduce potential impacts to archaeological, paleontological, and cultural resources.

Policy 5.6.3-P2. Encourage salvage and preservation of scientifically valuable paleontological or archaeological materials.

Policy 5.6.3-P3. Consult with California Native American tribes prior to considering amendments to the City's General Plan.

Policy 5.6.3-P4. Require that a qualified paleontologist/archaeologist monitor all grading and/or excavation if there is a potential to affect archaeological or paleontological resources, including sites within 500 feet of natural watercourses and in the Old Quad neighborhood.

Policy 5.6.3-P5. In the event that archaeological/paleontological resources are discovered, require that work be suspended until the significance of the find and recommended actions are determined by a qualified archaeologist/paleontologist.

Policy 5.6.3-P6. In the event that human remains are discovered, work with the appropriate Native American representative and follow the procedures set forth in State law.

Criteria for Local Significance

In addition to the policies listed above, General Plan Appendix 8.9 includes the Criteria for Local Significance, which were adopted by the City Council on April 20, 2004. The criteria establish evaluation measures to ensure that the resource is at least 50 years old and that the property is associated with an important individual or event, an architectural innovation, and/or an archaeological contribution in order to be deemed significant.

Qualified Historic Resources. Any building, site, or property in the city that is 50 years old or older and meets certain criteria of architectural, cultural, historical, geographical, or archaeological significance is potentially eligible.

Criteria for Historical or Cultural Significance. To be historically or culturally significant, a property must meet at least one of the following criteria.

- The site, building, or property has character, interest, integrity, and reflects the heritage and cultural development of the city, region, state, or nation.
- The property is associated with a historical event.
- The property is associated with an important individual or group who contributed in a significant way to the political, social, and/or cultural life of the community.
- The property is associated with a significant industrial, institutional, commercial, agricultural, or transportation activity.
- A building's direct association with broad patterns of local area history, including development and settlement patterns, early or important transaction routes or social, political, or economic trends and activities. Included is the recognition of urban street pattern and infrastructure.
- A notable historical relationship between a site, building, or property's site and its immediate environment, including original native trees, topographical features, outbuildings, or agricultural setting.

Criteria for Archaeological Significance. For the purposes of CEQA, an "important archaeological resource" is one which:

- Is associated with an event or person of

  - Recognized significance in California or American history, or
  - Recognized scientific importance in prehistory;
- Can provide information, which is both of demonstrable public interest, and useful in addressing scientifically consequential and reasonable or archaeological research questions;
- Has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind;
- Is at least 100 years old and possesses substantial stratigraphic integrity; or
- Involves important research questions that historical research has shown can be answered only with archaeological methods.

Santa Clara City Code

Title 12, Chapter 12.25.170 of the City Code contains "mitigation requirements for potentially significant archaeological impacts." If, during the course of construction or grading activities, a cultural resource is found, all work within 50 feet of the find must stop and a qualified archaeologist is to examine the find, determine its significance, and submit a Treatment Plan to the City. Other requirements in this section include monitoring of earthmoving activities by a qualified archaeologist if archaeological resources are found on-site, and notification of the County Coroner if Native American remains are found.

Environmental Setting

Prehistoric Setting

Archaeological resources are the physical remains of past human activities and can be either prehistoric or historic. Archaeological sites contain significant evidence of human activity; generally, a prehistoric site is defined by a significant accumulation or presence of such features as food remains, waste from the manufacturing of tools, tools, pottery, concentrations or alignments of stones, modification of rock surfaces, unusual discoloration or accumulation of soil, and/or human skeletal remains and associated burial artifacts such as beads, bone tools, or weapons.[1]

In the San Francisco Bay Area (Bay Area), a series of cultural changes have been documented for over 10,000 years, from early periods of hunter-gatherers to more permanent settlements with larger populations in later periods. In particular, the Santa Clara Valley's natural resources, including abundant fresh water sources such as the Guadalupe River and Coyote Creek, enabled Native American occupation of the Valley for at least 5,000–8,000 years, and possibly longer. Archaeological information suggests a slow, steady increase in the prehistoric population over time, with an increasing focus on permanent settlements with large populations in later periods. This change from hunter-gatherers to an increased sedentary lifestyle is due both to more efficient resource procurement, as well as a focus on staple food exploitation, the increased ability to store food at village locations, and the development of increasingly complex social and political systems, including long distance trade networks.[2]

---

[1] City of Santa Clara. January 2011. *City of Santa Clara Draft 2010-2035 General Plan, Integrated Final Environmental Impact Report*. Volume I: EIR Text.

[2] Basin Research Associates, Inc. 2007. *Archaeological Survey Report, Coyote Creek Trail Master Plan, Story Road to U.S. Highway 101, City of San Jose, Santa Clara County*. Prepared for: David J. Powers & Associates, San Jose, CA.

The majority of encountered prehistoric archaeological sites in the city have been identified within 0.5 mile of the current Guadalupe River stream channel. These sites include shell middens containing an array of stone and bone tolls, faunal remains, fire-cracked rock, and human bone.[3]

At the time of European contact, the Bay Area was occupied by a group of Native Americans whom ethnographers refer to as the Ohlone or Costanoan. The Ohlone are a linguistically defined group composed of several autonomous tribelets that spoke eight different but related languages. The territory of the Ohlone people extended along the coast from the Golden Gate in the north to just below Carmel to the south, and as far as 60 miles inland. The territory encompassed a lengthy coastline, as well as several inland valleys, including the Santa Clara Valley.[4]

The Ohlone were hunter-gatherers and relied heavily on acorns and seafood. They also exploited a wide range of other foods, including various seeds (the growth of which was promoted by controlled burning), buckeye, berries, roots, land and sea mammals, waterfowl, reptiles, and insects.[5]

Prior to contact with Europeans, the Ohlone were politically organized by tribelet, with each having a designated territory. A tribelet consisted of one or more villages and camps within a territory designated by physiographic features. This type of organization was prevalent in pre-contact California.[6]

The closest-known tribelet settlement to the Project site is believed to be the *Tamien* tribe.[7,8] The *Tamien* likely held the central Santa Clara Valley along the Guadalupe River from Agnew (a small, unincorporated village in what is now Santa Clara) to the present area of downtown San Jose, and the flat lands westward from the Guadalupe to the present town of Cupertino.[9]

Seven Spanish missions were founded in Ohlone territory from 1776 to 1797. The mission closest to the Project site was the Mission Santa Clara de Asis, also known as the Murguiá Mission (after Father Jose Murguiá, who directed its construction).[10] This former mission is located approximately 6 miles south of the Project site, within the city of Santa Clara. Construction of the mission complex began in 1781 but was abandoned after 1818 because of structural damage that was sustained as a result of earthquake activity.[11] Between 1781 and 1818, the mission complex expanded to include not only the church and quadrangle but also adobe granaries, corrals and houses, agricultural fields, and orchards. Additional

---

[3] City of Santa Clara. January 2011. *City of Santa Clara Draft 2010-2035 General Plan, Integrated Final Environmental Impact Report*. Volume I: EIR Text.

[4] Levy, R. 1978. Costanoan. Pages 485– 495 in *Handbook of North American Indians, Vol. 8: California*, R. F. Heizer, editor. Washington, D.C.: Smithsonian Institution.

[5] Levy, R. 1978. Costanoan. Pages 485– 495 in *Handbook of North American Indians, Vol. 8: California*, R. F. Heizer, editor. Washington, D.C.: Smithsonian Institution.

[6] Kroeber, A. 1955. The Nature of Land-Holding Groups in Aboriginal California. Pages 81–120 in *Aboriginal California: Three Studies in Culture History*. Berkeley, CA: Archaeological Research Facility.

[7] Milliken, R. 1995. *A Time of Little Choice: The Disintegration of Tribal Culture in the San Francisco Bay Area, 1769-1810*. Pages 229, Map 5, and 256. Ballena Press, Menlo Park, CA.

[8] Levy, R. 1978. Costanoan. Pages 485– 495 in *Handbook of North American Indians, Vol. 8: California*, R. F. Heizer, editor. Washington, D.C.: Smithsonian Institution.

[9] Milliken, R. 1995. *A Time of Little Choice: The Disintegration of Tribal Culture in the San Francisco Bay Area, 1769-1810*. Page 256. Ballena Press, Menlo Park, CA.

[10] Hylkema, M. 1995. Archaeological Investigations at the Third Location of Mission Santa Clara de Asis: The Murguía Mission, 17811818 (CA-SCL-30/H). Report on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

[11] Hylkema, M. 1995. Archaeological Investigations at the Third Location of Mission Santa Clara de Asis: The Murguía Mission, 1781–1818 (CA-SCL-30/H). Report on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

residences continued to be constructed after 1818, although, by that time, much of the complex was not in use. From 1822 to 1825, Murguiá church materials were dismantled and used in the construction of the fourth mission church. The neophyte houses gradually disintegrated from neglect as the Indian population of the so-called Rancheria dwindled. By 1839, some of the remaining houses were occupied by Mexican citizens.[12]

Mission life was devastating to the Ohlone population.[13] It has been estimated that in 1776, when the first mission was established in Ohlone territory, the Ohlone population numbered around 10,000. By 1832, the Ohlone numbered less than 2,000 as a result of introduced disease, harsh living conditions, and reduced birth rates.[14]

Under the Mexican government, secularization of the mission lands, including the Murguiá Mission, began in the early 1830s. The indigenous population scattered away from the mission centers, and most of the former mission land was divided among loyal Mexican subjects. During the next few decades, there was a partial return to aboriginal religious practices and food collection as a means of subsistence. Consequently, several multiethnic Indian communities were established in the mid-nineteenth century within Ohlone territory.[15]

Ohlone recognition and assertion began to move to the forefront during the early twentieth century, enforced by two legal suits brought against the U.S. government by Indians of California (1928–1964) for reparation due them for the loss of traditional lands. Although they have yet to receive formal recognition from the federal government, the Ohlone have developed an active interest in preserving their ancestral heritage and in maintaining their traditions and advocating for Native American issues.[16]

Nelson Shellmound 339 (CA-SCL-5)

One prehistoric archaeological resource along the west bank of the Guadalupe River has been recorded as extending into the northeastern portion of the Project site. P-43-000025/CA-SCL-5 was originally recorded in 1912 (prior to the development of the majority of the Project site as a city landfill, and when portions of many prehistoric sites could still be observed on the ground surface). Identified as "Nelson Shellmound 339," this resource was described only as an "occupation site."[17] The site was re-visited in 1980. During those investigations, shell, fire-cracked rock, and baked clay were observed. The plotted location of the site was expanded and re-mapped approximately 220 meters to the north following this fieldwork. The site was re-examined again in 2012, and no cultural material was identified as a result of these investigations.[18] Nevertheless, the documentation of this resource shows that the immediate Project

---

[12] Hylkema, M. 1995. Archaeological Investigations at the Third Location of Mission Santa Clara de Asis: The Murguía Mission, 1781–1818 (CA-SCL-30/H). Report on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

[13] Milliken, R. 1995. *A Time of Little Choice: The Disintegration of Tribal Culture in the San Francisco Bay Area, 1769-1810*. Pages 229, Map 5, and 256. Ballena Press, Menlo Park, CA.

[14] Levy, R. 1978. Costanoan. Pages 485–495 in *Handbook of North American Indians, Vol. 8: California*, R. F. Heizer, editor. Washington, D.C.: Smithsonian Institution.

[15] Levy, R. 1978. Costanoan. Pages 486–487 in *Handbook of North American Indians, Vol. 8: California*, R. F. Heizer, editor. Washington, D.C.: Smithsonian Institution.

[16] Yamane, L. 1994. Personal communication with L. J. Bean, in *The Ohlone: Past and Present.*

[17] Loud, L. 1912a. Archaeological Site Survey Record for P-43-000025/CA-SCL-5. Record on File at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

[18] Meyer, J. and J. Thomas. 2012. Continuation Sheet (Site Record Update) for P-43-000025/CA-SCL-5, Nelson Shellmound 339. Record on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

area was occupied by the Ohlone in the prehistoric period. Additional information regarding this resource, and other prehistoric archaeological resources identified within 0.5 mile of the Project site, is provided in the *Records Search Results*.

Historic Setting (General)

Spanish colonization of what is now California began in the late 1700s, based on a system of missions intended to convert the native peoples to Catholicism and European modes of economic production, and to create economically self-sufficient colonial communities. When Mexico won its independence from Spain in 1824, one of the first acts of the new government was to secularize the missions and redistribute the mission property as land grants to individuals who promised to work the land, primarily by raising cattle. Much like elsewhere in California, ranching became the driving force of the economy and culture in the Santa Clara Valley.[19]

In 1848, the United States and Mexico signed the Treaty of Guadalupe Hidalgo. As a result, the United States gained approximately 50 percent of Mexico's territory, including what would become the state of California. In January of that year, James Marshall discovered gold in the Sierra Nevada foothills. News of the discovery began to be disseminated in May 1848, and within weeks, people flocked to the Sierra Nevada foothills in hopes of striking it rich. By the end of summer, newcomers were flooding into California hoping to find fortune in the goldfields.[20]

The California legislature created 27 counties in 1850, including Santa Clara County. As gold fever subsided, American newcomers increasingly sought to acquire land. The federal government created the California Land Claims Commission in 1851 to institute a process for validating the land grants that the Mexican government had made to members of the ethnic Mexican or *Californio* population. In practice however, the long process and legal expense of confirming titles, along with the problem of squatters, worked against *Californios*, whose land was increasingly acquired by American newcomers.[21]

The community of Alviso was the boating and shipping port for San José and the transportation center connecting Santa Clara County to the rest of the San Francisco Bay with steamboats travelling regularly between San Francisco and Alviso. That usage declined with the growth in railroad transportation between San Francisco and San José. In 1864, the San Francisco and San José Railroad, which later was part of the Southern Pacific Railroad, bypassed Alviso, providing a stop instead in San José. However, in the 1880s, Alviso became a stop on the Newark line of Southern Pacific Railroad between San José and Oakland. The segment through Alviso is now part of the Union Pacific Railroad (UPRR) holdings and continues to the south, bisecting the Project site, and running adjacent to the Agnews site.

As the gold rush population influx increased the demand for fresh food, a California agricultural economy long dominated by cattle raising began to diversify. In the southern San Francisco Bay Area, a combination of wheat and barley fields, dairies, and orchards came to dominate the valley floor during the 1860s and 1870s.[22] With the collapse of the worldwide wheat market in the late 1870s, fruit farming became increasingly important in the Santa Clara Valley. The development of the refrigerated railroad car allowed for the transport of agricultural produce to distant markets. By the 1890s, orchard production had become

[19] Bean, W. and J. Rawls. 2002. *California: An Interpretive History* (8th Edition). McGraw Hill, New York, NY.

[20] Bean, W. and J. Rawls. 2002. *California: An Interpretive History* (8th Edition). McGraw Hill, New York, NY.

[21] Bean, W. and J. Rawls. 2002. *California: An Interpretive History* (8th Edition). McGraw Hill, New York, NY.

[22] Archives & Architecture, LLC. 2012. *County of Santa Clara Historic Context Statement*. Prepared for the County of Santa Clara Department of Planning and Development, San José, CA.

the leading agricultural activity in the valley. Local canning operations quickly multiplied as a result. Orchards continued to blanket the valley and drive the local economy into the 1940s.[23]

Following World War II, light industrial and high-tech research and development facilities, coupled with expanding suburban housing development, gradually replaced the Santa Clara Valley's vast orchards. The end of the war brought a wave of scientific and military expansion, and thousands of military personnel remained in the area. Companies formerly tasked with providing technology to the government were now shifting their attention to the private sector. This environment, coupled with flourishing engineering and electronics departments at Stanford University, made Santa Clara County a prime spot for the emergence of the new electronics industry.[24,25]

Business interests in the county saw an opportunity to expand beyond an agricultural commerce, and actively campaigned to attract electronic and defense companies. By the 1960s, these types of companies were responsible for the majority of the County's economic output, which increased further with the founding of Apple and development of the first personal computers in the 1970s. The new job market brought with it unprecedented population growth, increasing the number of residents five times over by 1975. The increase in population was accompanied by an increase in automobiles, and the car-oriented society left its mark on the County. Suburban housing tracts became the predominant residential building type, with other commercial car-oriented businesses lining new expressways and boulevards.[26]

Historic Setting (The Project Site)

Most of the Project site was formerly used as the Santa Clara All-Purpose Landfill (Landfill). The Project site was reportedly used for landfill operations between 1934 and 1993.[27] Prior to 1934, the Project site was presumed to be maintained by the State as open undeveloped or agricultural land. Based on historical aerial photographs and topographic maps, however, it appears that landfill operations began in the late 1960s.

Although the Landfill received final landfill closure certification in September 1994, a portion of the Landfill ceased operation by the late 1970s and early 1980s, and subsequently converted to a municipal golf course in 1986. The City-owned golf course encompasses the majority of the Project site west of Lafayette Street and the southern portion to the east of Lafayette Street. In addition to the golf course itself, the Santa Clara Golf and Tennis Club includes a clubhouse, a banquet facility, tennis courts, locker rooms, practice facilities, and a maintenance facility. All of the buildings were constructed between 1986 and 1999.[28]

---

[23] Archives & Architecture, LLC. 2012. *County of Santa Clara Historic Context Statement*. Prepared for the County of Santa Clara Department of Planning and Development, San José, CA.

[24] Archives & Architecture, LLC. 2012. *County of Santa Clara Historic Context Statement*. Prepared for the County of Santa Clara Department of Planning and Development, San José, CA.

[25] Laffey Architectural Archives. 1992. *Historical Context Statement—City of San José, California.* Available at: <http://www.laffeyarchives.org/contexts/sanJosécontext.htm>. Accessed on November 2014.

[26] Laffey Architectural Archives. 1992. *Historical Context Statement—City of San José, California.* Available at: <http://www.laffeyarchives.org/contexts/sanJosécontext.htm>. Accessed on November 2014.

[27] Langan Treadwell Rollo. 2015. *Post-Closure Land Use Plan: Former Santa Clara All-Purpose Landfill*. Prepared for Related Santa Clara, LLC. August.

[28] Geomatrix. 2008. *Phase I Environmental Site Assessment, Centennial Boulevard Site, Santa Clara, California*. Prepared for: 49ers Stadium, LLC, Santa Clara, CA.

The Ameresco Methane Plant, which is adjacent to the Bicycle-Motocross (BMX) track on Lafayette Street, was commissioned in 2009. The Eastside Storm Retention Basin (Retention Basin), located in the northern portion of the Project site, south of State Route (SR) 237 at 5611 Lafayette Street, was constructed in 1973.

Santa Clara Fire Station 10 (Fire Station 10) is located on the Project site at 5111 Stars and Stripes Drive, to the south of the golf course. The fire station opened in 1986 and is located to the west of the golf course maintenance facility. All of the structures currently located on the Project site are under 50 years of age.

The three office buildings in Tasman East that would be demolished to accommodate the Lick Mill Boulevard extension were constructed in 1984. These buildings consist of two, two-story buildings (51,200 gsf each) and one, one-story building (25,100 gsf).

The Alviso Historic District, which is 1 mile north of the Project site, was established in 1997 and listed in the NRHP (trinomial 73000449). Alviso was an important early transportation hub alongside the Bay and port at the southern tip of the Bay, hosting many train and vehicular travelers. Approximately 1 mile to the south of the Project site is the NRHP-listed Agnews Insane Asylum and the Agnews Historic District, which appears to be NRHP-eligible. The Union Pacific Railroad tracks that bisect the Project site also bisect Alviso to the north and run adjacent to Agnews to the south.[29]

Paleontological Setting

Paleontological resources (i.e., fossils and fossiliferous deposits) are considered nonrenewable scientific resources that provide information about the history of life on earth. Fossils are typically preserved in sedimentary rock, but can also be found in some volcanic rocks and low-grade metamorphic rocks. In general, paleontological resources are considered to be older than the middle Holocene (i.e., older than about 5,000 years), and therefore do not include materials associated with archaeological resources. Furthermore, the boundaries of archaeological sites are defined by the extent of the resource, whereas paleontological sites are defined by the extent of the entire rock unit that is known to contain or has the potential to contain significant paleontological resources.[30]

As described in the Society of Vertebrate Paleontology's *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources*, the paleontological potential of a rock unit can be determined based on review of available geological and paleontological literature, geologic maps, and records of fossil localities maintained by institutions (e.g., museums and universities). The Society of Vertebrate Paleontology defines "significant paleontological resources" as fossils and fossiliferous deposits consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. The Society of Vertebrate Paleontology describes the paleontological potential of a rock unit as having either a "high," "undetermined," "low," or "no potential" for containing significant paleontological resources. In areas determined to have a high or undetermined potential for significant paleontological resources, the Society of Vertebrate Paleontology recommends implementing a program to mitigate adverse impacts to the potential or known fossil resources.[31]

As discussed in Section 3.9, *Geology and Soils*, the Project site is located within the Santa Clara Valley. Geologic mapping indicates that the refuse and fill materials on the Project site overlie Holocene alluvium

[29] History San José, 2015. *Neighborhoods of San José: Alviso.* Available at: <http://www.historysanjose.org/neighborhoods/alviso/index.html>. Accessed on January 13, 2015.

[30] Society of Vertebrate Paleontology, 2010. *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources*. Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee.

[31] Society of Vertebrate Paleontology, 2010. *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources*. Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee.

consisting of Bay mud, basin, and levee deposits.[32] The average thickness of the Holocene deposits beneath the Project site is approximately 45 feet.[33] In 2005, the remains of a young Columbian mammoth were found about 2.5 miles southeast of the Project site along the Guadalupe River in a stratum mapped as Holocene levee deposits. However, this discovery is considered a rare occurrence because the age of the Holocene deposits in the Santa Clara Valley range from about 10,000 years to the present, which is generally considered too geologically young to yield significant paleontological resources. Therefore, Holocene deposits in the Project vicinity are considered to have a low potential for containing significant paleontological resources.[34]

The Holocene alluvium in the Project vicinity overlies older Pleistocene alluvial fans ranging from approximately one million to 10,000 years ago. Based on changes in the density, color, and texture of alluvial deposits, the top elevation of the Pleistocene deposits ranges from approximately -30 to -40 feet (North American Vertical Datum [NAVD] 88).[35] The Pleistocene deposits overlie the older Santa Clara formation. The combined depth of alluvial deposits in the Project vicinity is in excess of approximately 1,500 feet.[36] Vertebrate fossils, which are significant paleontological resources, have been discovered in both the Pleistocene and Santa Clara formation deposits. Therefore, Pleistocene and Santa Clara formation deposits in the Project vicinity have a high potential for containing significant paleontological resources.[37]

Environmental Impacts

This section describes the impact analysis relating to cultural resources for the Project. It describes the methods used to determine the impacts of the Project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the Project would be considered to have a significant effect if it would result in any of the conditions listed below.

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

---

[32] Wentworth, C.M, M.C. Blake, Jr., R.J. McLaughlin, and R.W. Graymer, 1999. *Preliminary Geologic Description of the San Jose 30 x 60 Minute Quadrangle. California*. A Digital Database: U.S. Geological Survey Open File Report 98-795.

[33] Helley, E.J., 1990. *Preliminary Contour Map Showing Elevation of Surface of Pleistocene Alluvium under Santa Clara Valley, California*. U.S. Geological Survey Open File Report 90-633.

[34] City of Santa Clara, 2011. *Integrated Final Environmental Impact Report: City of Santa Clara Draft 2010-2035 General Plan*. January.

[35] Helley, E.J., 1990. *Preliminary Contour Map Showing Elevation of Surface of Pleistocene Alluvium under Santa Clara Valley, California*. U.S. Geological Survey Open File Report 90-633.

[36] San Francisco Bay Regional Water Quality Control Board, 2003. *A Comprehensive Groundwater Protection Evaluation for the South San Francisco Bay Basins*. Appendix B: South Bay Geology. May.

[37] City of Santa Clara, 2011. *Integrated Final Environmental Impact Report: City of Santa Clara Draft 2010-2035 General Plan*. January.

Methods for Analysis

Records Search and Literature Reviewed

Bibliographic references, previous survey reports, historic maps, and archaeological site records pertinent to the study area were compiled through a records search of the California Historical Resources Information System (CHRIS) in order to identify prior archaeological studies and known cultural resources within a 0.5-mile area surrounding, or adjacent to, the Project site.

This records search was conducted at the Northwest Information Center (NWIC), Sonoma State University, Rohnert Park, on November 5, 2014. The Project site and a 0.5-mile search of the surrounding area composed the records search study area, which included a review of the following information:

- Site records for previously recorded sites.
- All previous studies conducted within, or within 0.5 mile of, the Project site.
- The NRHP.
- The California Historic Resources Inventory (HRI).
- OHP Historic Properties Directory (HPD).

The following documents were also reviewed:

- *City of Santa Clara 2010-2035 General Plan Environmental Impact Report* (City of Santa Clara 2011).
- *Environmental Impact Report, 49ers Santa Clara Stadium Project* (City of Santa Clara 2009).
- *Environmental Impact Report, Great America Office Campus Expansion* (City of Santa Clara 2013).

Records Search Results

One prehistoric resource was identified as being mapped within the Project site.

- P-43-000025/CA-SCL-5 was originally recorded in 1912. As discussed in the Prehistoric Setting, the original site record notes only that it was identified as "Nelson Shellmound 339" and described as an "occupation site."[38] The site was re-examined in 1980, and shell, fire-cracked rock, and baked clay was observed on the west bank of the Guadalupe River (extending into the northeastern portion of the Project site). The plotted location of the site was expanded and re-mapped approximately 220 meters to the north following this fieldwork. In 2012, this resource was contained within the area of a Pacific Gas & Electric Company (PG&E) utilities project, and as result, an intensive-level pedestrian survey and an extended Phase I (XPI) investigation were completed. No cultural material was identified either during the pedestrian survey or during the XPI investigations, which consisted of two mechanically excavated backhoe trenches and one hand-excavated shovel scrape.[39] Given the lack of both surface and subsurface archaeological materials, it is possible that CA-SCL-5 was destroyed when the lower Guadalupe River was straightened and channelized in 1963 or that "Nelson Shellmound 339" was originally plotted inaccurately and the surface materials identified during the 1980 investigations were

[38] Loud, L. 1912a. Archaeological Site Survey Record for P-43-000025/CA-SCL-5. Record on File at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

[39] Meyer, J. and J. Thomas. 2012. Continuation Sheet (Site Record Update) for P-43-000025/CA-SCL-5, Nelson Shellmound 339. Record on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

not actually associated with this former shellmound.[40] However, it is also possible that despite these investigations, portions of CA-SCL-5 remain intact and extend into the Project area beyond its current recorded boundaries. This resource has not been evaluated for NRHP/CRHR eligibility.

Six additional resources were identified within 0.5 mile of the Project site. The majority of the prehistoric resources have been recorded along the Guadalupe River, approximately 200 feet to the east.

- P-43-000026/CA-SCL-6 was originally recorded in 1912. This resource is recorded primarily south of Tasman Drive along the Guadalupe River. The original site record notes only that it was "Nelson Shellmound 340" and described as an "occupation site."[41] Field excavations were undertaken at the site in 1980. During these excavations, shell, fire-cracked rock, and baked clay were observed on the west bank of the Guadalupe River. The plotted location of the site was also updated based on the results of this study.[42] A subsequent excavation in 1988 yielded over 40 human burials. This resource has not been evaluated for NRHP/CRHR eligibility.
- P-43-000277/CA-SCL-268: This resource consists of a midden deposit with shell, fire-cracked rock, chert flake tools, and daub (a composite building material usually comprised of clay or lime, crushed stone, and straw or hay) on the east side of the Guadalupe River (east of the Project site). This resource is in proximity (about 0.125 mile to the south) to P-43-000025/CA-SCL-5 and it has been suggested (see above) that the surface material identified during the 1980 field investigations at P-43-000025/CA-SCL-5 were actually associated with this site. This resource has not been evaluated for NRHP/CRHR eligibility.
- P-43-000448/CA-SCL-447: This resource consists of a scatter of shell and animal bone fragments along the east bank of the Guadalupe River, southeast of the Project site. This resource has not been evaluated for NRHP/CRHR eligibility.
- P-43-000486/CA-SCL-485: This resource consists of a scatter of fire-cracked rock and a bowl mortar recorded north of SR 237, northeast of the Project site. This resource has not been evaluated for NRHP/CRHR eligibility.
- P-43-1278: This resource consists of a segment of the UPRR within the community of Alviso. The resource lies between approximately 0.3 mile and 0.5 mile north of the Project site. This UPRR segment has not been evaluated for NRHP/CRHR eligibility.
- P-43-002823: This resource consists of the Alviso Salt Work Historic Landscape, which is comprised of large evaporation ponds defined by levees, pilings, remnant piers, small interior berms, and interior water control structures.[43] This resource encompasses a large area north of the Project site and lies between approximately 0.5 mile and more than 1 mile outside the Project site. This resource has an NRHP Status Code of 3D (appears eligible for NRHP as a contributor to a NRHP eligible district through survey evaluation).

---

[40] Meyer, J. and J. Thomas. 2012. Continuation Sheet (Site Record Update) for P-43-000025/CA-SCL-5, Nelson Shellmound 339. Record on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

[41] Loud, L 1912b. Archaeological Site Survey Record for P-43-000026/CA-SCL-6. Record on File at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

[42] Morris-Johnson. 1980. Cabrillo College Archaeological Site Survey Record for P-43-000026/CA-SCL-6. Record on File at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

[43] Speulda-Drews, L. and N. Valentine. 2007. District Record for P-01-011436 – P-43-002823, the Alviso Salt Works Historic Landscape. Record on File at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

A total of 14 studies have covered portions of the Project site:

- S-4892, Buss, M. 1981. *Archaeological Survey Report for Proposed High Occupancy Vehicle Lanes, 04-SCL-237*. No resources were identified during this study.
- S-4961, Archaeological Resource Management. 1981. *Cultural Resource Evaluation of the Guadalupe River Flood Control Project Between Trimble Road and the Southern Pacific Railroad Crossing*. P-43-000025/CA-SCL-5 and P-43-000026/CA-SCL-6 were updated following this study, and P-43-000277/CA-SCL-268 was recorded during this study.
- S-7995, Gross, R. 1986. *Archaeological Survey Report for the Proposed Upgrading of Route 237 to Freeway Standards with Bike Route Alternatives, Santa Clara County, 4-SCL-237 3.2/9.5*. P-43-000025/CA-SCL-5 and P-43-000026/CA-SCL-6 were included in the study area, but the site records were not updated.
- S-9767, Buss, M. 1987. *Archaeological Survey Report, Interchange at Route 237 and Great American Parkway, 04-SCL-237 P.M. 3.2/9.4*. No resources were identified during this study.
- S-12032, Banet, A. and S. Rossa. 1990. *A Cultural Resources Assessment for the Preliminary Environmental Analysis for the Proposed Santa Clara Ball Park, Route 237 and Lafayette Street, Cities of San Jose and Santa Clara, Santa Clara County, California*. P-43-000025/CA-SCL-5 was included in the study area, but the site record was not updated.
- S-18541, Basin Research Associates, Inc. 1996. *Supplemental Report: Historic Properties Affected or Potentially Affected by the South Bay Water Recycling Program*. No resources in the Project site were identified during this study.
- S-19072, Basin Research Associates, Inc. 1996. *Historic Properties Treatment Plan, South Bay Water Recycling Program*. No resources in the Project site were identified during this study.
- S-190424, Holson, J. 1997. *Cultural Resources Survey for the Los Esteros Project, Santa Clara County*. No resources were identified during this study.
- S-21182, Busby, C. 1998. *Cultural Resources Assessment- Subareas A-H, Bayshore North Redevelopment Area, City of Santa Clara* (letter report). No resources were identified during this study.
- S-21546, Busby, C. 1998. *Cultural Resources Assessment- Subareas A-H, Bayshore North Redevelopment Area, City of Santa Clara* (letter report). No resources were identified during this study.
- S-23400, Basin Research Associates, Inc. 2000. *Addendum No. 1: Cultural Resources Assessment, PG&E Proposed Northeast San Jose Transmission Reinforcement Project*. No resources were identified during this study.
- S-25173, Pacific Legacy, Inc. and William Self Associates, Inc. 2002. *Cultural Resources Report for San Jose Local Loops, Level 3 Fiber Optics Project in Santa Clara and Alameda Counties, California*. No resources in the Project site were identified during this study.
- S-38765, Thomas, J. 2012. *Cultural Resources Study for the Line 109 107.6EW Station 81+65 ECDA Project, Santa Clara County, California*. P-43-000025/CA-SCL-5 was included in the study area and the site record was updated following field investigations.

- S-42844, Foutch, A. 2012. *PG&E External Corrosion Direct Assessment (ECDA) on Line EW08 101 Station 0+07, Santa Clara, California* (letter report). P-43-000025/CA-SCL-5 was included in the study area, but the site record was not updated (see S-38765).

Sixty studies have been conducted within 0.5 mile of the Project site. These studies include general overview studies, studies for infrastructure development, site-specific studies, and topic-specific studies. None of these studies identified any additional resources within 0.5 mile of the Project site that have not already been discussed in this chapter.

Native American Heritage Commission Correspondence

The City contacted the NAHC in July and August 2014 to request searches of the Sacred Lands file (SLF) and provide a list of interested Native American representatives for the Project. The NAHC stated that a search of the SLF did not contain any records of Native American sacred sites in or adjacent to the Project site.

The NAHC provided lists of five Native American contacts who might have information that would be pertinent to this Project or have concerns regarding the proposed actions. The following is a list of the Native American contacts with whom the City corresponded regarding the Project.

- Valentin Lopez, Chairperson, Amah Mutsun Tribal Band
- Irene Zwierlein, Chairperson, Amah Mutsun Tribal Band
- Ann Marie Sayers, Chairperson, Indian Canyon Mutsun Band of Costanoan
- Rosemary Cambra, Chairperson, Muwekma Ohlone Indian Tribe of the SF Bay Area
- Andrew Galvan, The Ohlone Indian Tribe

The City notified all of the above contacts in July and August 2014 by letter. The letters provide a detailed Project description and multiple maps depicting the proposed development. To date, no responses to these letters have been received.

Native American consultation for this Project is ongoing and will be updated as responses are received. Appendix 3.7 contains the Native American correspondence sent and received between the City and Native American contacts for this Project to date.

Paleontological Resources

The primary sources of information used to evaluate potential impacts to paleontological resources on the Project site were from the City's Final Environmental Impact Report for the general plan,[44] preliminary geologic mapping prepared by Wentworth and others,[45] a Preliminary Geotechnical Investigation prepared by Langan Treadwell Rollo,[46] and the Society of Vertebrate Paleontology's *Standard Procedures*

[44] City of Santa Clara, 2011. *Integrated Final Environmental Impact Report: City of Santa Clara Draft 2010-2035 General Plan*. January.

[45] Wentworth, C.M, M.C. Blake, Jr., R.J. McLaughlin, and R.W. Graymer, 1999. *Preliminary Geologic Description of the San Jose 30 x 60 Minute Quadrangle. California*. A Digital Database: U.S. Geological Survey Open File Report 98-795.

[46] Langan Treadwell Rollo, 2014. *Preliminary Geotechnical Investigation City Place Santa Clara, Santa Clara, California*. 22 August.

for the Assessment and Mitigation of Adverse Impacts to Paleontological Resource.[47] For purposes of this analysis, "unique paleontological resources" are construed in accordance with the Society of Vertebrate Paleontology's definition of "significant paleontological resources" (see discussion above). An important distinction in the determination of the significance of an impact to unique paleontological resources is whether or not the potential resource is too deep to assess or recover (if present) prior to or during proposed disturbance actions (e.g., a deep well bore passing through a rock unit with high paleontological potential).[48] If the potential resource cannot be feasibly identified prior to or during ground disturbance actions, then disturbance of the potential resource would not be considered a significant impact because it would not represent a true loss of available scientific information based on the existing conditions.

Scheme Analysis

The cultural resources analysis is not concerned with the range of densities under the Project schemes (Schemes A and B). This analysis is focused on ground disturbance in general and the geographic area affected by the Project. The analysis does not change between schemes.

Impacts Not Evaluated in Detail

Impacts on Historic Structures. The Project would not result in an adverse change to the significance of a historical structure because no historical structures would be affected by the Project. The Project would require the demolition of existing buildings on the site, which include the Golf Club House (1987), Golf Course Maintenance Facility (1986), Banquet Facility and Meeting Room (1999), Restroom Building (1991), and potential demolition of Fire Station 10 (1986). In addition, three existing office buildings in the Tasman East industrial/office development at 2101, 2111, and 2121 Tasman Drive would be demolished for the construction of the proposed roadway extension for site access. These buildings were constructed in 1984. None of the structures to be demolished as part of the Project are more than 50 years old and do not meet local, State, or federal criteria for significance; therefore, would not be considered eligible for the CRHR.

The segment of the UPRR/Alviso alignment, which runs along Lafayette Street between SR 237 and Tasman Drive, appears to have been in use since 1877. However, the alignment has modern rails and ballast, suggesting the route has been subject to continuous maintenance activities. For this reason, the railroad segment would not be considered eligible to the CRHR. As such, there would be ***no impact*** to historic structures. This impact is not evaluated further.

Impacts and Mitigation Measures

Impact CR-1. Archaeological Resources. Project grading and excavation could result in disturbance to identified or previously undiscovered archaeological resources and cause substantial adverse change in the significance of a unique archaeological resource. (LTS/M)

As mentioned above, the majority of the Project site is located on an existing landfill; therefore, the majority of grading and other ground-disturbing activities would be limited and would not disturb native soil. In those areas within the Project site where excavation would occur below the refuse layer

[47] Society of Vertebrate Paleontology, 2010. *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources*. Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee.

[48] Bureau of Land Management, 2008. *Guidelines for Assessment and Mitigation of Potential Impacts to Paleontological Resources*. 10 October.

and into the native soils, it is also possible that previously unrecorded archaeological resources could be discovered.

Areas within Parcels 4, all of Parcel 5, and the Retention Basin are not underlain by landfill. In these areas, the Project may include below-grade features for structured parking, areas for service access to buildings, and other below-grade features. The depth of the proposed trenching in these areas not underlain by landfill would not extend below 20 feet on Parcel 4 and below 15 feet on Parcel 5.[49] Further, construction of the Project would include off-site ground disturbance in the following locations: Tasman East industrial/office development for the Lick Mill Boulevard extension; Santa Clara Convention Center (Convention Center) parking lot for Fire Station 10; the potential roadway construction off of Great America Parkway through the Convention Center site and/or the southern portion of the Santa Clara Gateway office complex parking lot (owned and operated by the Irvine Company) to Parcel 4; San Tomas Aquino Creek for the bridge overcrossing; the Retention Basin for the roadway connection from Lafayette Street to Parcel 1; Tasman Drive and the Santa Clara Youth Soccer Park for the Tasman Drive slip-ramp; and various locations for proposed utilities and infrastructure improvements.

The background records search identified one prehistoric archaeological resource, P-43-000025/CA-SCL-5, within the Project area. Although the majority of the Project site is located on landfill, CA-SCL-5 is recorded along the Guadalupe River, not in an area underlain by landfill. Existing sanitary sewer and recycled water infrastructure that would serve the Project is located near this resource. It is not anticipated that this infrastructure would need to be upgraded to serve the Project, and Project activities are not likely to disturb this resource. However, the full extent of CA-SCL-5 is unknown, and it is possible that the previously undiscovered portions of the site extend into the Project site beyond the current recorded boundaries. In addition, as discussed in the records search results, there are three additional previously recorded prehistoric archaeological resources within 0.5 mile of the Project site. One of these sites, P-43-000026/CA-SCL-6, is located on the west side of the Guadalupe River, south of the Project site; and the other two prehistoric archaeological resources, P-43-000277/CA-SCL-268 and P-43-000448/CA-SCL-447, are located on the east side of the Guadalupe River, east of the Project site. The presence of these prehistoric archaeological sites suggests that there could be additional, previously undiscovered prehistoric archaeological resources along this portion of the Guadalupe River that could be affected by ground-disturbing activities. Therefore, this impact is considered ***significant***.

MITIGATION MEASURES. Implementation of Mitigation Measures CR-1.1 through CR-1.3, below, would reduce impacts on archaeological resources to a ***less-than-significant*** level.

CR-1.1: *Conduct Extended Phase I (XPI) Archaeological Investigations within the Project Site near Recorded Resources and within an Area of Archaeological Sensitivity.* Prior to construction, if it is determined that Project-related ground-disturbing activities may extend into native soil within 100 feet of a previously recorded archaeological site, the Project Developer shall retain the services of a qualified archaeologist to conduct XPI investigations within the Project site. The XPI investigations shall consist of subsurface trench excavations to determine the presence or absence of buried features associated with the known archaeological site. If feasible, at least two trenches shall be placed in recorded location P-43-000025/CA-SCL-5, which is recorded as partially in the Project site, to ensure adequate investigations in this area.

[49] The Related Companies, April 2015.

If the XPI investigations reveal resources, additional trenches or testing may be necessary. Mitigation Measure CR-1.3, described below, shall be followed.

CR-1.2: *Provide Archaeological Monitoring of the Project Site When in Native Soil.* Prior to construction, if it is determined that Project-related ground-disturbing activities may extend into native soil, within 100 feet of a previously recorded archaeological site, the Project Developer shall retain the services of a qualified archaeologist to monitor earthmoving activities within the Project site. Monitoring shall consist of coordinating subsurface work to allow for the careful examination of vertical and horizontal soil relationships for the purpose of seeking positive archaeological finds (prehistoric and/or historic). The monitor shall maintain a field log of their presence and observations, carefully noting soil conditions. The archaeological monitor shall be pre-approved by the Director of Planning and Inspection. After written approval, the Planning Division shall be notified at least 48 hours prior to any grading or other subsurface work on the site, and the Project Developer shall provide a written protocol for the City's review and approval that stipulates the manner in which the Project Developer shall comply with the monitoring requirements. In the event that cultural resources are encountered, Mitigation Measure CR-1.3, described below, shall be followed.

CR-1.3: *Stop work if cultural resources are encountered during ground disturbing activities.* In the event that cultural resources are encountered during ground disturbing activities, all work within proximity of the find shall temporarily halt so that the archaeological monitor can examine the find and document its provenience and nature (drawings, photographs, written description). The archaeological monitor shall then direct the work to either proceed if the find is deemed to be insignificant, or instruct the work to continue elsewhere or cease until adequate mitigation measures are adopted. If the find is determined to be potentially significant, the archaeologist, in consultation with the Planning Division, shall develop a Treatment Plan that could include site avoidance, capping, or data recovery. If data recovery is determined to be appropriate, excavation shall target recovery of an appropriate amount of information from archaeological deposits to determine the potential of the resource to address specific research questions. If it occurs, data recovery shall emphasize the understanding of the archaeological deposit's structure, including features and stratification, horizontal and vertical extent, and content, including the nature and quantity of artifacts.

Impact CR-2. Paleontological Resources. Should the Project result in deeper excavations than currently proposed in areas not underlain by refuse, the Project could result in significant impact to paleontological resources. (LTS/M)

Project pilings and some areas of excavation would disturb native geologic deposits beneath the Project site. The Project site is underlain by an approximately 45-foot-thick layer of Holocene deposits, which have a low potential to contain significant paleontological resources and would not require further assessment or mitigation for significant impacts. Beneath the Holocene deposits are Pleistocene deposits, which have a high potential to contain significant paleontological resources. The average elevation of the top of the Pleistocene deposits ranges from about -30 to -40 feet (NAVD 88) beneath the Project site.

The majority of the native geologic materials underlying the Project site is covered with refuse and fill materials from the Landfill. The Project may use drilled displacement column (DDC) and/or auger cast in place (ACIP) pile methods to create the structural foundations. The DDC and ACIP piles would extend through the refuse and fill materials and up to 10 and 100 feet, respectively, into the native geologic materials. Piles could also be driven in the areas not underlain by refuse. The deeper pilings have the

potential to disturb significant paleontological resources located within the Pleistocene deposits. However, the potentially significant paleontological resources are buried too deep (more than about 45 feet) below ground surface to assess or recover (if present) for scientific studies prior to or during proposed piling activities. Based on the existing conditions, deep pilings constructed to support Project foundations would have a ***less-than-significant*** impact on unique paleontological resources.

Approximately 13.3 acres within Parcel 4 and all 8 acres of Parcel 5 are not underlain by landfill refuse. The Retention Basin area similarly is not underlain by landfill refuse and could be disturbed to accommodate the proposed Lick Mill Boulevard extension. In these areas, the Project could include excavation of native geological materials to construct below-grade features for structured parking, roadway construction, areas for service access to buildings, and other below-grade functions. Off-site Project improvements for the Lick Mill Boulevard extension (in the Tasman East industrial/office development), the potential roadway construction off of Great America Parkway through the Convention Center site and/or the southern portion of the Santa Clara Gateway office complex parking lot, the potential reconstruction of Fire Station 10 at the Convention Center, and construction of the Tasman Drive slip-ramp near the northern boundary of the Santa Clara Youth Soccer Park could also disturb native geologic materials. Any excavations below an elevation of -30 feet (NAVD 88) below the existing ground surface in non-refuse areas on the Project site and off-site Project improvement areas could disturb Pleistocene deposits. The Project Developer has indicated that excavations in non-refuse areas of Parcel 4 and on Parcel 5 would not extend further than 20 feet below the existing ground level, which would avoid the Pleistocene deposits and would have a ***less-than-significant*** impact on paleontological resources.

Should final design of the Project dictate that excavation extend beyond 30 feet below existing ground surface in non-refuse areas on or off the Project site, then impacts on paleontological resources would be ***significant*** and the mitigation measures outlined below would be required.

MITIGATION MEASURES. Implementation of Mitigation Measures CR-2.1 through CR-2.3, which are consistent with the Society of Vertebrate Paleontology's standard guidelines,[50] would reduce significant impacts on unique paleontological resources during excavation to a ***less-than-significant*** level if deep excavation (greater than 35 feet below the existing ground surface) were to be proposed in areas not underlain by refuse.

CR-2.1: *Paleontological Resource Mitigation Plan.* Prior to any deep excavations below an elevation of -30 feet (North American Vertical Datum [NAVD] 88) at the Project site on areas not underlain by landfill refuse, the Planning Division shall be notified at least 48 hours prior to the excavation, and a qualified professional paleontologist shall prepare a Paleontological Resource Mitigation Plan (PRMP) in consultation with the Planning Division. The PRMP shall describe the tasks necessary to monitor, assess, and recover (if present) significant paleontological resources during Project excavation activities. The PRMP shall be implemented by the qualified paleontologist during the deep Project excavations below an elevation of -30 feet (NAVD 88).

CR-2.2: *Paleontological Resource Monitoring.* In accordance with the PRMP, a qualified paleontologist shall monitor for fossils in Pleistocene deposits during Project excavations below an elevation of -30 feet (NAVD 88) on areas not underlain by landfill refuse or below other elevations confirmed in the field by the qualified paleontologist. The qualified paleontologist shall be

[50] Society of Vertebrate Paleontology, 2010. *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources*. Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee.

present initially for 100 percent of the excavation activities within the Pleistocene deposits. After 50 percent of the excavation is completed within the rock unit and if no fossils of any kind have been discovered, then the level of monitoring can be reduced or suspended entirely at the Project paleontologist's discretion. If the paleontologist discovers potential paleontological resources, all ground disturbance within 50 feet of the find shall stop immediately until the qualified professional paleontologist can assess the nature and importance of the find and recommend appropriate salvage, treatment, and future monitoring and mitigation actions.

CR-2.3: *Paleontological Resource Reporting.* If significant paleontological resources are identified, the Project qualified paleontologist shall prepare a report summarizing the field and laboratory methods, site geology and stratigraphy, faunal/floral list(s), and a brief statement of the significance and relationship of the fossils discovered to similar fossils found elsewhere. The final report should emphasize the discovery of any new or rare taxa, or paleoecological or taphonomic significance. A complete set of field notes, geologic maps, stratigraphic sections, and a list of identified specimens must be included in or accompany the final report. This report should be finalized only after all aspects of the PRMP are completed, including preparation, identification, cataloging, and curatorial inventory. Full copies of the final report shall be deposited with both the Lead Agency and the repository institution with the request that all locality data remain confidential and not made available to the general public.

Impact CR-3. Human Remains. Project grading and excavation could result in disturbance to previously undiscovered human remains. (LTS/M)

No human remains were identified in the Project site during the background records search. As noted earlier, the majority of the Project site is located on landfill, and no previously recorded archaeological resources were identified in that area. Non-archaeological human remains are not anticipated to be present in landfill material. As discussed above, the Project site includes areas that are not underlain by landfill. This includes approximately 13.3 acres within Parcel 4, all of Parcel 5, and the Retention Basin area. In these areas, the Project could include below-grade features for structured parking, areas for service access to buildings, and other below-grade functions. Further, construction of the Project would include off-site ground disturbance in the following locations: the Tasman East industrial/office development for the Lick Mill Boulevard extension, Convention Center parking lot for the potential relocation of Fire Station 10, the potential roadway construction off of Great America Parkway through the Convention Center site and/or the southern portion of the Santa Clara Gateway office complex parking lot, Tasman Drive and the Santa Clara Youth Soccer park for the Tasman Drive slip-ramp, and San Tomas Aquino Creek for the bridge overcrossing. Human burials have been identified in one of the resources within 0.5 mile of the Project site. It is therefore possible that additional undiscovered human remains could be encountered during ground-disturbing activities associated with the Project in areas that are not covered by landfill. This impact is considered ***significant***.

MITIGATION MEASURE. Implementation of Mitigation Measure CR-3.1 would reduce impacts on human remains to a ***less-than-significant*** level.

CR-3.1: *Stop work if human remains are encountered during ground-disturbing activities.* When human remains are discovered (in either an archaeological or construction context), all work within proximity of the remains shall stop so that the archaeological monitor can examine the remains. The County Coroner shall be notified, who shall make a determination as to whether the remains are of Native American origin. If the remains are determined to be Native American, the Coroner shall notify the Native American Heritage Commission (NAHC) immediately. The

NAHC shall notify those persons it believes are most likely descended from the deceased Native American. Once the NAHC identifies the most likely descendants, the descendants will make recommendations regarding proper burial, which will be implemented in accordance with Section 15064.5(e) of the State CEQA Guidelines.

Cumulative Impacts

The geographic context for the analysis of cumulative impacts associated with cultural resources considers the broad regional system in which these resources exist. The cumulative context for this cultural resources analysis is the Bay Area, an area where common patterns of prehistoric and historic development have occurred. Past, present, and future development within this geographic context assumes full build-out of the general plans of the nine ABAG counties and associated cities, including the projects identified in Section 3.0, *Environmental Impact Analysis*.

Cumulative impacts are addressed only for those thresholds that would result in a Project-related impact, whether it be less than significant, significant, or significant and unavoidable. If the Project would result in no impact with respect to a particular threshold, it would not contribute to a cumulative impact. Therefore, no analysis would be required.

The Project would not affect historic structures. Thus, this topic is not analyzed for cumulative impacts. This cumulative analysis examines the effects of the Project in the relevant geographic area, in combination with other current projects, probable future projects, and projected future growth.

Impact C-CR-1: Cumulative Impacts on Archaeological, Paleontological Resources, and Human Remains. Construction activities on the Project site and other development could result in impacts on unknown archaeological resources, paleontological resources, and human remains. This cumulative impact is less than significant with mitigation. (LTS/M)

Urban development that has occurred over the past several decades in the Bay Area has resulted in the demolition or alteration of archeological and paleontological resources. It is reasonable to assume that present and future development will continue to result in impacts on these resources by disturbing native soils in potentially archeologically sensitive areas. Because all archeological and paleontological resources are unique and non-renewable members of finite classes, all adverse effects or negative impacts erode a dwindling resource base. Federal, State, and local laws protect archeological and paleontological resources in most instances. Even so, it is not always feasible to protect archeological and paleontological resources, particularly when preservation in place could prevent implementation of certain projects. For this reason, the cumulative effects of development in the region on archeological and paleontological resources are considered significant.

Because the Project site is situated in an archeologically sensitive area, the possibility exists of encountering unknown archaeological resources during ground-disturbing activities associated with Project construction. The Project could contribute to a cumulative loss of archaeological resources, paleontological resources, and human remains. Therefore, the Project's cumulative impact prior to the application of mitigation measures could be considerable. However, Mitigation Measures CR-1.1 and CR-1.2 require archeological investigations to determine the presence or absence of buried features as well as monitoring during earthmoving activities of the locations on the Project site. Further, Mitigation Measures CR-1.3, CR-2.1, CR-2.2, CR-2.3, and CR-3.1 prescribe discovery procedures for archeological resources, paleontological resources, or human remains that may be encountered during Project

construction. Compliance with these mitigation measures would reduce the Project's contribution to a cumulative impact to ***less than cumulatively considerable with mitigation***.