



United States Forest Service    County of San Bernardino

## **BUTTERFIELD SENTINEL QUARRY EXPANSION PROJECT**



**DRAFT**

### **ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT**

**Prepared by:**

Sespe Consulting, Inc.  
1565 Hotel Circle South  
San Diego, California 92108  
Contact Person: Maya Rohr  
Phone: (619) 894-8669

**Prepared for:**

United States Forest Service  
County of San Bernardino, California

**March 2018**

**Omya Inc. Butterfield and Sentinel Quarries Expansion Project  
Draft  
Environmental Impact Report / Environmental Impact Statement  
San Bernardino County, California  
SCH#: 2013021057**

<b>Lead Agencies:</b>	<b>USDA Forest Service (NEPA) and County of San Bernardino (CEQA)</b>
<b>Responsible Official (NEPA):</b>	<b>Jody Noiron, San Bernardino National Forest Supervisor 602 S. Tippecanoe Avenue San Bernardino, CA 92408</b>
<b>Responsible Official (CEQA):</b>	<b>Reuben Arceo, Contract Planner, San Bernardino County Land Use Services Department 385 N. Arrowhead Avenue, First Floor San Bernardino, CA 92415</b>
<b>For Forest Service Process Information Contact:</b>	<b>Tasha Hernandez 602 S. Tippecanoe Avenue San Bernardino, CA 92408 <a href="mailto:thernandez@fs.fed.us">thernandez@fs.fed.us</a></b>
<b>For County Process Information Contact:</b>	<b>Reuben Arceo, Contract Planner, San Bernardino County Land Use Services Department 385 N. Arrowhead Avenue, First Floor San Bernardino, CA 92415</b>

**Abstract:**

Omya, Inc. has submitted to the U.S. Department of Agriculture, Forest Service (Forest Service) and the County of San Bernardino (County) an Amended Plan of Operations (POO) and Reclamation Plan for the proposed Butterfield and Sentinel Quarries Expansion Project (Project). The Project would be located approximately 7.5 miles south of the community of Lucerne Valley and 5 miles north of Big Bear Lake within the SBNF in San Bernardino County, California. The proposed quarry expansions would add an additional 40 years life to the Butterfield Quarry and an additional 20 years to the Sentinel Quarry. The average ore production rates would be approximately 680,000 tons per year compared to the 3-year average from 2004-2006 of approximately 378,000 tons per year. The proposed expansions would include 30.6 acres of disturbance at the Butterfield Quarry and 64.3 acres of disturbance at the Sentinel Quarry. Three action alternatives and the No Action/No Project Alternative were analyzed in the Draft EIR/EIS. With Alternative 1 – No Action/No Project, Omya, Inc. would not develop the known limestone ore resources in both quarries. The existing quarries would continue to operate under their current POO and Reclamation Plan. Alternative 2 – Proposed Project would allow the expansion of both quarries. With Alternative 3 – Partial Implementation, Omya, Inc. would expand only the Butterfield Quarry and the Sentinel Quarry would continue to be mined under its current POO and Reclamation Plan through the year 2035 and the B5 overburden pad would not be expanded from

its permitted area. Alternative 4 – Mixed Production with the White Knob Quarry would assume that instead of the Butterfield and Sentinel Quarries providing all the ore (680,000 tons per year) to the processing plant, a mixed production between the quarries would be evaluated to meet OMYA’s processing plant capacity and purity requirements.

To ensure coordination between the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) processes, and to avoid duplication of effort, a joint Environmental Impact Report/Environmental Impact Statement (EIR/EIS) has been prepared. The County will be the CEQA Lead Agency and the Forest Service will be the NEPA Lead Agency for the EIR/EIS.

Reviewers should provide the Forest Service and the County with their comments during the review period of the Draft EIR/EIS. This will enable the County and the Forest Service to analyze and respond to the comments at one time and to use information acquired in the preparation of the Final EIR/EIS, thus avoiding undue delay in the decision making process. Reviewers have an obligation to structure their participation in the NEPA process so that it is meaningful and alerts the agency to the reviewers’ position and contentions. *Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 553 (1978). Environmental objections that could have been raised at the draft stage may be waived if not raised until after completion of the final environmental impact statement. *City of Angoon v. Hodel* (9<sup>th</sup> Circuit, 1986) and *Wisconsin Heritages, Inc. v. Harris*, 490 F. Supp. 1334, 1338 (E.D. Wis. 1980). Comments on the Draft EIR/EIS should be specific and should address the adequacy of the statement and the merits of the alternatives discussed (40 CFR 1503.3).

**Send Comments to:**

**Maya Rohr**  
**Sespe Consulting, Inc.**  
**1565 Hotel Circle South, Suite 370**  
**San Diego, CA 92108**  
**(805) 667-8104 fax**  
[mrohr@sespeconsulting.com](mailto:mrohr@sespeconsulting.com)

**Date Comments Must Be Received:**

Comments are due 45 days after the Federal Register notice is published.

## TABLE OF CONTENTS

### ABSTRACT

<b>ES.0</b>	<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
ES.1	Project Summary.....	1
ES.2	Purpose and Need for the Project .....	3
ES.3	Purpose of the Environmental Impact Report / Environmental Impact Statement.....	11
ES.4	Project Objectives .....	11
ES.5	Summary of the CEQA and NEPA Process .....	12
ES.6	Issues Raised and Areas of Known Controversy .....	15
ES.7	Environmental Issues Scoped Out of the Detailed Study .....	16
ES.8	Summary of Alternatives .....	16
ES.9	Summary of Potential Impacts and Mitigation Measures .....	18
ES.10	Significant and Unavoidable Impacts (CEQA) .....	18
ES.11	Cumulative Impacts .....	19
ES.12	Preferred (NEPA) and Environmentally Superior (CEQA) Alternative .....	19
<b>1.0</b>	<b>PURPOSE OF AND NEED FOR ACTION.....</b>	<b>1-1</b>
1.1	Project-Specific Forest Plan Amendment .....	1-2
1.2	Document Structure .....	1-7
1.3	Background .....	1-10
1.4	Type of Environmental Document.....	1-11
1.5	Similarities and Differences between NEPA and CEQA .....	1-13
	1.5.1 Terminology .....	1-13
	1.5.2 Initial Study and Environmental Assessment .....	1-13
	1.5.3 Levels of Significance and Mitigation Measures.....	1-13
	1.5.4 Mitigation, Monitoring and Reporting Program.....	1-15
1.6	Purpose and Need for Action.....	1-15
	1.6.1 Purpose and Need for the Draft EIR/EIS .....	1-15
1.7	Project Objectives (CEQA).....	1-21
1.8	Proposed Action/Proposed Project (Project) .....	1-22
1.9	Decision Framework .....	1-25
1.10	Management Direction (NEPA).....	1-26
	1.10.1 Design Criteria.....	1-26
	1.10.2 Regulatory Agency Roles .....	1-31
1.11	Required Permits, Licenses, and Other Entitlements .....	1-33
1.12	Integration of Related Environmental Review Requirements .....	1-35
1.13	Public Involvement .....	1-35
	1.13.1 Initial Scope of the Analysis .....	1-35
	1.13.2 Opportunities for Public Involvement with the Draft EIR/EIS .....	1-37
	1.13.3 Final EIR/EIS .....	1-37
	1.13.4 Scoping Comments .....	1-38

1.14 Issues..... 1-41

    1.14.1 Environmental Issues Identified for Detailed Study ..... 1-41

    1.14.2 Environmental Issues Scoped Out of the Detailed Study ..... 1-43

1.15 Review of Existing Decisions and Documents..... 1-46

**2.0 ALTERNATIVES, INCLUDING THE PROPOSED ACTION/PROJECT ..... 2-1**

2.1 Introduction ..... 2-1

    2.1.1 NEPA Requirements..... 2-1

    2.1.2 CEQA Requirements..... 2-2

2.2 Alternatives Considered in Detail ..... 2-2

    2.2.1 Alternative 1: No Action – Continue Mining under Current Entitlements ..... 2-3

    2.2.2 Alternative 2: Proposed Project..... 2-3

    2.2.3 Alternative 3: Partial Implementation – Butterfield Quarry Expansion Only .... 2-3

    2.2.4 Alternative 4: Mixed Production with the White Knob Quarry to Meet Omya’s  
Processing Plant Capacity ..... 2-3

    2.2.5 Comparison of Alternatives ..... 2-11

2.3 Mining Characteristics Common to All Alternatives ..... 2-11

    2.3.1 Location ..... 2-12

    2.3.2 Environmental Setting and Land Use..... 2-12

    2.3.3 History..... 2-14

    2.3.4 Timing ..... 2-15

    2.3.5 Mining Operations ..... 2-15

    2.3.6 Pre-Mining Activities of Undisturbed Lands ..... 2-15

    2.3.7 Equipment Used ..... 2-15

    2.3.8 Slope Stability ..... 2-16

    2.3.9 Overburden and Waste Rock..... 2-17

    2.3.10 Ore Crushing System..... 2-17

    2.3.11 Production Water ..... 2-18

    2.3.12 Erosion and Sedimentation Control..... 2-19

    2.3.13 Stormwater Pollution Prevention Plan (SWPPP) ..... 2-20

    2.3.14 Blasting..... 2-20

    2.3.15 Sanitation..... 2-20

    2.3.16 Public Access and Safety ..... 2-20

    2.3.17 Avoidance, Minimization and Environmental Protection Measures..... 2-21

    2.3.18 Reclamation and Revegetation..... 2-27

2.4 Final Reclamation Common to All Alternatives ..... 2-31

    2.4.1 Revegetation..... 2-31

    2.4.2 Growth Media Salvage and Storage ..... 2-32

    2.4.3 Plant Salvage..... 2-32

    2.4.4 Seed Collection ..... 2-33

    2.4.5 Plant Propagation ..... 2-33

    2.4.6 Site Preparation ..... 2-33

2.4.7	Seeding.....	2-33
2.4.8	Irrigation .....	2-35
2.4.9	Weed Control.....	2-35
2.4.10	Herbivore Exclusion .....	2-35
2.4.11	Success Criteria .....	2-35
2.4.12	Cleanup .....	2-36
2.4.13	Post Reclamation and Future Mining .....	2-36
2.4.14	Reclamation Assurance.....	2-36
2.5	Comparison of Project Alternatives.....	2-37
2.5.1	Alternative 1: No Action – Continue Mining under Current Entitlements .....	2-37
2.5.2	Alternative 2: Proposed Project.....	2-40
2.5.3	Alternative 3: Partial Implementation - Butterfield Quarry Expansion Only...	2-62
2.5.4	Alternative 4: Mixed Production with the White Knob Quarry to Meet Omya’s Processing Plan Capacity.....	2-64
2.6	Design Criteria, Mitigation Measures, and Monitoring .....	2-65
2.7	Alternatives Considered but Eliminated from Detailed Study.....	2-90
2.7.1	Alternative Quarry Design .....	2-90
2.7.2	Alternative Overburden Design .....	2-91
2.7.3	Full Restoration Alternative .....	2-92
2.7.4	Alternative Location.....	2-92
2.8	Comparison of the Environmental Impacts between the Alternatives .....	2-93
2.9	Preferred (NEPA) and Environmentally Superior (CEQA) Alternative .....	2-94
3.1	Aesthetics.....	3.1-1
3.1.1	Affected Environment.....	3.1-1
3.1.2	Regulatory Framework .....	3.1-3
3.1.3	Environmental Consequences/Impacts and Mitigation Measures.....	3.1-8
3.1.4	Cumulative Effects .....	3.1-42
3.1.5	Alternatives.....	3.1-44
3.2	Agriculture & Forestry .....	3.2-1
3.2.1	Affected Environment.....	3.2-1
3.2.2	Regulatory Framework .....	3.2-2
3.2.3	Environmental Consequences/Impacts and Mitigation Measures.....	3.2-5
3.3	Air Quality and Greenhouse Gases .....	3.3-1
3.3.1	Affected Environment.....	3.3-1
3.3.2	Regulatory Framework .....	3.3-9
3.3.3	Environmental Consequences/Impacts and Mitigation Measures.....	3.3-25
3.3.4	Cumulative Effects .....	3.3-58
3.3.5	Alternatives.....	3.3-58
3.4	Biological Resources .....	3.4-1
3.4.1	Affected Environment.....	3.4-1
3.4.2	Regulatory Framework .....	3.4-15
3.4.3	Environmental Consequences/Impacts and Mitigation Measures.....	3.4-25

3.4.4	Cumulative Effects .....	3.4-101
3.4.5	Alternatives .....	3.4-103
3.5	Cultural Resources .....	3.5-1
3.5.1	Affected Environment.....	3.5-1
3.5.2	Regulatory Framework .....	3.5-2
3.5.3	Environmental Consequences/Impacts and Mitigation Measures.....	3.5-5
3.6	Geology and Soils .....	3.6-1
3.6.1	Affected Environment.....	3.6-1
3.6.2	Regulatory Framework .....	3.6-10
3.6.3	Environmental Consequences/Impacts and Mitigation Measures.....	3.6-12
3.6.4	Cumulative Effects .....	3.6-21
3.6.5	Alternatives.....	3.6-21
3.7	Hazards and Hazardous Materials .....	3.7-1
3.7.1	Affected Environment.....	3.7-1
3.7.2	Regulatory Framework .....	3.7-2
3.7.3	Environmental Consequences/Impacts and Mitigation Measures.....	3.7-5
3.8	Hydrology and Water Quality .....	3.8-1
3.8.1	Affected Environment.....	3.8-1
3.8.2	Regulatory Framework .....	3.8-12
3.8.3	Environmental Consequences/Impacts and Mitigation Measures.....	3.8-16
3.8.4	Cumulative Effects .....	3.8-35
3.8.5	Alternatives.....	3.8-35
3.9	Noise .....	3.9-1
3.9.1	Affected Environment.....	3.9-1
3.9.2	Regulatory Framework .....	3.9-1
3.9.3	Environmental Consequences/Impacts and Mitigation Measures.....	3.9-3
<b>4.0</b>	<b>OTHER NEPA AND CEQA CONSIDERATIONS.....</b>	<b>4-1</b>
4.1	Short-Term Uses and Long-Term Productivity.....	4-1
4.2	Significant Unavoidable Adverse Impacts.....	4-1
4.3	Irreversible and Irretrievable Commitments of Resources .....	4-1
4.4	Cumulative Effects .....	4-2
4.5	Identification of Environmentally Preferred Alternative (NEPA) and the Environmentally Superior Alternative (CEQA) .....	4-2
4.6	Growth-Inducing Effects .....	4-3
4.7	Mitigation Monitoring and Reporting Program.....	4-4
4.8	CEQA Findings of Fact and Statements of Overriding Consideration .....	4-4
<b>5.0</b>	<b>CONSULTATION AND COORDINATION .....</b>	<b>5-1</b>
5.1	Prepares and Contributors.....	5-1
5.2	Distribution of the EIS/EIR .....	5-1
<b>6.0</b>	<b>REFERENCES .....</b>	<b>6-1</b>
<b>7.0</b>	<b>ACRONYMS .....</b>	<b>1</b>

**TABLE OF TABLES**

Table ES-1	Existing and Proposed Quarries’ Production and Operational Areas.....	3
Table ES-2	Summary of Alternatives .....	18
Table ES-3	Impacts and Mitigation Measures Summary.....	21
Table 1-1	Existing and Proposed Quarries’ Production and Operational Areas.....	1-23
Table 1-2	Typical Quarry Equipment .....	1-24
Table 1-3	Anticipated Agency Approvals, Permits or Compliance Reviews .....	1-33
Table 1-4	Commenters and Affiliations .....	1-36
Table 1-5	Identified Issues/Areas of Study .....	1-42
Table 2-1	Comparison of Alternatives Analysis for Butterfield – Sentinel Quarries.....	2-11
Table 2-2	Mining Claims.....	2-12
Table 2-3	Typical Quarry Equipment - Butterfield and Sentinel Quarries .....	2-16
Table 2-4	Key Design Features and Environmental Protection Measures Incorporated into All Alternatives	2-21
Table 2-5	Recommended Plant Species for Revegetation.....	2-34
Table 2-6	Alternatives 2 and 4: Planned Production and Operational Areas.....	2-40
Table 2-7	Alternatives 2 and 4: Butterfield and Sentinel Quarries Phased Development Schedule	2-42
Table 2-8	Alternatives 2 and 4: Planned Overburden Areas and Storage Capacities.....	2-46
Table 2-9	Alternatives 2 and 4: Reclamation Phasing.....	2-58
Table 2-10	Alternative 3 - Phased Development Schedule .....	2-63
Table 2-11	Summary Mitigation Measures, SBNF Design Features / Environmental Protection Measures and Proposed Project Design Features .....	2-67
Table 2-12	Summary of Potential Environmental Impacts.....	2-93
Table 3.1-1	Scenery Management System Scenic Integrity Objectives.....	3.1-4
Table 3.1-2	Summary of Scenery Project Design Features .....	3.1-13
Table 3.1-3	Viewpoint Locations.....	3.1-15
Table 3.1-4	Potential for Change in Scenic Integrity Level .....	3.1-18
Table 3.1-5	Existing and Foreseeable Actions and Effects on Cumulative Scenic Integrity - Related to All Alternatives	3.1-43
Table 3.3-1	Nearby Receptors .....	3.3-9
Table 3.3-2	Ambient Air Quality Standards .....	3.3-11
Table 3.3-3	MDAQMD Attainment Status .....	3.3-13
Table 3.3-4	MDAQMD Attainment Plans.....	3.3-14
Table 3.3-5	Baseline Activity Levels .....	3.3-27
Table 3.3-6	Baseline Stationary Source Throughputs.....	3.3-28
Table 3.3-7	Baseline Activity on Roads.....	3.3-29
Table 3.3-8	Baseline Vehicle Emissions .....	3.3-34
Table 3.3-9	Baseline Emissions on Roads .....	3.3-35
Table 3.3-10	Baseline Mining and Processing Emissions.....	3.3-35
Table 3.3-11	Baseline Mining and Processing Combustion Emissions .....	3.3-37
Table 3.3-12	Project Activity Scaling Factors .....	3.3-37

Table 3.3-13 Project Vehicle Emissions by Location .....3.3-38

Table 3.3-14 Project Emissions on Roads .....3.3-38

Table 3.3-15 Project Particulate Matter Emissions .....3.3-39

Table 3.3-16 Project Mining and Processing Combustion Emissions .....3.3-40

Table 3.3-17 Incremental Change in Emissions .....3.3-41

Table 3.3-18 Key Project Design Features Considered in the Air Quality Assessment.....3.3-48

Table 3.3-19 MDAQMD Significant Emissions Thresholds.....3.3-49

Table 3.3-20 Project Significance Comparisons.....3.3-50

Table 3.3-21 Comparison of Project Emissions with Major Modification Thresholds.....3.3-52

Table 3.3-22 Project Emissions in Concentration at Point of Maximum Impact .....3.3-55

Table 3.3-23 Mitigated Significance Comparisons.....3.3-56

Table 3.3-24 Mitigated Concentration at Point of Maximum Impact .....3.3-57

Table 3.3-25 Project Health Risk Impacts .....3.3-58

Table 3.3-26 Alternative 4 Emissions Comparison (77% from Butterfield and Sentinel Quarries) .3.3-59

Table 3.3-27 Alternative 4 Concentration at Point of Maximum Impact .....3.3-60

Table 3.3-28 Alternative 4 Health Risk Impacts.....3.3-60

Table 3.3-29 Mitigated Alternative 4 Concentrations at Point of Maximum Impact .....3.3-61

Table 3.4-1 Summary of Special Status Species Expected to Occur In and Near Analysis Area ...3.4-11

Table 3.4-2 Project Design Features .....3.4-33

Table 3.4-3 Mitigation Claim Acreages .....3.4-39

Table 3.4-4 Summary of Effects Determination for TESW Species in and Near the Analysis Area ..3.4-57

Table 3.4-5 Threatened or Endangered Plant Species Evaluated.....3.4-63

Table 3.4-6 Summary of Acres of Occupied Habitat (Occ) and Critical Habitat (CH) within Footprint of Direct Effects (i.e., habitat removal/burial) and Mitigation Parcels .....3.4-69

Table 3.4-7 Mitigation Claim Acreages .....3.4-70

Table 3.4-8 Threatened or Endangered Animal Species Evaluated.....3.4-71

Table 3.4-9 Comparison of Alternatives for Biological Resource .....3.4-104

Table 3.6-1 Summary of Geology and Soils Project Design Features .....3.6-17

Table 3.8-1 Climate data for Big Bear Lake, California (1960–2012) .....3.8-1

Table 3.8-2 Summary of Hydrology and Water Quality Project Design Features .....3.8-26

Table 3.9-1 San Bernardino County Noise Standards for Stationary Noise Sources .....3.9-2

Table 3.9-2 San Bernardino County Noise Standards – Noise Limit Category.....3.9-3

Table 5-1 List of Preparers and Individuals Involved in the Preparation of this Draft EIS/EIR. ....5-2

**TABLE OF FIGURES**

Figure ES-1	Project Location .....	7
Figure ES-2	Existing Quarries and Proposed Operations .....	9
Figure ES-3	CEQA and NEPA Process Flow Chart .....	14
Figure 1-1	Regional Location.....	1-3
Figure 1-2	Project Vicinity .....	1-5
Figure 1-3	CEQA and NEPA Process Flow Chart .....	1-12
Figure 1-4	Mineral Resource Zone (MRZ) Zoning .....	1-19
Figure 2-1	Existing Quarries and Proposed Operations (Project) .....	2-5
Figure 2-2	Proposed Amended Mine Plan (Project) .....	2-7
Figure 2-3	Alternative 3 - Partial Implementation .....	2-9
Figure 2-4	Project Reclamation Plan.....	2-29
Figure 2-5	Butterfield Quarry Cross Sections.....	2-49
Figure 2-6	Sentinel Quarry Cross Sections .....	2-51
Figure 2-7	B5 Pad and Central Area Cross Sections .....	2-53
Figure 3.1.1	Project Location within the Desert Rim Place and Big Bear Backcounty Place .....	3.1-5
Figure 3.1.2	Existing vs. Proposed Scenic Integrity Objectives (SIOs).....	3.1-19
Figure 3.1.3	Overall Viewshed – Location of Viewpoints .....	3.1-21
Figure 3.1.4	Viewpoint 1 – Project from the Pacific Crest Trail .....	3.1-25
Figure 3.1.5	Viewpoint 2 –Project from Castle Rocks .....	3.1-29
Figure 3.1.6	Viewpoint 3 – Project from the Top of Snow Summit Ski Resort .....	3.1-31
Figure 3.1.7	Viewpoint 4 – Project from Western Holcomb Valley: Existing and Future .....	3.1-35
Figure 3.1.8	Viewpoint 5 – Project from Forest Service Road 3N16 .....	3.1-37
Figure 3.1.9	Alternative 1 – No Project (from Viewpoint 1) .....	3.1-47
Figure 3.1.10	Alternative 3 – Partial Implementation (from Viewpoint 1).....	3.1-49
Figure 3.3.1	Location of Receptors Near Project Site .....	3.3-7
Figure 3.3.2	Emissions Sources .....	3.3-31
Figure 3.4-1	Project Location .....	3.4-3
Figure 3.4-2	Streams and Riparian Conservation Areas .....	3.4-9
Figure 3.4-3	JD Survey Area and Jurisdiction Drainages .....	3.4-31
Figure 3.4-4	Mitigation Claims .....	3.4-67
Figure 3.6-1	Geologic Index Map - Lateral Expansions of Existing Quarry .....	3.6-3
Figure 3.6-2	Geologic Map.....	3.6-7
Figure 3.8-1	Location Map - Transverse Ranges Province .....	3.8-3
Figure-3.8-2	Project Area Vicinity Map .....	3.8-5
Figure-3.8-3	Watershed Map Based on Currently Approved Area .....	3.8-9
Figure 3.8-4	Proposed Watershed Map Based on Project's Mining Reclamation Plan .....	3.8-19
Figure 3.8-5	Project Mine Plan with Erosion and Sediment Control Measures .....	3.8-21
Figure 3.8-6	Reclamation Plan with Sediment and Erosion Control Measures .....	3.8-23

**APPENDICES**

- A Public Scoping Process
- B Initial Study (February 2013)
- C Plan of Operation/Reclamation (Omya, updated November 2017)
- D Reserved
- E Air Quality and Greenhouse Gas Impact Analysis (Sespe, updated October 2017)
- F Biological Resources
  - Biological Report (SBNF, updated 2017)
  - Jurisdictional Delineation (Tetra Tech, 2016)
  - Bat Habitat Assessment (Tetra Tech, 2014)
  - Raptor Conservation Strategy (SBNF, updated December 2016)
  - North Slope Raptor Survey (BBI, August 2015) – RESERVED
  - CHMS/OMYA Agreement (April 2003)
- G Cultural Report
- H Geology and Soil Technical Report
  - Slope Stability Investigation (CHJ, updated 2017)
  - Geology and Soil Report (SLR, 2013)
- I Hydrology and Water Quality Technical Report
  - Water Supply Assessment (Lilburn, June 2013)
  - Hydrology Technical Study (SLR, updated 2017)
  - Drainage Control Program, Crystal Creek Haul Road (Pluess-Staufer, 1992)
  - Spill Prevention, Control, and Countermeasures Plan (Webber & Webber, 1997)
- J Scenery Report (Lilburn Corporation, 2014)
- K Storm Water Pollution Prevention Plan (SWPPP) (Omya, updated 2017)
- L EIR/EIS Distribution List

**ES.0 EXECUTIVE SUMMARY**

The Forest Service, San Bernardino National Forest (SBNF) and the County of San Bernardino (County) have prepared this joint Draft Environmental Impact Report and Environmental Impact Statement (Draft EIR/EIS) in response to the Omya California (Omya) submittal of the following applications:

- An Amended Plan of Operations (POO) and Reclamation Plan to the Forest Service; and
- A Mining and Land Reclamation Plan Conditional Use Permit (CUP) application to the County.

Implementation of the Proposed Project / Proposed Action (Project) requires discretionary approvals from Federal, State, and local agencies; therefore, this Project is subject to the environmental review requirements of both the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). To ensure coordination between the NEPA and CEQA processes, and to avoid duplication of effort, this joint EIR/EIS has been prepared as recommended by CEQA Guidelines Title 14 California Code of Regulations (CCR) Section 15222 and 40 CFR 1506.25. The Forest Service is the NEPA Lead Agency and the County is the CEQA Lead Agency for the joint EIR/EIS.

**ES.1 Project Summary**

The Project is the expansion of the Butterfield and Sentinel (Butterfield-Sentinel) Limestone Quarries. The quarries are located approximately 7.5 miles south of the community of Lucerne Valley and 5 miles north of Big Bear Lake within the SBNF in San Bernardino County, California (see Figure ES-1). The existing Butterfield and Sentinel limestone quarries as well as the Project expansions are and would continue to be entirely within portions of approximately 954 acres of unpatented placer claims controlled by Omya but located on public land administered by SBNF.

Known limestone ore resources within the proposed quarry expansion areas would add an additional 40 years life to the Butterfield quarry and an additional 20 years life to the Sentinel quarry. The Project would allow continued mining of these reserves to be extended until approximately 2055. Disturbance proposed for the Project includes expansion of existing Butterfield and Sentinel quarries, expansion of associated overburden placement sites, additional internal access roads and ancillary facility areas, and minor adjustments to existing disturbance boundaries. The Project does not include any new quarries, new haul roads or new overburden sites.

The proposed expansion would include 30.6 acres of disturbance at the Butterfield Quarry, and 64.3 acres of disturbance at the Sentinel Quarry area. The 64.3 acres of disturbance at the Sentinel Quarry includes 16 acres at the Sentinel Quarry, 27.8 acres at the Overburden Pad 5, 19.5 acres in the Central Area and 1 acre for a maintenance buffer at the Sentinel North Pad. The total area of disturbance associated with the Project would be 94.9 acres. Quarry development and expansion would be phased and reclamation would occur concurrently.

Depending on market demand, the maximum combined Butterfield and Sentinel quarries average ore production rates would be approximately 680,000 tons per year compared to the 3-year average from 2004 – 2006 of approximately 378,000 tons per year.

The existing operational hours currently in place at the quarries would not change with this Project. Mining activities would vary through the year, and could occur 24 hours/day, 7 days/week depending on operational requirements. Blasting would be restricted to daylight hours. Winter snowfall and ore production requirements are and would be the major determining factors for scheduling of ore and waste rock mining. Other factors such as market conditions and maintenance requirements would also affect this schedule.

The quarries would be multi-bench open pit mines. Several working levels would be operated at any one time to supply the quota of ore needed to meet production demands. The multi-working level concept allows for greater selectivity and blending of rock qualities to meet stringent quality standards of customers, and allows maximum utilization of the resource. Five grades of ore would be selectively mined. The ore would be drilled and blasted, loaded into haul trucks and hauled to the crusher currently located just southwest of the Sentinel Quarry. Crushed ore would be loaded into off-road haul trucks and transported eight miles on the vested Crystal Creek Haul Road to the existing processing plant in Lucerne Valley.

Waste rock, defined as limestone and other rock not suitable for the manufacture of Omya-produced limestone products would be stockpiled within the planned overburden stockpiles and/or backfilled within the quarries' footprints to reduce the size of separate stockpiles, thereby reducing surface disturbance and potential impacts to wildlife habitat, sensitive vegetation, and visual resources.

There would be no operational settling ponds on-site or new runoff diversion channels required. No change in the number of blasts would be expected which is approximately one per week at each quarry. Table ES-1 provides a summary of the Project. Figure ES-2 shows the existing mine plan and proposed expansion areas.

The Proposed Action (Project) also includes a Project-specific forest plan amendment to reduce the Scenic Integrity Objectives in the Project Area. The current Land Management Plan (LMP) Scenic Integrity Objectives (SIOs) map, provided as Figure 3.1.2 – Existing SIOs in Section 3.1, identifies the regional setting in which the Project is located as High. However, as discussed in Section 3.1, the existing and historic landscape character of the region appears to be inconsistent with a SIO ranking of High. According to Anita Bueno of the SBNF, the existing Project Area currently has baseline conditions that are more consistent with scenic integrity levels ranging from Low to High, and a plan amendment should be made by the Forest Service to address this inconsistency. The amendment would be subject to pre-decisional administrative review under 36 CFR § 218, not the review process for forest plans under 36 CFR § 219. When a plan amendment is made together with, and only applies to, a project or activity decision, the analysis prepared for the project or activity may serve as the documentation for the preliminary

identification of the need to change the plan (§219.13(b)(1)). This documentation is found within Section 3.1 – Aesthetics.

**Table ES-1 Existing and Proposed Quarries' Production and Operational Areas**

Quarry/Area	Project Proposed Area (acres)	Total Existing and Proposed Area (acres)	Ore Limestone Resources (millions of tons)	Annual Average Excavated (tons)	Annual Average Production – “ore to plant” (tons)	Annual Average Waste – including crusher fines <sup>1</sup> (tons)	Max. Depth (feet above ground surface)
Butterfield	30.6	52.3	7.6	356,500	162,500	194,000	200
Sentinel	16.0	75.6	24.4	1,131,000	517,500	613,500	600
B5 OB Pad	27.8	51.2	---	---	---	---	---
Central Area	19.5	47.8	---	---	---	---	---
North Pad*	1.0	5.5	---	---	---	---	---
<b>Totals</b>	<b>94.9</b>	<b>232.4</b>	<b>32</b>	<b>1,487,500</b>	<b>680,000</b>	<b>807,500</b>	<b>---</b>

Notes: \*Sentinel North Pad – Maintenance Buffer.

Volumes are estimated based on drilling data and computer modeling.

Area rounded to nearest tenth of an acre. Totals may be slightly different due to rounding.

In-situ or in-place limestone rock weight to volume ratio estimated at 2 tons per cubic yard.

Waste rock (interburden and overburden) excavated will vary annually depending on area being excavated.

<sup>1</sup>-Fines produced from primary onsite crushing estimated at 15% of ore crushed.

## ES.2 Purpose and Need for the Project

The Project would allow the expansion of two existing limestone (calcium carbonate) quarries. Within the United States, productive deposits of white, high purity limestone are found in only a few areas and the Omya deposits are one of these sources. High calcium limestone can be used as whitening in the form of nontoxic fillers and extenders in a large number of products ranging from paper products to environmental cleanup, carpet backing, plastics, PVC, paint, paper and other building products. Limestone can also be used as a substitute for other components in industrial processes and the manufacture of consumer products.

Omya's Lucerne Valley Processing Plant (LVPP) is located within the Omya property just north of the Project Site. The LVPP operations require high brightness, high purity limestone ore (calcium carbonate) of specific quantities and qualities to produce fine ground calcium carbonate for the numerous consumer and industrial products discussed above. To meet current and future product demand, Omya requires reliable and economic resources of high quality limestone ore. This has been achieved through the development of three unique limestone deposits, the White Knob Quarry to the west of the LVPP, and the Butterfield and Sentinel quarries located to the south of the LVPP. The Project would assure Omya that the LVPP would have the raw limestone resources needed to meet consumer demand.

### **Mineral Resource Zoning**

Omya petitioned and received from the California Division of Mines and Geology (CDMG) a Mineral Resource Zone 2 status (MRZ-2) for the limestone deposits. Core drilling, detailed geologic mapping and assay data proved the deposits are significant mineral resources (MRZ-2) and exceeded the MRZ-2 criteria established by the CDMG. The MRZ-2 rating of the Butterfield and Sentinel Quarries limestone deposits indicates that these quarries are an important mineral source and their value to mining and land use planning is well recognized.

### **Economic Benefit**

Long-term cumulative economic benefits of limestone mining along the north range front of the San Bernardino Mountains have added to the County economy for decades including tax payments and jobs. The limestone mining industry provides stable high paying jobs and professional careers for many people. The Project would allow continued (up to 40 years) mining of the resource and provide long-term employment for many employees.

Omya helps support Federal, State and local governments and schools through payment of property taxes, excise, fuel and other taxes for the long term. Omya supports local economies through direct purchases of equipment, materials, supplies, and services, and indirect turnover of these expenditures in the economy. Omya also supports local communities through charitable contributions.

### **SBNF Land Management Plan**

Under the National Forest Management Act (NFMA), the Forest Service is required to identify the best use of forest land, including potential options such as mining, timber, range and recreation. The purpose of the Land Management Plan (LMP) is to articulate the long term vision and strategic management direction for the SBNF and to facilitate the development of activities that will contribute towards the realization of the National Forests' desired conditions. One of the FLMP's fundamental requirements is to determine the suitability and capacity of National Forest land for resource production (i.e., mining). Therefore, part of the purpose and need for this Project is to facilitate the development of management activities that will contribute towards the realization of the National Forests' desired conditions as identified in the LMP Southern California National Forest Vision.

As described above, there is a need for a site-specific amendment to the LMP. Per § 219.13(b)(3), the LMP is to be amended consistent with Forest Service NEPA procedures. The plan amendment is narrow in scope and, because the amendment applies to only this Project, it is not considered a significant change to the plan for purposes of the NFMA (36 CFR 219.13(b)(5)). The environmental effects of the proposed amendment on the pertinent resources include those effects on aesthetics as a part of § 219.10 – Multiple use Planning Regulation Section, Part (a) – Integrated Resource Management for Multiple Use, Subpart (1) – Aesthetic Values. These effects are discussed in more detail in Section 3.1 – Affected Environmental Consequences; Aesthetics. The amendment conforms with all other substantive requirements of the planning regulations including § 219.8 – Sustainability, § 219.9 – Diversity of Plant and Animal

Communities, § 219.10 – Multiple Use, and § 219.11 – Timber Requirements Based on NFMA. This amendment would not affect the relationship of the LMP to these requirements of the planning regulations.

THIS PAGE IS INTENTIONALLY BLANK



■ Project Site Location (Geographic Location)  
 California Zone 5 (FIPS 405); 6881064.78  
 1943854.58  
 Lat/Lon: 34° 19' 45.0165" N, 116° 56'  
 31.3945"  
 Source: SLR Consulting USA Pty Ltd, 5/2013

**Figure ES-1 Project Location**

THIS PAGE IS INTENTIONALLY BLANK

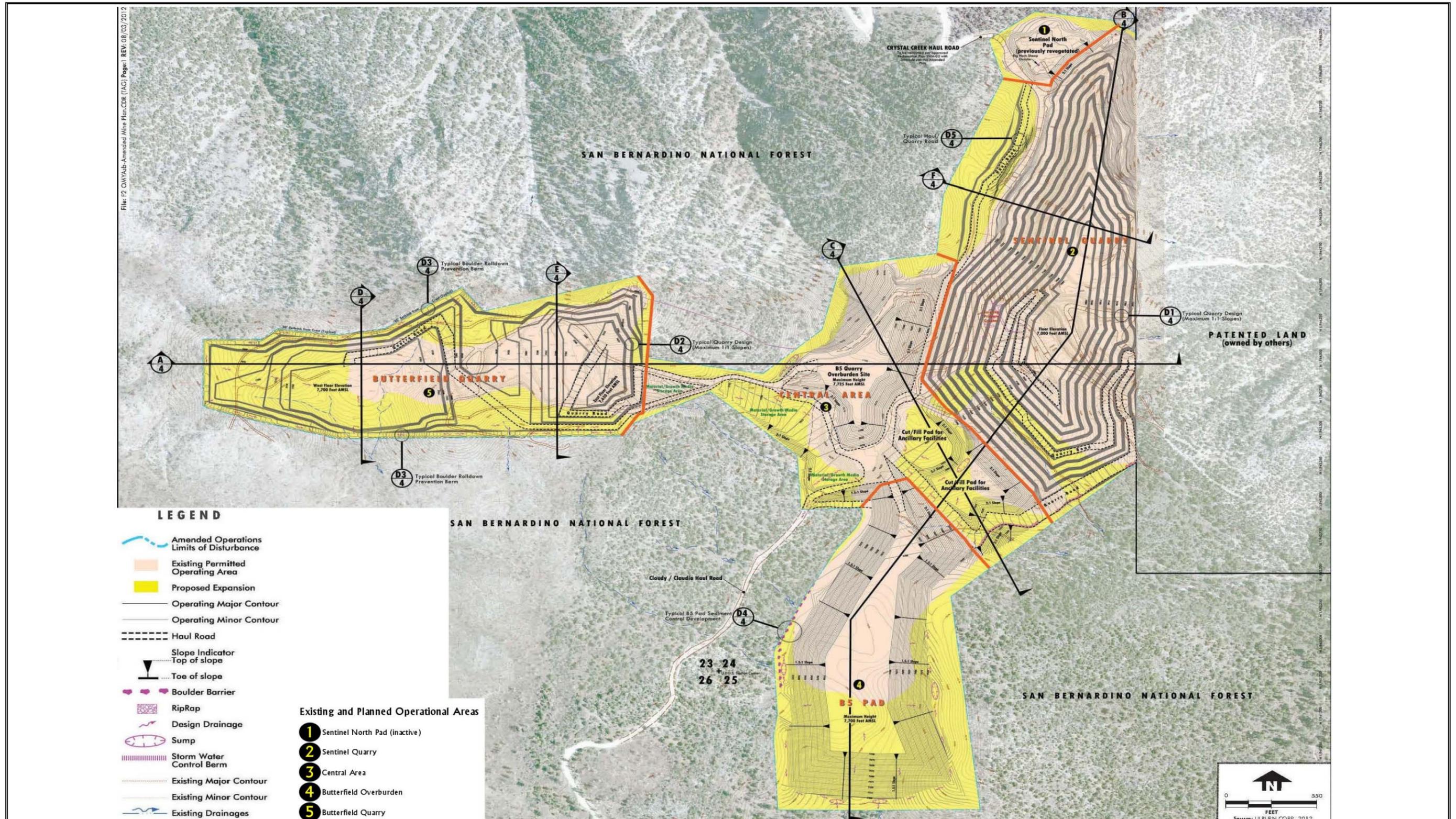


Figure ES-2 Existing Quarries and Proposed Operations

THIS PAGE IS INTENTIONALLY BLANK

**ES.3 Purpose of the Environmental Impact Report / Environmental Impact Statement**

The preparation of this Draft EIR/EIS is in response to Omya's submittal of an Amended Plan of Operations and Reclamation Plan and an application for a Mining and Land Reclamation Plan Conditional Use Permit. The Draft EIR/EIS will be used to provide the lead agencies, the Forest Service and the County, with the necessary information to make an informed decision regarding the submitted plans and application. An EIS is the document required under NEPA for the Forest Service and an EIR is the document required by CEQA for the County. The joint Draft EIR/EIS addresses both sets of regulatory requirements.

The Forest Service is analyzing this joint document (Draft EIR/EIS) in regards to the surface use of National Forest System lands in connection with operations authorized by the United States mining laws (30 U.S.C. 21-54). The United States mining laws confer a statutory right to enter upon the public lands to search for minerals, and require that these activities be conducted so as to minimize adverse environmental impacts on National Forest System surface resources. The responsibility for managing mineral resources is in the Secretary of the Interior.

The Forest Service administers exploration and development on National Forest System lands under mining regulations defined in 36 CFR 228, Subpart A. These regulations direct the Forest Service to prepare the appropriate level of NEPA analysis and documentation when proposed operations may significantly affect surface resources. Mine operators planning mineral exploration and development activities, which are likely to cause significant disturbances to surface resources, are required to submit a Plan of Operation for review by the District Ranger (36 CFR 228.4(a)). Forest Service mining regulations state that, "operations shall be conducted so as, where feasible, to minimize adverse impacts on National Forest System surface resources" (36 CFR 228.8).

The County is analyzing this Draft EIR/EIS in regards to their discretionary decisions associated with the CUP process. In accordance with the County of San Bernardino General Plan and the County Development Code, the County regulates the uses of land and structures within unincorporated county areas. Through the CUP process, the Project is evaluated for consistency with the County General Plan, County development standards, compatibility with surrounding land uses, availability of public services and potential environmental impacts. The County is also lead agency for SMARA. SMARA provides for reclamation of mined lands with comprehensive reclamation policies and regulations that reduce the adverse environmental effects of mining operations and to ensure that mined lands are reclaimed to a usable condition.

**ES.4 Project Objectives**

The overall intent of the Project is to supply the LVPP with high brightness, high purity limestone ore of specific quantities and qualities to produce fine ground calcium carbonate for numerous consumers and industrial products.

The Project was developed with these specific goals and objectives:

- Continue the mining and recovery of a rare calcium limestone resource;
- Supply the LVPP with sufficient quantities of reliable resources of high quality limestone for the production of a wide range of calcium carbonate products;
- Enable the LVPP to meet consumer demands;
- Make available for consumer and industrial use a recognized valuable mineral resource as identified by the MRZ-2 rating of the Butterfield and Sentinel limestone deposits;
- Provide long-term employment and economic benefits to the local community and County of San Bernardino.
- Minimize additional land disturbance through the expansion of contiguous existing quarries and minimal expansion of existing overburden stockpiles and haul roads;
- Limit the area of disturbance outside the quarries in order to reduce impacts on sensitive plant habitats and viewsheds by developing internal waste rock stockpiles within the completed portions of the quarries;
- Meet the SBNF regulations that require activities to cause no undue and unnecessary degradation;
- Meet the State's and County's requirements;
- Mitigate for impacts to carbonate plants consistent with the Carbonate Habitat Management Strategy by relinquishing mining claims;
- Minimize impacts to sensitive plants and wildlife including bighorn sheep and raptors through quarry design and conservation management programs;
- Reclaim the site for post-mining uses which will include open space habitat and be in compliance with SMARA regulations;
- Contour mining features and revegetate disturbed areas to minimize aesthetic and erosion impacts; and
- Reclaim and maintain the site as necessary to eliminate hazards to public safety.

#### **ES.5 Summary of the CEQA and NEPA Process**

As discussed above, because the Project requires discretionary approvals from Federal, State and local agencies, the Project is subject to NEPA and CEQA. Therefore, this is a joint Draft EIR/EIS. A flow chart summarizing the CEQA and NEPA processes is provided in Figure ES-3.

CEQA Guidelines Section 15151 contains the following standards of adequacy: *“An EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and good faith effort at full disclosure.”*

According to the Council of Environmental Quality (CEQ) NEPA implementing regulations (40 CFR 1502), an EIS should present the environmental impacts of the Proposed Action (Project), and all reasonable

alternatives in comparative form, defining the issues and providing a clear basis for choice by decision makers and the public. The CEQ has stated that, *“reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense rather than simply desirable from the standpoint of the applicant.”*

This Draft EIR/EIS is intended to serve as a document to inform public agency decision-makers (lead, cooperating, responsible and trustee agencies) and the public of the potentially significant environmental effects associated with the Project, identify ways to minimize or eliminate the significant effects, and evaluate a reasonable range of alternatives that meet the major objectives of the Project but further reduce or avoid significant environmental effects.

### **Scoping Process and Draft EIR/EIS**

The involvement of the public during the CEQA/NEPA process is an integral part of the environmental analysis. Public involvement helps to refine the proposed action, identify issues, explore possible alternatives and identify interested and affected persons. The sections below describe the activities taken to ensure that the public has been, and will be appropriately involved in this process.

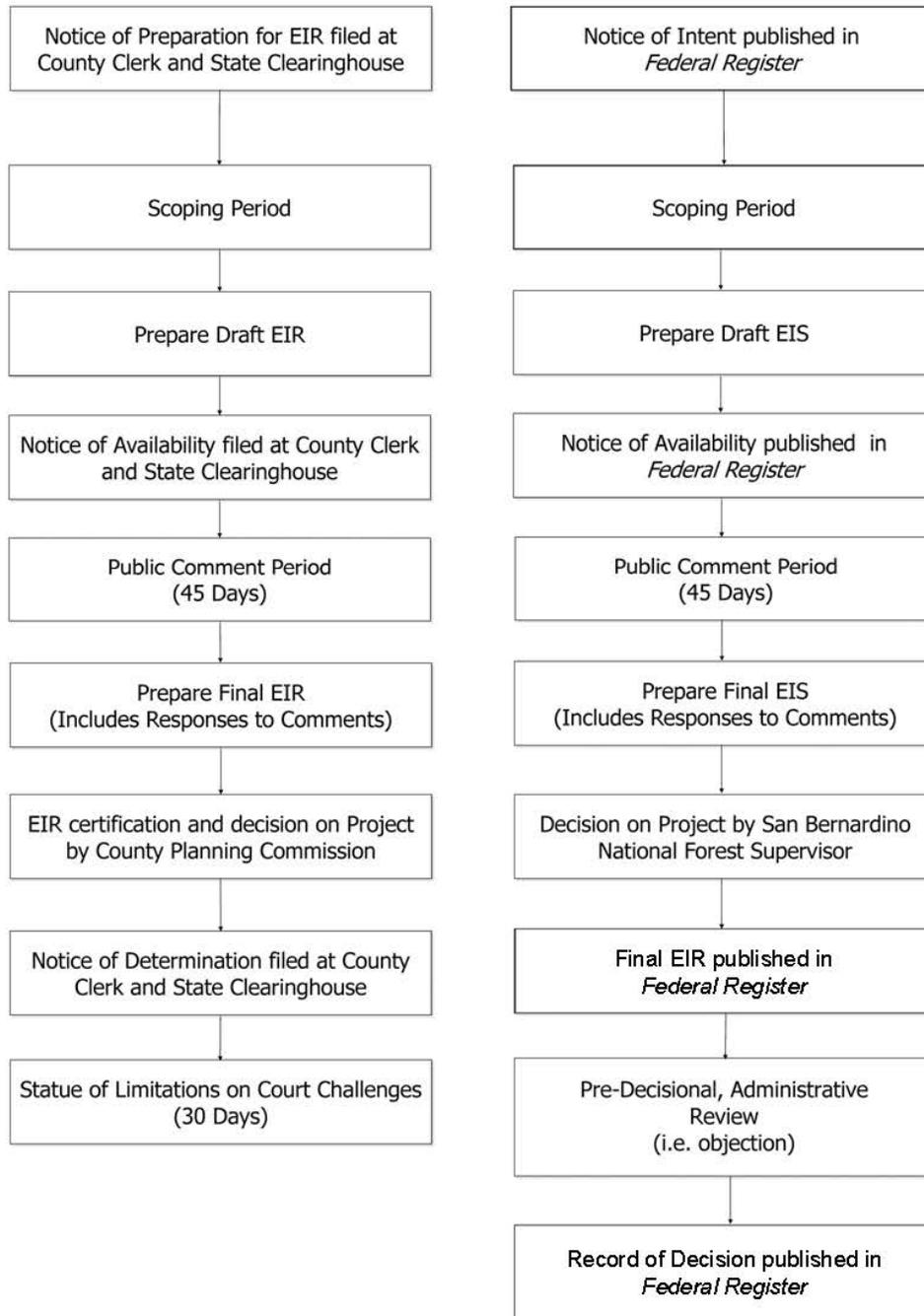
The Forest Service published a Notice of Intent (NOI) in the Federal Register on February 28, 2013. The County distributed the Notice of Preparation (NOP) and Initial Study to the California State Clearinghouse on February 22, 2013, and posted the NOP with the County Clerk. A joint NOP/NOI was mailed to the agencies, organizations and individuals on the Forest Service and County mailing lists.

In order to ensure that the public agencies, organizations and individuals had access to the technical documents supporting the Amended Plan of Operations and Reclamation Plan, the scoping period was extended two times, once to April 16 and then again to June 6, 2013.

The joint NOP/NOI was also published in the local newspapers and copies of the scoping notices, the Initial Study and the Amended Plan of Operations and Reclamation Plan were posted on the agency websites.

Two public scoping meetings were held to provide the public and government agencies the opportunity to receive information on the CEQA/NEPA process and the Project as well as provide verbal and written comments. Approximately 6 people attended the meeting in Big Bear and 7 people attended the meeting in Lucerne Valley. Thirteen letters/emails were received, eight from governmental agencies and five from organizations or individuals. Issues raised during the scoping process are summarized in Section ES.6.

## The Environmental Impact Report/ Environmental Impact Statement Process



Source: RGP/Sespe Consulting, Inc.

**Figure ES-3 CEQA and NEPA Process Flow Chart**

The Forest Service published the Draft EIR/EIS Notice of Availability in the Federal Register and the County distributed the Draft EIR/EIS Notice of Completion to the California State Clearinghouse. In addition, notices were sent to the agencies, organizations and individuals on the County and Forest Service mailing lists and posted in the San Bernardino County Sun. Notice of the Draft EIR/EIS in the Federal Register marks the beginning of a 45-day public review period.

### **Final EIR/EIS**

Comments received in response to the Draft EIR/EIS will be addressed in a Response to Comment document which together with the Draft EIR/EIS will constitute the Final EIR/EIS. The Forest Service and County will prepare the Final EIR/EIS and a Mitigation, Monitoring and Reporting Plan (MMRP). Copies of the Final EIR/EIS and MMRP will be provided to other regulatory agencies, elected officials and/or other interested organization or individuals. The documents will also be posted on the Forest Service and County websites.

The Forest Service and the County will address objections and prepare the Record of Decision (ROD), Notice of Determination (NOD), Findings of Fact and Statement of Overriding Considerations (if necessary). In accordance with 36 CFR 218, a project-level pre-decisional administrative review process will be provided. This directs the Forest Service to issue a draft decision with the ROD to allow for an objection process prior to the issuance of the ROD. This is in lieu of the Federal post-decisional appeal process used since 1993. Upon approval of the Draft EIR/EIS by the County Planning Commission, there will be a 30-day statute of limitations on court challenges to the approval under CEQA. (The determination by the Planning commission is final unless appealed within 10 days.) A six year statute of limitations is provided under the Administrative Procedure Act for NEPA.

### **Mitigation Monitoring and Reporting**

CEQA requires adoption of a reporting and monitoring program referred to as the Mitigation Monitoring and Reporting Program (MMRP) for those measures placed on a project to mitigate or avoid adverse effects on the environment. A final MMRP shall be adopted for this Project by the County upon certification of the Final EIR by the Planning Commission.

### **ES.6 Issues Raised and Areas of Known Controversy**

Based on comments received during the NOP review period and scoping process the following represent the primary areas of controversy for this Project:

- **Aesthetics** – Depending on the given location of a viewer, portions of the Project site may be visible to the public. Considering that the Project is located in the SBNF, there is concern that impacts on viewsheds from within the SBNF could be significant.
- **Air Quality and Greenhouse Gas Emissions** – Project operations, including excavation activities, plant operations, and vehicle trips, have the potential to impact air quality. Potential impacts associated with Greenhouse Gas (GHG) emissions are also a concern.

- **Biological Resources** – There are listed, endangered and special status species as well as unique habitats such as the carbonate soil habitat in the Project area. The mining operations potentially could impact sensitive species and/or their habitat.
- **Geology and Soils** – The quarry slopes could present a hazard due to slope stability and seismic activity.
- **Hydrology and Water Quality** – There is the potential that groundwater and surface water quality could be affected by the mining operations. There are drainages adjacent to the quarries that connect to jurisdictional Waters of the United States and the State.

### **ES.7 Environmental Issues Scoped Out of the Detailed Study**

Based on the findings of the Initial Study and from the comments received during the scoping period, the following environmental issues were determined not to be significant and were eliminated from detailed study in this Draft EIR/EIS. However, due to some public interest in several areas that were eliminated during scoping, brief discussions have been included in the Draft EIR/EIS (Forestry, Cultural, Hazards/Hazardous Materials and Noise).

- Agriculture and Forestry;
- Cultural Resources;
- Hazards and Hazardous Materials;
- Land Use and Planning;
- Mineral Resources;
- Noise;
- Population and Housing;
- Public Service;
- Recreation;
- Transportation and Traffic; and
- Utilities and Service Systems.

### **ES.8 Summary of Alternatives**

Reasonable alternatives were developed that respond to the significant issues, reduce potential environmental impacts, address the purpose of and need for the Project and the Project objectives. Alternatives that did not meet the purpose of and need for the Project or the Project objectives, that did not resolve environmental conflicts and/or were not available or feasible were eliminated from detailed consideration.

The following four alternatives were identified for detailed analysis in this Draft EIR/EIS and are summarized in Table ES-2:

**Alternative 1: No Action – Continue Mining under Current Entitlements**

Under this alternative, Omya would not expand the Butterfield and Sentinel Quarries. The existing mining activities located on 137 acres within the 954 acres of unpatented placer claims controlled by Omya would continue in accordance with the approved POO and Reclamation Plans and other Federal, State and local regulations.

**Alternative 2: Proposed Project**

Alternative 2 is the Project. It reflects the activities identified in the Amended POO and Reclamation Plan submitted to the Forest Service and the CUP application submitted to the County. Figure ES-2 shows the existing quarry operations and the proposed operations under Alternative 2, the Project.

**Alternative 3: Partial Implementation – Butterfield Quarry Expansion Only**

Under Alternative 3 only the Butterfield Quarry would be expanded. The Sentinel Quarry would continue to be mined under its current POO and Reclamation Plan and the B5 overburden pad would not be expanded from its current area. In this alternative the Butterfield Quarry would have a shorter duration of 20 years instead of 40 years as proposed in Alternatives 2 and 4. This alternative would also have a smaller footprint than Alternative 2 by approximately 50 acres.

**Alternative 4: Mixed Production with the White Knob Quarry to Meet Omya’s LVPP Capacity**

This alternative would assume that instead of the Butterfield and Sentinel Quarries providing 100% (680,000 tpy) of the ore to the LVPP, an alternative production mix between the quarries would be evaluated. A key objective of this alternative is to minimize potential impacts associated with air emissions. As determined by the air quality analysis discussed in Section 3.3.5, if the Butterfield Sentinel quarries produced only 77% of the ore instead of 100% the ore going to the LVPP, the PM<sub>10</sub> emissions would be below certain significance levels, but this alternative would still require the same air quality mitigations as the Project in order to stay under all the air quality significance thresholds.

In addition, this alternative would limit Omya’s operational flexibility and potentially prevent Omya from meeting the market demand for high quality limestone. This is because the quality of limestone varies between the ore deposits and often Omya is required to mix resources, or exclude resources from various deposits/quarries in order to obtain a final product that meets the necessary purity levels. It is not possible to predict when resources from one deposit/quarry would be required to “sweeten” the mix in order to accomplish this. In addition, if White Knob were to shut down for some un expected reason, and production limitations were imposed that rely on a certain ratio mix specified this alternative, it could prevent Omya from meeting the market demand. As recently approved, the White Knob quarry is able to provide 100% of the material to the LVPP and as such it would be consistent to allow 100% of the Butterfield and Sentinel Quarries to as well (which would not be feasible in this alternative)

**ES.9 Summary of Potential Impacts and Mitigation Measures**

Potentially significant impacts were evaluated in this Draft EIR/EIS. Table ES-3 provides a summary of the potentially significant impacts, applicable mitigation measures, and the level of significance after mitigation.

**Table ES-2 Summary of Alternatives**

<b>Project Element</b>	<b>Alternative 1 No Action/No Project<sup>1</sup></b>	<b>Alternative 2 Proposed Action</b>	<b>Alternative 3 Partial Implementation Butterfield Expansion Only</b>	<b>Alternative 4 Mixed Production to Meet Omya LVPP Capacity</b>
Proposed New Area (acres)	0	94.9	30.6	94.9
Total Area – Existing and Proposed (acres)	137.5	232.4	168.1	232.4
Total Material Excavated <sup>2</sup>	12 (7.6 ore; 4.4 waste rock)	59.5 (27.2 ore; 32.3 waste rock)	25.5 (13.5 ore; 12 waste rock)	59.5 <sup>3</sup> (27.2 ore; 32.3 waste rock)
Maximum Depth (feet above mean sea level (amsl))	7,810 (Butterfield) 7,150 (Sentinel)	7,650 (Butterfield) 7,000 (Sentinel)	7,650 (Butterfield) 7,150 (Sentinel)	7,650 (Butterfield) 7,000 (Sentinel)
Life of Mine Extension (years)	N/A	40	20	40
Years at 680,000 tons per year	11	40	20	40
Final Reclamation Year	Year 30	Year 50	Year 30	Year 50

Notes: <sup>1</sup> - With the No Action/No Project Alternative, Omya would not expand either quarry.

<sup>2</sup> - Ore to plant; waste rock and fines (millions of tons)

<sup>3</sup> - It may not be feasible to excavate 59.5 MTPY in this Alternative due to the requirement for the production split with White Knob and potential resource limitations such as required purity levels and operational logistics of quarries.

**ES.10 Significant and Unavoidable Impacts (CEQA)**

Under CEQA, an EIR must disclose the significant unavoidable impacts that will result from a proposed project. There were no environmental effects that would have significant and unavoidable impacts associated with this Project.

**ES.11 Cumulative Impacts**

The lead agencies identified currently or reasonably foreseeable projects that could result in cumulative impacts for the resource areas affected by the Project and these were evaluated in relation to this Project. It was determined that the Project would not make a cumulatively considerable contribution to environmental resources and that the Project's cumulative impact would be less than significant.

**ES.12 Preferred (NEPA) and Environmentally Superior (CEQA) Alternative**

NEPA requires that the Lead Agency identify the preferred alternative (40 CFR 1502.14). CEQA Guidelines Section 15126.6(e)(2) requires that the Lead Agency identify the environmentally superior alternative. The No Project Alternative is considered by the County as the CEQA environmentally superior alternative; however, CEQA requires that an EIR further identify an alternative other than the No Project Alternative as the environmental superior alternative. The County identified the CEQA environmental superior alternative to be the Project (Alternative 2) because the other alternatives would not meet key Project objectives and/or result in potentially greater impacts when compared to the Project. The NEPA preferred alternative will be identified by the Forest Service following the public comment period.

THIS PAGE IS INTENTIONALLY BLANK

**Table ES-3 Impacts and Mitigation Measures Summary**

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
<b>Aesthetics</b>			
<b>Impact A-1</b> Substantial adverse effect on a scenic vista. <i>(CEQA Guidelines Threshold Criteria (a), Forest Service Criteria 2)</i>	Less than Significant	None Required	Less than Significant
<b>Impact A-2</b> Substantially damage scenic resources, including but not limited to trees, rock outcroppings and historic buildings within a state scenic highway. <i>(CEQA Guidelines Threshold Criteria (b), Forest Service Criteria 2)</i>	Less than Significant	None Required	Less than Significant
<b>Impact A-3</b> Substantially degrade the existing visual character or quality of the site and its surroundings. <i>(CEQA Guidelines Threshold Criteria (c), Forest Service Criteria 1,2 and 3)</i>	Less than Significant	None Required	Less than Significant
<b>Impact A-4</b> Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area. <i>(CEQA Guidelines Threshold Criteria (d), Forest Service Criteria 2)</i>	Less than Significant	None Required	Less than Significant
<b>Impact A-5</b> Nonconformance to and inconsistency with the Forest Service Scenic Integrity Objectives (SIO's). <i>(Forest Service Criteria 1)</i>	Less than Significant	None Required	Less than Significant
<b>Impact A-6</b> Nonconformance to and inconsistency with the Forest Service Scenic Values. <i>(Forest Service Criteria 2)</i>	Less than Significant	None Required	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
<b>Impact A-7</b> Not meeting the Forest Service reclamation requirements for scenic resources. ( <i>Forest Service Criteria 3</i> )	Less than Significant	None Required	Less than Significant
<b>Agriculture &amp; Forestry</b>			
Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use. ( <i>CEQA Guidelines Threshold Criteria (a)</i> )	No Impact	None Required	No Impact
Conflict with existing zoning for agricultural use or a Williamson Act contract. ( <i>b</i> )	No Impact	None Required	No Impact
Conflict with existing zoning for, or cause rezoning of, forest land, timberland or timberland zoned Timberland Production. ( <i>CEQA Guidelines Threshold Criteria (c)</i> )	Less than Significant	None Required	Less than Significant
Result in the loss of forest land or conversion of forest land to non-forest use. ( <i>CEQA Guidelines Threshold Criteria (d)</i> )	Less than Significant	None Required	Less than Significant
Involve other changes in the existing environment, which due to their location or nature, could result in conversion of forest land to non-forest use. ( <i>CEQA Guidelines Threshold Criteria (e)</i> )	Less than Significant	None Required	Less than Significant
<b>Air Quality and Greenhouse Gas Emissions</b>			
<b>Impact AQ-1</b> Conflict with or obstruct implementation of the applicable air quality plan. ( <i>CEQA Guidelines Threshold Criteria AQ(a), GHG (a) &amp; (b); MDAQMD (1) &amp; (3)</i> )	Less than Significant	None Required	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
<p><b>Impact AQ-2:</b> Emissions of air pollutants resulting in violation of any air quality standards or contribute substantially to an existing or projected air quality violation. <i>(CEQA Guidelines Threshold Criteria (b); MDAQMD Criteria (2))</i></p>	Significant	<p><b>Mitigation Measure AQ-1: Dust Control – Unpaved Roads:</b> Unpaved roads shall be controlled by at least 80% using methods that are consistent with MDAQMD guidance.</p>	Less than Significant
	Significant	<p><b>Mitigation Measure AQ-2: Dust Control – Grading:</b> Areas to be graded and where bulldozer operates shall controlled by at least 85% using methods that are consistent with MDAQMD guidance.</p>	Less than Significant
<p><b>Impact AQ-3:</b> Result in cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors). <i>(CEQA Guidelines Threshold Criteria (c); MDAQMD Criteria (2) &amp; (3))</i></p>	Significant	<p><b>Mitigation Measures AQ-1 and AQ-2</b></p>	Less than Significant
<p><b>Impact AQ-4:</b> Exposure of sensitive receptors to substantial pollutant concentrations. <i>(CEQA Guidelines Threshold Criteria (d); MDAQMD Criteria 4)</i></p>	Less than Significant	<p>None Required</p>	Less than Significant
<p><b>Biological Resources</b></p>	<p>See Below</p>	<p>See Below</p>	<p>See Below</p>

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
<p><b>Impact BIO-1:</b> Substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service. <i>(CEQA Guidelines Threshold (a))</i></p>	<p>See Below</p>	<p>See Below</p>	<p>See Below</p>
<p><b>Impact BIO-1a:</b> Threatened and Endangered Plants Species</p>	<p>Significant</p>	<p><b>Mitigation Measure BIO-1: Relinquish Mining Claims:</b> Omya shall relinquish through a quit-claim process, the identified acreage located within the unpatented mining claims as shown in Table 3.4-3. These areas have been verified by the SBNF to contain habitat for the specified endangered or threatened species pursuant to the CHMS. Table 3.4-6 identifies the number of acres in the Project and mitigation parcels for each T/E plant species. Mitigation for affected T/E plants is a minimum of 3:1 based on conservation value (as described in the CHMS). (SBNF Biological Report PDF CARB-1 and 2)</p>	<p>Less than Significant</p>
	<p>Significant</p>	<p><b>Mitigation Measure BIO-2: Non-native Species – Inspections:</b> Omya shall visually monitor the occurrence of non-native invasive plants on-site by visual inspection. The goal is to prevent non-native invasive plants from becoming established and depositing seeds in areas to be re-vegetated at a later date. If inspections reveal that weeds are becoming an issue or have established on-site, then removal would be initiated by Omya in coordination with the Forest Service botanist. Inspections shall be made in conjunction with Project’s revegetation monitoring. (SBNF Biological Report PDF NNS-1)</p>	<p>Less than Significant</p>

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
Impact BIO-1a (continued)	Significant	<p><b>Mitigation Measure BIO-3: Non-native Species – Equipment Cleaning:</b> To reduce the risk of introducing non-native invasive plants, insects, and pathogens from off-site, all heavy mining equipment (e.g., drill rigs, haul trucks and loaders) must be thoroughly washed of all soil and vegetation debris prior to being brought into the Project Area. (SBNF Biological Report PDF NNS-2)</p>	Less than Significant
	Significant	<p><b>Mitigation Measure BIO-4: Non-native Species – Control and Eradication:</b> Since the Project is expected to last 40 years and new non-native invasive plants and animals may become established in the region, an adaptive management approach is necessary. If any new non-native invasive plants, animals, or pathogens are identified as having a potential for establishment in the Project Area, the Forest Service, CDFW and Omya will develop measures for detection, control, and eradication as necessary. Omya shall be responsible for funding detection, control, and eradication efforts. (SBNF Biological Report PDF NNS-3)</p>	Less than Significant
	Significant	<p><b>Mitigation Measure BIO-5: Personnel Training – Domestic and Feral Animals:</b> Omya personnel will be trained and will report sightings of domestic sheep, goats, dogs, and cats on and near the facility to the Forest Service and CDFW within two hours of the observation. In the event of domestic or feral animals being found, Omya shall employ a trained trapper to catch and remove the animals following County regulations. CDFW may assist capture/removal efforts if available. (SBNF Biological Report PDF NNS-4)</p>	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
Impact BIO-1a <i>(continued)</i>	Significant	<p><b>Mitigation Measure BIO-6: Wildlife and Plant Awareness:</b> Omya shall conduct wildlife/plant awareness programs for employees (including new employee orientation and annual refresher trainings). The program will address bighorn sheep, desert tortoise, raptors, other animals of the area, and rare plants. This will include the importance of avoiding harassment/disturbance, adherence to speed limits, adherence to defined project boundaries, reporting guidelines, etc. CDFW and USFS will provide assistance in developing the training program. (SBNF Biological Report GEN-2)</p>	Less than Significant
<b>Impact BIO-1b:</b> Threatened and Endangered Animal Species	See Below	See Below	See Below

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
<p>California Condor (<i>Gymnogyps californianus</i>)</p>	<p>Significant</p>	<p><b>Mitigation Measure BIO-1, and the following:</b></p> <p><b>Mitigation Measure BIO-7: Raptor Conservation Strategy (RCS):</b> A RCS shall be developed in coordination with the Forest Service, USFWS, and CDFW. Omya shall provide input to the development/finalization of the RCS and shall follow the guidelines put forth in the effort. The RCS will be tailored for activities associated with mining activities and effects. Upon approval of the Plan of Operations and the Reclamation Plan by the County and the Forest Service, Omya will participate in the implementation of the strategy by contributing to specified survey and monitoring efforts and by the following applicable operation guidelines.</p> <p>The RCS will cover the North Slope of the San Bernardino Mountains from the White Mountain to Terrace Springs, and will address golden eagles, California condor, peregrine falcon, and prairie falcon. The RCS may be updated to include other raptors in the future if concerns develop over their local population status.</p> <p>The RCS will be a dynamic document and will be updated as new data and scientific understanding of the aforementioned species become available. It will include monitoring and information gathering and measures to avoid, minimize, rectify, and reduce (or eliminate over time) effects to raptors nesting on the North Slope. The intent is to use systematic monitoring or raptor nesting chronology and observed behavior to develop site- and activity- specific measures to ensure successful nesting and provide for adaptive management opportunities. (SBNF Biological Report PDF RAPTOR-1)</p>	<p>Less than Significant</p>

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
<p>California Condor (<i>Gymnogyps californianus</i>) (continued)</p>	<p>Significant</p>	<p><b>Mitigation Measure BIO-8: Raptor Monitoring:</b> If an occupied raptor nest is located within 1.5 miles of the active mining area, the mining company shall provide a qualified biologist to monitor during blasting for disturbance as a result of the mining activities. Monitoring results will be provided to the Forest Service biologist via email within 48 hours of a blast. The Forest Service will coordinate appropriate notification, as necessary, with USFWS and CDFW. (SBNF Biological Report PDF RAPTOR-1)</p>	<p>Less than Significant</p>
	<p>Significant</p>	<p><b>Mitigation Measure BIO-9: Raptor Nesting Regulatory Coordination:</b> If an occupied nest for a Federally or State protected species is found within 1.5 miles of an active quarry operation, the SBNF shall conduct an evaluation to determine the appropriate course of action under applicable State and Federal laws (e.g. “incidental take” authorization, Endangered Species Consultation) (SBNF Biological Report PDF RAPTOR-2)</p>	<p>Less than Significant</p>
	<p>Significant</p>	<p><b>Mitigation Measure BIO-10: Raptor Nesting Protection:</b> If monitoring detects that blasting or other mine activities are resulting in disturbance of nesting raptors that could lead to mortality or nest abandonment, the Forest Service, Omya, USFWS and CDFW, as appropriate, shall evaluate the feasibility of implementing measures to avoid or reduce the effects. The RCS will contain some potential methods for reducing or avoiding effects. (SBNF Biological Report PDF RAPTOR-3)</p>	<p>Less than Significant</p>

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
Desert Tortoise ( <i>Gopherus agassizii</i> )	Significant	<b>Mitigation Measure BIO-11: Personnel Training – Desert Tortoise:</b> Omya shall work with the SBNF and CDFW and incorporate desert tortoise education and awareness into their training for employees, customers, and contractors. This shall include how to minimize impacts to desert tortoises and their habitats. Information about penalties shall also be included. These briefings shall include guidelines about driving in desert tortoise habitat, handling prohibitions, etc. Omya shall work with SBNF and CDFW to develop other protective measures if monitoring identifies a need. (SBNF Biological Report PDF DETO-1)	Less than Significant
	Significant	<b>Mitigation Measure BIO-12: Desert Tortoise Reporting:</b> Any sightings of desert tortoises, including dead tortoises, must be reported to the Forest Service biologist. The report should include photos if possible, location, date, time, cause of death (if obvious), and any other pertinent information. (SBNF Biological Report PDF DETO-2)	Less than Significant
Southern Rubber Boa ( <i>Charina bottae umbratica</i> )	Significant	<b>Mitigation Measures BIO-1 and BIO-6</b>	Less than Significant
Swainson’s Hawk ( <i>Buteo swainsoni</i> )	Less than Significant	None Required	Less than Significant
<b>Impact BIO-1c:</b> Other Special Status Species – Plants	See Below	See Below	See Below

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
Coville’s Dwarf Abronia ( <i>Abronia nana var. covillei</i> ), Crested Milkvetch ( <i>Astragalus bicristatus</i> ), Bear Valley Milkvetch ( <i>Astragalus lentiginosus var. sierra</i> ), Parish's Rock Cress ( <i>Boechea parishii</i> ), Shockley’s Rock Cress ( <i>Boechea shockleyi</i> ), Parish’s Alumroot ( <i>Heuchera parishii</i> ), Bear Valley Phlox ( <i>Phlox dolichantha</i> )	Significant	Mitigation Measure BIO-1	Less than Significant
<b>Impact BIO-1d:</b> Other Special Status Species – Amphibians and Reptiles	See Below	See Below	See Below

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
Southern Rubber Boa ( <i>Charina bottae umbratica</i> ), Large-Blotched Ensatina ( <i>Ensatina klauberi</i> ), Yellow- Blotched Ensatina ( <i>Ensatina eschscholtzii</i> ), Southern California Legless Lizard ( <i>Anniella stebbinsi</i> ), Northern Three-Lined Boa ( <i>Lichanura orcutti</i> ), San Bernardino Ringneck Snake ( <i>Diadophis punctatus modestus</i> ), San Bernardino Mountain Kingsnake ( <i>Lampropeltis zonata parvirubra</i> ), Two-Striped Garter Snake ( <i>Thamnophis hammondi</i> ), Coast Patch-Nosed Snake ( <i>Salvadora hexalepis virgultea</i> )	Significant	Mitigation Measure BIO-1 and BIO-6	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
<p><b>Impact BIO-1e:</b> Other Special Status Species – Birds</p>	<p>Significant</p>	<p><b>Mitigation Measure BIO-1, BIO-6, and the following:</b></p> <p><b>Mitigation Measure BIO-13: Ground Clearing:</b> During the development of the quarry and associated facilities, all initial ground clearing (vegetation removal, grading, etc.) shall ideally occur outside the avian breeding season, and potential nesting habitat shall not be removed from February 1 through August 31, or appropriate dates based on on-site nesting phenology determined by a qualified biologist.</p> <p>For initial ground clearing (vegetation removal, grading, etc.) that is not feasible to be conducted outside the nesting season, surveys shall be conducted to locate active nests. Any active nest sites that are located shall be buffered and no work shall be conducted within those buffered areas until the nests are no longer active. The buffer distances would be determined by current species-specific standards. (SBNF Biological Report PDF BIRD-1)</p>	<p>Less than Significant</p>

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
<p><b>Impact BIO-1e:</b> Other Special Status Species – Birds <i>(continued)</i></p>	<p>Significant</p>	<p><b>Mitigation Measure BIO-14: Nesting Surveys:</b>                      Nesting bird surveys for passerine birds, as outlined under MM BIO-13, guidelines area as follows:</p> <ul style="list-style-type: none"> <li>• A qualified biologist shall be experienced and familiar with robust nest-locating techniques or comparable to those described by Martin and Guepel (1993).</li> <li>• Surveys shall be conducted in accordance with the following guidelines:                             <ul style="list-style-type: none"> <li>○ Surveys shall cover all potential nesting habitat to be disturbed and a 500 foot buffer surrounding areas to be disturbed.</li> <li>○ At least two pre-construction surveys, separated by a minimum 10 day interval, shall be completed prior to initial grading or grubbing activity; the later survey shall be completed no more than 10 days preceding initiation of initial grading or grubbing activity. Additional follow-up surveys shall be required if periods of construction inactivity exceed one week in any given area, an interval during which birds may establish a nesting territory and initiate egg laying and incubation. (SBNF Biological Report PDF BIRD-2)</li> </ul> </li> </ul>	<p>Less than Significant</p>

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
<b>Impact BIO-1e:</b> Other Special Status Species – Birds ( <i>continued</i> )	Significant	<b>Mitigation Measure BIO-15: Nesting Season – Crystal Creek Well:</b> To the greatest extent possible, maintenance activities at the Crystal Creek well and access road would be avoided during the nesting season for California spotted owl and other nesting birds (February 1 through August 15). Exceptions may be considered depending on planned activities and associated noise levels, after coordination with the Forest Service biologist or if protocol-level surveys determine the territory is vacant. If emergency repairs are required within the breeding season, the company shall notify the Forest Service within 24 hours. (SBNF Biological Report PDF CC-1)	Less than Significant
California Spotted Owl ( <i>Strix occidentalis occidentalis</i> )	Significant	<b>Mitigation Measures BIO-6 and BIO-13 through BIO-15.</b>	Less than Significant
Willow Flycatcher ( <i>Empidonax traillii</i> )	Significant	<b>Mitigation Measures BIO-1 and BIO-13 through BIO-15.</b>	Less than Significant
Gray Vireo ( <i>Vireo vicinior</i> )	Significant	<b>Mitigation Measures BIO-1 and BIO-13 through BIO-15.</b>	Less than Significant
Bendire’s Thrasher ( <i>Toxostoma bendirei</i> ), LeConte’s Thrasher ( <i>Toxostoma leconteri</i> ), Yellow Warbler ( <i>Dendroica petechial brewsteri</i> )	Less than Significant	None Required	Less than Significant
Golden Eagle ( <i>Aquila chrysaetos</i> )	Significant	<b>Mitigation Measures BIO-1, BIO-6, BIO-7 through BIO-10, BIO-13 through BIO-15.</b>	Less than Significant
<b>Impact BIO-1f:</b> Other Special Status Species – Mammals	See Below	See Below	See Below

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
Long-eared Myotis ( <i>Myotis evotis</i> ), Fringed Myotis ( <i>Myotis thysanodes</i> ), Long-legged Myotis ( <i>Myotis Volans</i> ), Small-footed Myotis ( <i>Myotis ciliolabrum</i> ), Western Red Bat ( <i>Lasiurus blossevillii</i> ), Spotted Bat ( <i>Eucerna maculatum</i> ), Townsend’s Big-eared Bat ( <i>Corynorhinus townsendii</i> ), Pallid Bat ( <i>Antrozous pallidus</i> ), Mexican Free-tailed Bat ( <i>Tadarida brasiliensis</i> ), Pocketed Free-tailed Bat ( <i>Nyctinomops femorosaccus</i> ), Western Mastiff (Bonneted) Bat ( <i>Eumops perotis</i> ), Yuma Myotis ( <i>Myotis yumanensis</i> ), Little Brown Myotis ( <i>Myotis lucifugus</i> )	Significant	Mitigation Measure BIO-1	Less than Significant
San Bernardino Flying Squirrel ( <i>Glaucomys sabrinus californicus</i> ), San Diego Pocket Mouse ( <i>Chaetodipus fallax fallax</i> ), San Diego Desert Woodrat ( <i>Neotoma lepida intermedia</i> )	Less than Significant	None Required	Less than Significant
American Badger ( <i>Taxidea taxus</i> )	Significant	Mitigation Measure BIO-1	Less than Significant
Nelson’s Bighorn Sheep ( <i>Ovis canadensis nelsoni</i> )	Significant	Mitigation Measures BIO-1, BIO-6, and the following:	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
<p>Nelson’s Bighorn Sheep (<i>Ovis canadensis nelsoni</i>) (continued)</p>	<p>Significant</p>	<p><b>Mitigation Measure BIO-16: Bighorn Sheep Foraging Habitat:</b> When trucks spray water on haul roads to control fugitive dust, some overspray occurs on road berms for a short distance beyond. Those watered areas sometimes support vegetation that bighorn sheep consume. Omya will not make an effort to eliminate the overspray. The Project’s Revegetation Plan shall focus on using native species that will help enhance bighorn sheep habitat. (SBNF Biological Report PDF BHS-1)</p>	<p>Less than Significant</p>
	<p>Significant</p>	<p><b>Mitigation Measure BIO-17: Bighorn Sheep Reporting of Mortality:</b> Omya shall immediately report any bighorn sheep mortalities, whatever the cause, to the CDFW and Forest Service as soon as possible after the observation. The bighorn sheep carcass shall be left in place until the CDFW or Forest Service biologist can examine it and determine the proper disposal method. In the event that mountain lion predation is occurring at levels that compromise the viability of the population, Omya shall cooperate fully by ensuring access to Omya properties to determine the predator involved or, in the event that an individual predator has been identified, for removal of the predator. (SBNF Biological Report PDF BHS-2)</p>	<p>Less than Significant</p>

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
Nelson’s Bighorn Sheep ( <i>Ovis canadensis nelsoni</i> ) (continued)	Significant	<p><b>Mitigation Measure BIO-18: Bighorn Sheep Monitoring/Adaptive Management:</b> Omya shall monitor bighorn sheep use in and near their operations and at water sources in and adjacent to their operations. Monitoring shall consist of maintenance of cameras stationed at water sources and recording of data from cameras in a database developed by CDFW, as well as collection of observations by Omya employees. An annual monitoring report will be provided to the Forest Service and CDFW. (SBNF Biological Report PDF BHS-3)</p>	Less than Significant
Nelson’s Bighorn Sheep ( <i>Ovis canadensis nelsoni</i> ) (continued)	Significant	<p><b>Mitigation Measure BIO-19: North Slope Bighorn Sheep Conservation Strategy:</b> A Draft North Slope Bighorn Sheep Conservation Strategy will be developed by CDFW and the Forest Service which will include:</p> <ul style="list-style-type: none"> <li>• Guidelines/thresholds for population status that would trigger augmentation of the herd;</li> <li>• A strategy/guidelines for developing water sources to respond to drought years;</li> <li>• Herd monitoring methodology and objectives.</li> </ul> <p>Omya will be a partner in the North Slope Bighorn Sheep Conservation Strategy and will help support the long-term management goals of maintaining a sustainable population of bighorn sheep on the North Slope. (SBNF Biological Report PDF BHS-4)</p>	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
Nelson’s Bighorn Sheep ( <i>Ovis canadensis nelsoni</i> ) (continued)	Significant	<b>Mitigation Measure BIO-20: Future Conservation and Management:</b> Within one year after approval, Omya shall begin contributing to a non-wasting endowment, designated as the North Slope Bighorn Sheep Conservation Fund (Fund). The amount of Omya’s contributions shall be determined by CDFW in coordination with Omya. The Fund shall be administered by the National Fish and Wildlife Foundation as a sub-account of the California Department of Fish and {Game} Wildlife Master Mitigation Account. This sub-account shall be managed as a long term endowment dedicated to activities that aid in conservation and monitoring of bighorn sheep both within the Cushenbury herd and on proximate habitats, occupied or unoccupied, including the Bighorn Mountains and San Gorgonio Wilderness where immigration and emigration may connect groups into a functional metapopulation. (SBNF Biological Report PDF BHS-5)	Less than Significant
	Significant	<b>Mitigation Measure BIO-21: Bighorn Sheep Employee Awareness Training:</b> Omya will consult with the CDFW to incorporate bighorn sheep education and awareness into their training for employees and contractors. Training will include how to minimize impacts to bighorn sheep and include guidelines for driving, operation of heavy equipment, general quarry operation, and blasting in bighorn sheep habitat. (SBNF Biological Report PDF BHS-6)	Less than Significant
Mountain Lion ( <i>Felis concolor californica</i> )	Significant	<b>Mitigation Measure BIO-1</b>	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
<p><b>Impact BIO-2:</b> Substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service. <i>(CEQA Guidelines Threshold Criteria (b))</i></p>	<p>Significant</p>	<p><b>Mitigation Measure BIO-22: Jurisdictional Water and Agency Consultation:</b> Prior to activities that could impact Waters of the United States or the State as identified in the Project JD, the ACOE, RWQCB-Lahontan Region and CDFW shall be consulted for concurrence with the findings of the JD and to determine if regulatory permits or approvals (i.e.: Streambed Alteration Agreement, coverage under the National Permit, Waste Discharge Request/Section 401) would be required and if considered necessary, the appropriate permits and/or approvals shall be obtained.</p>	<p>Less than Significant</p>
<p>Other Sensitive Natural Communities</p>	<p>Significant</p>	<p><b>Mitigation Measure BIO-1</b></p>	<p>Less than Significant</p>
<p><b>Impact BIO-3:</b> Substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or any other means. <i>(CEQA Guidelines Threshold Criteria (c))</i></p>	<p>Less than Significant</p>	<p>None Required</p>	<p>Less than Significant</p>
<p><b>Impact BIO-4:</b> Substantial interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. <i>(CEQA Guidelines Threshold Criteria (d))</i></p>	<p>Less than Significant</p>	<p>None Required</p>	<p>Less than Significant</p>

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
<p><b>Impact BIO-5:</b> Conflict with any local policies or ordinances protecting biological resources such as a tree preservation policy or ordinance. (CEQA Guidelines Threshold Criteria (e))</p>	<p>Less than Significant</p>	<p>None Required</p>	<p>Less than Significant</p>
<p><b>Impact BIO-6:</b> Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan. (CEQA Guidelines Threshold Criteria (f))</p>	<p>Significant</p>	<p>Carbonate Habitat Management Strategy:  <b>Mitigation Measures BIO-1, PLANT-1 and PLANT-2, CARB-1 and CARB-2</b>                      Raptor Conservation Strategy: <b>Mitigation Measures BIO-6 through BIO-10</b>                      North Slope Bighorn Sheep Conservation Strategy:  <b>Mitigation Measures BIO-6, BIO-16 through BIO-20</b></p>	<p>Less than Significant</p>
<p><b>Cultural</b></p>			
<p>Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5. (CEQA Guidelines Threshold Criteria (a))</p>	<p>No Impact</p>	<p>None Required</p>	<p>No Impact</p>
<p>Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5. (CEQA Guidelines Threshold Criteria (b))</p>	<p>No Impact</p>	<p>None Required</p>	<p>No Impact</p>
<p>Directly or indirectly destroy a unique paleontological resource or site or unique geological feature. (CEQA Guidelines Threshold Criteria (c))</p>	<p>No Impact</p>	<p>None Required</p>	<p>No Impact</p>
<p>Disturb any human remains, including those interred outside of formal cemeteries. (CEQA Guidelines Threshold Criteria (d))</p>	<p>No Impact</p>	<p>None Required</p>	<p>No Impact</p>

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
<b>Geology &amp; Soils</b>			
<p><b>Impact GS-1:</b> Expose people or structures to potential substantial adverse effects, involving the risk of loss, injury, or death involving (CEQA Guidelines Threshold Criteria (a)):</p> <ul style="list-style-type: none"> <li>• Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zone Map issued by the State Geologist for the area or based on other substantial evidence of known fault;</li> <li>• Strong seismic ground shaking;</li> <li>• Seismic-related ground failure, including liquefaction; or landslides.</li> </ul> <p><i>(CEQA Guidelines Threshold Criteria (a))</i></p>	<p>Significant</p>	<p><b>Mitigation Measure GS-1: Inspect slope conditions after seismic events and remove precarious rocks from slopes:</b> This mitigation measure requires that slope conditions in the Project Area be inspected after a seismic event exceeding 5.5 magnitude on the Richter Scale originating from an epicenter located within 100 miles of the Project Area. Quarry operations will be halted until a qualified geotechnical engineer is retained to inspect slope conditions for potential loose blocks or other unsafe or unstable conditions. Any required slope stabilization measures must lead to achievement of a minimum factor of safety of 1.5 before quarry operations continue.</p> <p>Under this mitigation measure, the Project Area also must be inspected for precarious rocks. Natural weathering processes would result in accumulation of talus on excavated benches. The talus can be left on the slopes to facilitate revegetation and to give reclaimed slopes a relatively natural appearance. It is anticipated that any boulders resulting from weathering processes would be angular and would therefore be less likely to roll downhill. Any large unstable rounded boulders on slopes steeper than 2:1 must be removed or stabilized where accessible. Areas below loose rocks must be restricted from entry and identified with proper signage.</p>	<p>Less than Significant</p>
<p><b>Impact GS-2:</b> Result in substantial soil erosion or the loss of topsoil. <i>(CEQA Guidelines Threshold Criteria (b))</i></p>	<p>Less than Significant</p>	<p>None Required</p>	<p>Less than Significant</p>

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
<p><b>Impact GS-3:</b> Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse. <i>(CEQA Guidelines Threshold Criteria (c))</i></p>	<p>Less than Significant</p>	<p>None Required</p>	<p>Less than Significant</p>
<p>Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to the life or property. <i>(CEQA Guidelines Threshold Criteria (d))</i></p>	<p>Less than Significant</p>	<p>None Required</p>	<p>Less than Significant</p>
<p>Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water. <i>(CEQA Guidelines Threshold Criteria (e))</i></p>	<p>Less than Significant</p>	<p>None Required</p>	<p>Less than Significant</p>
<p><b>Hazards &amp; Hazardous Materials</b></p>			
<p>Create a significant hazard to the public or the environment through routine transport, use or disposal of hazardous materials. <i>(CEQA Guidelines Threshold Criteria (a))</i></p>	<p>Less than Significant</p>	<p>None Required</p>	<p>Less than Significant</p>
<p>Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. <i>(CEQA Guidelines Threshold Criteria (b))</i></p>	<p>Less than Significant</p>	<p>None Required</p>	<p>Less than Significant</p>

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing school. <i>(CEQA Guidelines Threshold Criteria (c))</i>	No Impact	None Required	No Impact
Be located on a site which is included on a list of hazardous materials sites compiled pursuant Government Code Section 65962.5 and as a result, would it present a significant hazard to the public or the environment. <i>(CEQA Guidelines Threshold Criteria (d))</i>	No Impact	None Required	No Impact
For a project located within an airport land use plan or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the Project Area. <i>(CEQA Guidelines Threshold Criteria (e))</i>	No Impact	None Required	No Impact
For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the Project Area. <i>(CEQA Guidelines Threshold Criteria (f))</i>	No Impact	None Required	No Impact
Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. <i>(CEQA Guidelines Threshold Criteria (g))</i>	No Impact	None Required	No Impact

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
Expose people or structures to a significant risk or loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. <i>(CEQA Guidelines Threshold Criteria (h))</i>	Less than Significant	None Required	Less than Significant
<b>Hydrology</b>			
<b>Impact HWQ-1:</b> Violation of any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater water quality. <i>(CEQA Guidelines Threshold Criteria (a))</i>	Less than Significant	None Required	Less than Significant
<b>Impact HWQ-2:</b> Substantial depletion groundwater supplies or substantial interference with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted). <i>(CEQA Guidelines Threshold Criteria (b))</i>	Less than Significant	None Required	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
<p><b>Impact HWQ-3:</b> Substantial alteration of the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on-or off-site. <i>(CEQA Guidelines Threshold Criteria (c))</i></p>	<p>Less than Significant</p>	<p>None Required</p>	<p>Less than Significant</p>
<p><b>Impact HWQ-4:</b> Substantial alteration of the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on-or off-site. <i>(CEQA Guidelines Threshold Criteria (d))</i></p>	<p>Less than Significant</p>	<p>None Required</p>	<p>Less than Significant</p>
<p><b>Impact HWQ-5:</b> Creation or contribution to runoff water which would exceed the capacity of existing or planned stormwater drainage systems, cause flooding on-and off-site, or provide substantial additional sources of polluted runoff. <i>(CEQA Guidelines Threshold Criteria (e))</i></p>	<p>Less than Significant</p>	<p>None Required</p>	<p>Less than Significant</p>
<p><b>Impact HWQ-6:</b> People or structures exposure to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam. <i>(CEQA Guidelines Threshold Criteria (h))</i></p>	<p>Less than Significant</p>	<p>None Required</p>	<p>Less than Significant</p>

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
<b>Impact HWQ-7:</b> Inundation by seiche, tsunami, or mudflow. (CEQA Guidelines Threshold Criteria (i))	Less than Significant	None Required	Less than Significant
<b>Noise</b>			
Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies. (CEQA Guidelines Threshold Criteria (a))	Less than Significant	None Required	Less than Significant
Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. (CEQA Guidelines Threshold Criteria (b))	Less than Significant	None Required	Less than Significant
A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. (CEQA Guidelines Threshold Criteria (c))	Less than Significant	None Required	Less than Significant
A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. (CEQA Guidelines Threshold Criteria (d))	Less than Significant	None Required	Less than Significant
For a project located within an airport land use plan or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels. (CEQA Guidelines Threshold Criteria (e))	No Impact	None Required	No Impact

Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels. <i>(CEQA Guidelines Threshold Criteria (f))</i>	No Impact	None Required	No Impact

THIS PAGE IS INTENTIONALLY BLANK

## 1.0 PURPOSE OF AND NEED FOR ACTION

The United States Department of Agriculture, Forest Service, San Bernardino National Forest (SBNF) and the County of San Bernardino (County) have prepared this joint Draft Environmental Impact Report and Draft Environmental Impact Statement (Draft EIR/EIS) in response to Omya California (Omya) submittal of the following applications:

- An Amended Plan of Operations (POO) and Reclamation Plan to the Forest Service; and
- A Mining and Land Reclamation Plan Conditional Use Permit (CUP) application to the County.

Implementation of the Proposed Project / Proposed Action (Project) requires discretionary approvals from Federal, State, and local agencies; therefore, this Project is subject to the environmental review requirements of both the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). To ensure coordination between the NEPA and CEQA processes, and to avoid duplication of effort, this joint Draft EIR/EIS has been prepared as recommended by CEQA Guidelines Title 14 California Code of Regulations (CCR) Section 15222 and 40 CFR 1506.25. The Forest Service is the NEPA Lead Agency and the County is the CEQA Lead Agency for the joint Draft EIR/EIS.

The Project is the expansion of the Butterfield and Sentinel limestone quarries and is located approximately 7.5 miles south of the community of Lucerne Valley and 5 miles north of Big Bear Lake within the SBNF in San Bernardino County, California (see Figure 1-1 and Figure 1-2). The existing Butterfield and Sentinel limestone quarries are entirely within portions of approximately 954 acres of unpatented placer claims controlled by Omya but located on public land administered by SBNF.

The Omya Lucerne Valley mining and reclamation operations consist of the Butterfield and Sentinel, White Knob/White Ridge (White Knob), Cloudy, and Claudia Quarries. The Project only involves the Butterfield and Sentinel Quarries. White Knob is an existing quarry located northwest of the Project. An expansion to the White Knob Quarry was recently evaluated under a separate CEQA process and obtained approval for the proposed activities. Cloudy and Claudia quarries are inactive and have either been successfully reclaimed or are currently being reclaimed and/or monitored.

Known limestone ore resources within the proposed quarry expansion areas would add an additional 40 years of life to the Butterfield Quarry, an additional 20 years of life to the Sentinel Quarry, and would allow mining at both quarries to be extended until 2055. Depending on market demand, the combined Butterfield and Sentinel Quarries average ore production rates would be approximately 680,000 tons per year compared to the 3-year average from 2004 – 2006 of approximately 378,000 tons per year. Reclamation would occur concurrently with mining. The proposed expansion as shown on Figure 1-2 would include 30.6 acres of disturbance at the Butterfield Quarry, and 64.3 acres of disturbance at the Sentinel Quarry area. The 64.3 acres of disturbance at the Sentinel Quarry includes 16 acres at the Sentinel Quarry, 27.8 acres at the Overburden Pad 5, 19.5 acres in the Central Area and 1 acre for a maintenance buffer at the Sentinel North Pad. The total area of disturbance associated with the Project would be 94.9 acres. Quarry development and expansion would be phased. Disturbance proposed for

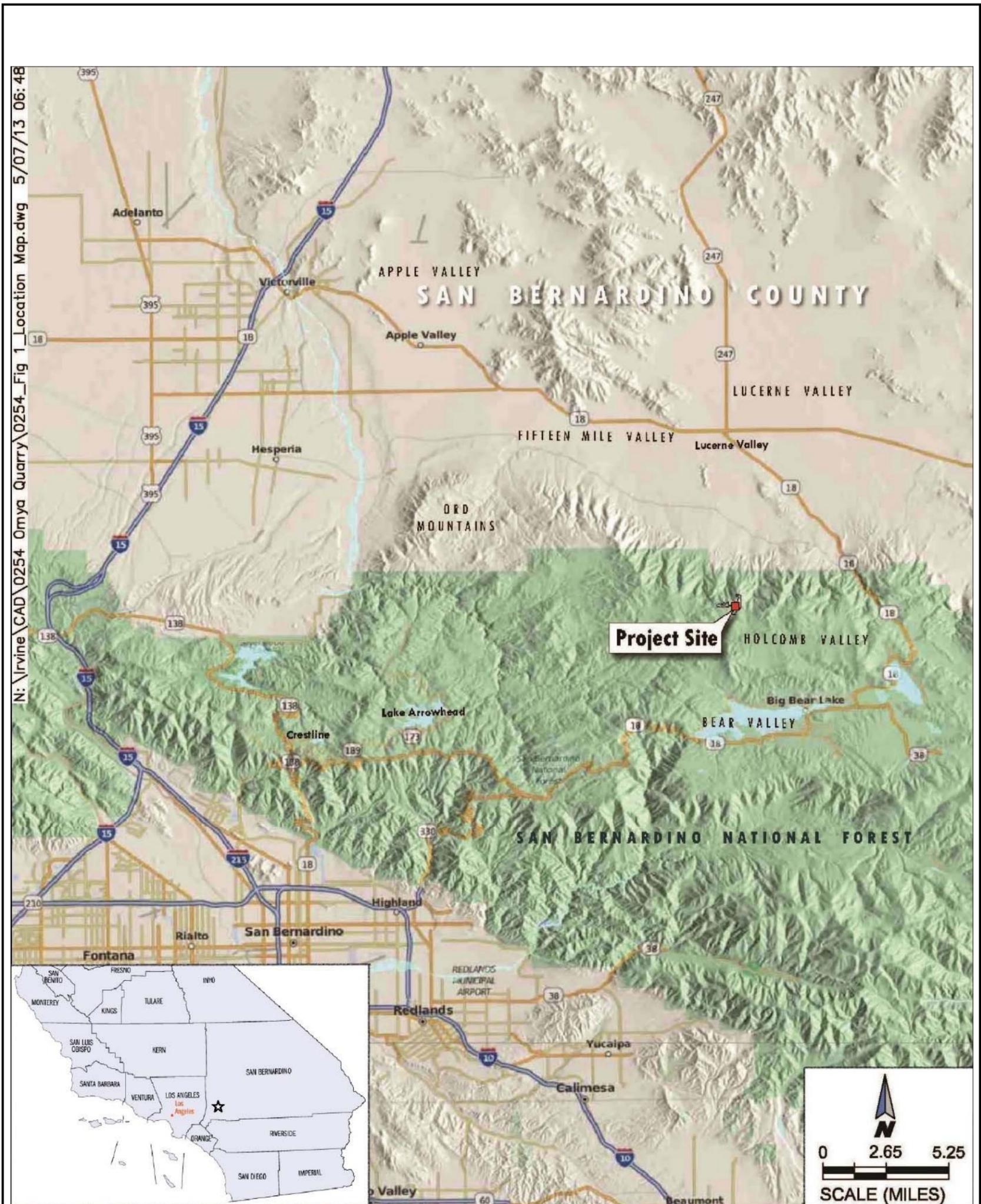
the Project includes expansion of existing Butterfield and Sentinel Quarries, expansion of associated overburden placement sites, additional internal access roads and ancillary facility areas, and minor adjustments to existing disturbance boundaries. The Project does not include any new quarries, new haul roads or new overburden sites.

### **1.1 Project-Specific Forest Plan Amendment**

The SBNF has identified a need for change and a site-specific Project proposal to address the coarse-scale Land Management Plan (LMP) designations for Scenery Integrity Objectives (SIOs). During the Project environmental analysis, the interdisciplinary team determined that the initial Project proposal is not consistent with the existing LMP. The information and evaluation that occurred at the Project level that identified the need to change the SIO from High to Low in the Project Area is discussed in detail in the Aesthetics evaluation in Section 3.1. As a result of this analysis, there is a need for a site-specific amendment to the LMP.

The forest-wide scenery inventory included in the LMP (USDA Forest Service, 2006) was developed as a coarse-scale overview, with the understanding that it would be refined and expanded via project-level scenery analysis. Through the work produced on the Project scale, sufficient detail has been added to the scenery inventory to more accurately establish SIOs that reflect and support the LMP's desired conditions for the Project Area. The LMP Part 2 outlines the desired Project Area landscape character as the following: Desert Rim Place – is maintained as a modified to natural appearing landscape that functions as a sanctuary for a large number of federally listed native plants and a highly valued area for limestone production. The Project Area has a SIO of High and an existing scenic integrity level ranging from High to Very High. LMP direction is to maintain the landscape as modified to natural appearing because of the Project site's long cultural history and the local and regional economic impacts associated with mining, particularly mining for high-quality limestone mineral deposits. Forest plans are expected to be revised every 10 to 15 years, and it would be expected that the SIOs would be further refined at that time. According to LMP Aesthetic Management Standards – S10, temporary drops of more than one SIO level may be made during and immediately following implementation of a project provided they do not exceed three years.

With any action alternative, the SIO level in the Butterfield-Sentinel Quarry Project Area would be reduced by more than one level, from High to Low during the first 10 years of implementation. Therefore, due to this deviation from the LMP Aesthetic Management Standard – S10, a Project-specific forest plan amendment to the SIO is being considered. The proposed SIO for those areas affected in the Butterfield-Sentinel Project Area would be Low (see Figure 3.1.2 – Existing SIOs).

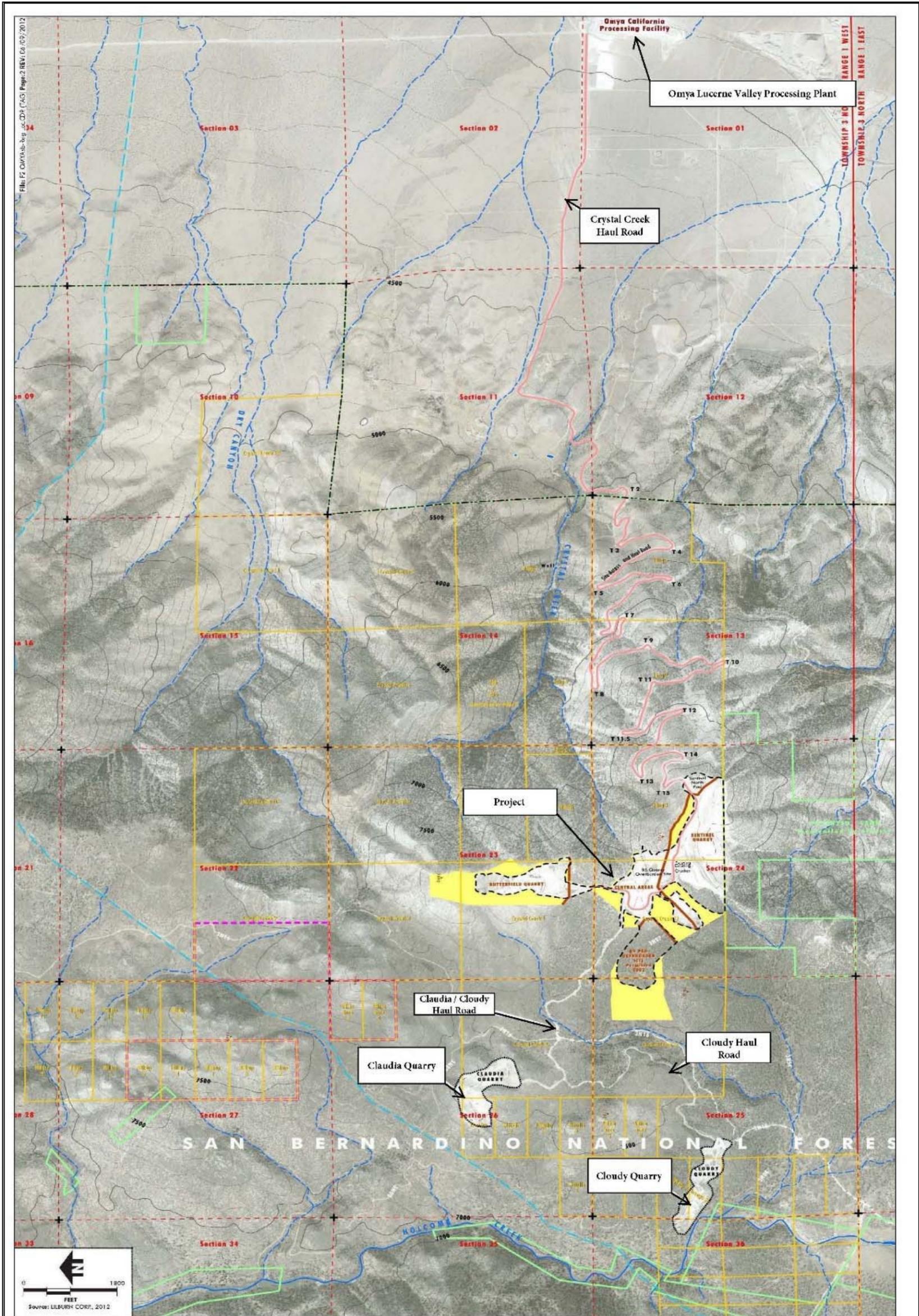


■ Project Site Location (Geographic Location)  
 California Zone 5 (FIPS 405); 6881064.78 1943854.58  
 Lat/Lon: 34° 19' 45.0165" N, 116° 56' 31.3945"

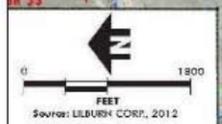
Source: SLR Consulting USA Pty Ltd, 5/2013

Figure 1-1 Regional Location

THIS PAGE IS INTENTIONALLY BLANK



File: F2 OMYA-Sub-Reg-CD9 (CAC) Page: 2 REV: 06/09/2012



LEGEND	
<span style="border: 1px dashed black; display: inline-block; width: 20px; height: 10px;"></span>	Existing Operating Area
<span style="background-color: yellow; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span>	Amended Operations
<span style="border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span>	Claims
<span style="color: red; font-weight: bold;">T 12</span>	Crystal Creek Turn-out
<span style="border-bottom: 1px dashed purple; width: 20px; display: inline-block;"></span>	Proposed Carbonate Mitigation
<span style="border-bottom: 1px solid green; width: 20px; display: inline-block;"></span>	Patented land Owned by Others
<span style="border-bottom: 1px solid black; width: 20px; display: inline-block;"></span>	Major Contour
<span style="border-bottom: 1px dashed black; width: 20px; display: inline-block;"></span>	Minor Contour
<span style="font-size: 1.2em;">▲</span>	Peak or Ridgeline Elevation
<span style="border-bottom: 1px solid black; width: 20px; display: inline-block;"></span>	SBNFS Boundary
<span style="border-bottom: 1px solid red; width: 20px; display: inline-block;"></span>	USGS Township
<span style="border-bottom: 1px solid red; width: 20px; display: inline-block;"></span>	USGS Section
<span style="border-bottom: 1px solid blue; width: 20px; display: inline-block;"></span>	Streams
<span style="border-bottom: 1px solid blue; width: 20px; display: inline-block;"></span>	Drainage
<span style="border-bottom: 1px solid blue; width: 20px; display: inline-block;"></span>	Water Body
<span style="border-bottom: 1px dashed blue; width: 20px; display: inline-block;"></span>	Pipeline (not a part of project)

Source: SLR Consulting USA Pty Ltd, 5/2013

Figure 1-2 Project Vicinity

THIS PAGE IS INTENTIONALLY BLANK

## **1.2 Document Structure**

This joint Draft EIR/EIS has been structured to address the requirements of both the most recent United States Forest Service (USFS) NEPA and California CEQA guidelines. The document evaluates the potential direct, indirect and cumulative environmental consequences that would result from the approval of the submitted applications. This document also considers alternatives to the Project, including the No Action alternative.

The Draft EIR/EIS has been organized into two Volumes. Volume 1 contains the Project Abstract, Executive Summary and Chapters 1.0 – 7.0. Volume 2 contains the Appendices.

The following sections have been provided to meet CEQA and NEPA requirements.

### **Project Abstract**

The Project abstract/cover sheet identifies the lead agencies, cooperating/responsible agencies and the county and jurisdictions where the Project is located. Information is provided regarding the public comment opportunities, including the deadline by which comments must be received and who to contact for further information. This section also provides a summary of the joint Draft EIR/EIS.

### **Executive Summary**

The Executive Summary provides a brief description of the Draft EIR/EIS. This includes the Project, the potential environmental consequences associated with the Project and alternatives, and the level of significance before and after mitigation measures were applied. It summarizes the major areas of controversy, the issues to be resolved, any unavoidable adverse effects and identifies the environmental preferred alternative.

### **Section 1.0 – Purpose of and Need for Action**

Section 1.0 focuses on the underlying need to which the agencies are responding in proposing the action and alternatives, the framework in which the decisions will be made and significant issues associated with the Project. This section addresses several different key elements of the Draft EIR/EIS. It includes a discussion of the document structure, the Project background, a description of the similarities and differences between NEPA and CEQA, how the joint Draft EIR/EIS is prepared, the purpose and need for the Project, a description of the Project, how a decision is made, a description of the required permits and approvals that will be required, how related environmental requirements are integrated, a detailed outline of how the public can be involved in the process and provide their comments, and key issues associated with the Project and other alternatives.

## Section 2.0 – Alternatives, Including the Proposed Project

This section provides a detailed description of each of the alternatives, including the Project, no action alternative, and the other two alternatives developed during the scoping process. Each alternative is described in detail, and presented in a comparative form to show how they differ. The alternatives considered and eliminated from detailed study are also provided. Finally, this section includes a comparison of the potential environmental impacts associated with each alternative.

## Section 3.0 – Affected Environment and Environmental Consequences

Section 3.0 describes the affected environment and the potential environmental consequences associated with the Project and the alternatives considered in detail. It also includes a discussion of the regulatory framework, methodology, significance criteria, mitigation measures, and cumulative effects/impacts. It evaluates direct and indirect impacts, as well as possible conflicts between the Project and the objectives of Federal, State, regional, local and Native American land use, policies and/or controls for the resource areas that have been evaluated in this Draft EIR/EIS.

The Initial Study, prepared per CEQA Guidelines for the Project, identified that there was the potential for a significant impact to the following environmental factors (also referred to as resource areas):

- Aesthetics
- Air Quality
- Biological Resources
- Cumulative Impacts
- Geology and Soils Resources
- Greenhouse Gases
- Hydrology and Water Quality

The evaluation of the potential direct and indirect impacts to these resource areas, cumulative impacts, and appropriate mitigation measures are discussed in Section 3.0. In addition, even though the Initial Study concluded that there would be no impact or a less than significant impact associated with the following areas, due to the potential for public interest, they are also briefly discussed in Section 3.0:

- Agriculture and Forestry
- Cultural Resources
- Hazards and Hazardous Materials
- Noise

## Section 4.0 – Other NEPA and CEQA Considerations

This section addresses some of the additional considerations required by the NEPA and CEQA processes. These include short term uses, long term productivity, significant unavoidable adverse impacts, irreversible and irretrievable commitments of resources, identification of the environmentally preferred/superior alternative, growth inducing effects, Mitigation Monitoring and Reporting Program (MMRP), and CEQA finding of fact and statements of overriding considerations (if needed).

## Section 5.0 – Consultation and Coordination

This section lists all the Federal, State, local and Native American agencies that assisted in the preparation of or contributed to the development of the Draft EIR/EIS. It lists the names of the persons who were primarily responsible for preparing the Draft EIR/EIS and/or significant background or technical reports. It also provides the names of the agencies, organizations and persons to whom the Draft EIR/EIS was sent to and where the document was made available for public review.

## Section 6.0 – References

Section 6.0 provides a list of references. The analyses conducted for this Project reflect the information available at the time the document was prepared. In accordance with NEPA and CEQA, the Draft EIR/EIS has incorporated technical studies and detailed documents by reference to streamline the Draft EIR/EIS. Brief descriptions of the referenced material are provided in the appropriate sections of the Draft EIR/EIS. Copies of these documents are provided either in the appendices, or are available on the agency or other referenced websites and are included in the Administrative Record. The information provided in the Draft EIR/EIS and the referenced documents is intended to provide adequate site-specific information for the responsible agency officials to make reasoned decisions.

## Section 7.0 – Acronyms

Section 7.0 provides a list of acronyms.

## Appendices

The appendices included with the Draft EIR/EIS are organized in the following manner. They may be referenced in a different order in the document.

- Appendix A: Public Scoping Process
- Appendix B: Initial Study (February 2013)
- Appendix C: Plan of Operation/Reclamation (Lilburn, updated 2017)
- Appendix D: Reserved
- Appendix E: Air Quality, Health Risk & Greenhouse Gas Impact Analysis (Sespe, updated 2017)
- Appendix F: Biological Resources
  - Biological Report (SBNF, updated 2017)
  - Jurisdictional Delineation (Tetra Tech, 2016)
  - Bat Habitat Assessment (Tetra Tech, 2014)
  - Raptor Conservation Strategy (SBNF, updated December 2016)
  - North Slope Raptor Survey (BBI, August 2015) – RESERVED
  - CHMS/OMYA Agreement (April 2003)
- Appendix G: Cultural Reports
  - Cultural Resources Inventory (Michael K. Lerch & Associates, 1984)

- Archeological Survey (San Bernardino National Forest, 1998)
- Archaeological Reconnaissance Report (USDA Forest Service, 2010)
- Appendix H: Geology & Soil Technical Reports
  - Slope Stability Investigation (CHJ, 2012 updated 2017)
  - Geology & Soil Report (SLR, 2013)
- Appendix I: Hydrology & Water Quality Technical Report
  - Water Supply Assessment (Lilburn, June 2013)
  - Hydrology Technical Study (SLR, 2016, updated 2017)
  - Drainage Control Program, Crystal Creek Haul Road (Pluess-Staufer, 1992)
  - Spill Prevention, Control, and Countermeasures Plan (Webber & Webber Mining Consultants, 1997)
- Appendix J: Scenery Report (Lilburn Corporation, 2014)
- Appendix K: Storm Water Pollution Prevention Plan (Omya, 2017)
- Appendix L: Draft EIR/EIS Distribution List

### 1.3 Background

Mining on the properties now controlled by Omya and within which the Project would occur began by the Sentinel Mining Company during the late 1950s and has been, more or less, continuous since 1958. The Crystal Creek Haul Road was started in 1958 and was extended to the top of the mountain at that time. Mining of the Sentinel deposit began by La Habra Products during the early 1970's and mining of the Butterfield deposit began by Pluess-Staufer (later renamed Omya) during the late 1970's.

Omya acquired the mining and processing operation in 1976 at which time extensive geologic exploration and quarry development programs were initiated. Omya has continuously mined these quarries since that time. Geologic mapping, sampling and core drilling continue to the present day, and have substantially increased limestone resources. According to geological assessments prepared for Omya, the Butterfield and Sentinel resources are adequate to allow mining to continue until at least 2055 at present and projected rates of mining.

The United States mining laws confer a statutory right to enter upon the public lands to search for minerals, and require that these activities be conducted so as to minimize adverse environmental impacts on National Forest System surface resources. The Forest Service administers exploration and development on National Forest System lands under mining regulations. On January 11, 1988, the Forest Service approved an Omya Umbrella Plan of Operations and Reclamation Plan which included the Sentinel, Butterfield, Cloudy, and Claudia quarries and associated haul roads.

In 1975, the Surface Mining and Reclamation Act (SMARA) was enacted by the California Legislature to address the need for a continuing supply of mineral resources and to prevent or minimize the negative impacts of surface mining to public health, property and the environment. SMARA requires that a Reclamation Plan be submitted to the designated SMARA lead agency for review and approval. The current SMARA Plan of Operations and Reclamation Plan was approved by the County (SMARA lead

agency) and the Forest Service in 1994. The site is designated with CA Mine ID# 91-36-0052 by the Department of Mine Reclamation (DMR).

In 2002/2003 Omya submitted a Sentinel Quarry Area Expansion Plan of Operations and Reclamation Plan and received approval for the expansion from the Forest Service. The 2003 Reclamation Plan includes a site specific approved Revegetation Plan, including growth media salvage, organics placement, seeding and revegetation, seed collection and propagation, irrigation, monitoring and maintenance plans and bond release criteria. The Project would incorporate the conditions identified in the previously approved Revegetation Plan.

#### **1.4 Type of Environmental Document**

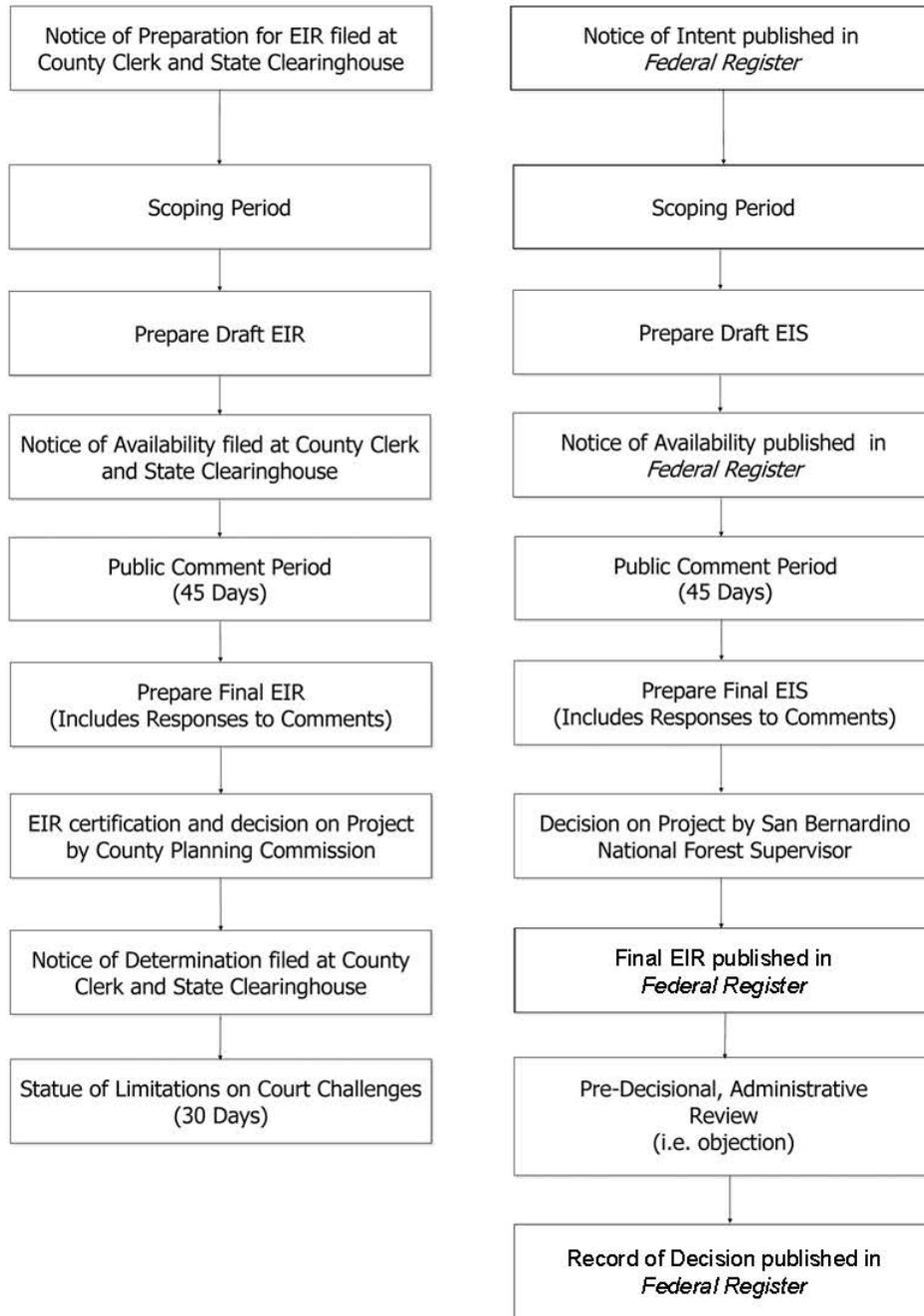
As discussed in Section 1.2, because the Project requires discretionary approvals from Federal, State and local agencies, the Project is subject to NEPA and CEQA. Therefore, this is a joint Draft EIR/EIS. A flow chart summarizing the CEQA and NEPA processes is provided in Figure 1-3.

This Draft EIR/EIS is intended to serve as a document to inform public agency decision-makers (lead, cooperating, responsible and trustee agencies) and the public of the potentially significant environmental effects associated with the Project, identify ways to minimize or eliminate the significant effects, and evaluate a reasonable range of alternatives that meet the major objectives of the Project but further reduce or avoid significant environmental effects.

CEQA Guidelines Section 15151 contains the following standards of adequacy: *“An EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and good faith effort at full disclosure.”*

According to the Council of Environmental Quality (CEQ) NEPA implementing regulations (40 CFR 1502), an EIS should present the environmental impacts of the Proposed Action (Project), and all reasonable alternatives in comparative form, defining the issues and providing a clear basis for choice by decision makers and the public. The CEQ has stated that *“reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense rather than simply desirable from the standpoint of the applicant.”*

## The Environmental Impact Report/ Environmental Impact Statement Process



Source: RGP/Sespe Consulting, Inc.

**Figure 1-3 CEQA and NEPA Process Flow Chart**

## **1.5 Similarities and Differences between NEPA and CEQA**

Although there are similarities between NEPA and CEQA, the two acts are not identical. The following provides a brief description of some of the differences between NEPA and CEQA and how these differences have been addressed in this joint document.

### **1.5.1 Terminology**

NEPA and CEQA sometimes use different terms for similar concepts. Throughout this Draft EIR/EIS, NEPA and/or CEQA terminology may be used interchangeably. Often the alternative terminology is provided in parenthesis. For example, NEPA uses the term “Proposed Action” while CEQA uses the term “Proposed Project.” To minimize confusion, the Draft EIR/EIS typically uses the term “Project” synonymously for both the Proposed Action and Proposed Project. NEPA includes the Proposed Action as an alternative, whereas CEQA separates the Proposed Project from the other identified alternatives. This Draft EIR/EIS includes the Proposed Project as Alternative 2. The terms “effect” and “impact” are used synonymously, as are “environmental factors” and “resources areas”.

### **1.5.2 Initial Study and Environmental Assessment**

CEQA Guidelines Section 15063 and County Guidelines Ordinance 3040 state that an Initial Study should be conducted to determine if a project may have a significant effect on the environment. However, if the CEQA lead agency can determine that an EIR will clearly be required for a project, an Initial Study is not required but may still be desirable. An Initial Study can provide the lead agency with information that will assist in the preparation of the EIR by:

- Focusing the EIR on the issues determined to be potentially significant;
- Identifying the issues determined not to be potentially significant;
- Explaining the reasons for determining that potentially significant issues would not be significant; and
- Facilitating environmental impact assessment early in the design of the project.

Based on the Initial Study conducted for this Project, the County determined that an EIR must be prepared.

Under NEPA an Environmental Assessment (EA) provides a similar evaluation as the Initial Study. The Forest Service prepared an EA for a previous project proposed for the Sentinel Quarry. However, when the Sentinel Quarry project was enlarged to include the Butterfield Quarry, it was determined that an EIS was required for the currently proposed activities; therefore, eliminating the need for an EA for this Project.

### **1.5.3 Levels of Significance and Mitigation Measures**

NEPA is a procedural law requiring agencies to evaluate a range of reasonable alternatives, disclose potential impacts, and identify feasible mitigations. CEQA, in contrast, is partly “substantive” in that it

requires an agency to adopt “feasible” mitigation measures for any “significant effect on the environment.”

Under NEPA, significance is used to determine whether an EIS, or some lower level of documentation, will be required. NEPA requires that an EIS be prepared when the proposed Federal action (project) as a whole has the potential to “significantly affect the quality of the human environment.” The determination of significance is based on context and intensity of the environmental effects. Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA or vice versa. Under NEPA, once a decision to do an EIS is made, it is the magnitude of the impact that is evaluated. NEPA does not require that a determination of significant impacts be stated in the environmental documents.

CEQA, on the other hand, does require the lead agency to identify each significant impact on the environment and to provide ways to mitigate these impacts, if feasible. In addition, CEQA requires that if a significant impact has been identified, the lead agency must prepare written findings for each of the significant impacts. This is referred to as the Findings of Fact. If an impact is considered significant and unavoidable, the lead agency must also prepare a Statement of Overriding Consideration. There are no types of actions under NEPA that parallel the findings of mandatory significance in CEQA.

Another important aspect of CEQA is the concept of “baseline”. Under CEQA, lead agencies must identify the existing physical environment (i.e.; the baseline set of environmental conditions) against which to compare a project’s expected impacts in order to determine whether project impacts are “significant.” The lead agency does this by assessing the increment between the pre-project and likely post-project environmental conditions.

Because of the obligation under CEQA to provide mitigation for significant effects on the environment when feasible, the characterization of impacts as being either “significant” or “less than significant” is important. For this reason, this Draft EIR/EIS has been written in a manner that identifies significance thresholds and provides specific impact statements with corresponding impact analysis and significance determinations for each impact statement.

NEPA documents identify “design criteria” to evaluate the effect an action may have on the environment. Design criteria include the laws, the standards (36 CFR 219.11 (c) and 219.13 through 219.27) and other applicable guidance that the Forest Service uses during project planning and implementation. Standards are mandatory requirements that come into play as site-specific activities are planned for implementation, and are designed to be consistent with achieving the objectives and desired conditions. Design criteria act as thresholds or constraints for management activities or practices to ensure the protection of resources.

Under NEPA, the Forest Service is responsible for monitoring results and effects of the selected action. They must ensure that any necessary measures to minimize or mitigate potential environmental consequences identified in the EIR/EIS and Record of Decision (ROD) are addressed and implemented

appropriately. Reviews are documented during and upon project completion. SBNF has drafted a Land Management Plan (LMP) Monitoring Guide to assist in this process.

CEQA (Public Resources Code Section 21081.6) requires adoption of a mitigation and monitoring program referred to as the Mitigation, Monitoring and Reporting Plan (MMRP). The MMRP identifies the requirements placed on a project (in addition to the project design features and environmental minimization measures that were included as part of the project) to mitigate or avoid adverse effects on the environment and the agency responsible for ensuring compliance with each requirement.

#### **1.5.4 Mitigation, Monitoring and Reporting Program**

As discussed above, CEQA requires that projects include a MMRP for changes made to the project in order to avoid or mitigate potential significant effects on the environment.

Throughout this Draft EIR/EIS, impact statements which address each of the identified thresholds of significance are clearly provided and, if mitigation measures are determined necessary to mitigate potential impacts to less than significant, the mitigations are presented in language that will facilitate establishment of a MMRP. Each mitigation measure adopted by the Forest Service and the County will be included in the MMRP. The MMRP will be used to verify compliance with the conditions of approval. The MMRP will be provided in the Final EIR/EIS.

In addition to the identified mitigation measures, the Project contains “Project design features” which are already being implemented as part of Omya’s mining operations, or will be implemented as part of the Project. Many of the Project’s design features minimize or eliminate potential environmental impacts. Project design features must be implemented as described in the Draft EIR/EIS or other referenced documents.

### **1.6 Purpose and Need for Action**

#### **1.6.1 Purpose and Need for the Draft EIR/EIS**

The purpose and need for this Draft EIR/EIS is in response to Omya’s submittal of an Amended Plan of Operations and Reclamation Plan and an application for a Mining and Land Reclamation Plan Conditional Use Permit. Primarily the purpose is to provide the lead agencies with the necessary information needed to make an informed decision regarding the submitted plans and application.

The Forest Service is analyzing the Draft EIR/EIS in regards to the surface use of National Forest System lands in connection with operations authorized by the United States mining laws (30 United States Code Title 30 Chapters 21-54). The United States mining laws confer a statutory right to enter upon the public lands to search for minerals, and require that these activities be conducted so as to minimize adverse environmental impacts on National Forest System surface resources. The responsibility for managing mineral resources is placed with the Secretary of the Interior.

The Forest Service administers exploration and development of mineral resources on National Forest System lands under mining regulations codified in 36 CFR 228, Subpart A. These regulations direct the Forest Service to prepare the appropriate level of NEPA analysis and documentation when proposed operations may significantly affect surface resources. Mine operators planning mineral exploration and development activities, which are likely to cause significant disturbances to surface resources, are required to submit a Plan of Operation for review by the District Ranger (36 CFR 228.4(a)). Forest Service mining regulations state that, “operations shall be conducted so as, where feasible, to minimize adverse impacts on National Forest System surface resources” (36 CFR 228.8).

The County is analyzing this Draft EIR/EIS in regards to their discretionary decisions associated with the CUP process. In accordance with the County of San Bernardino General Plan and Development Code, the County regulates the uses of land and structures within unincorporated county areas. The Project is subject to the County’s CUP process, which is the application process the County uses to review the proposed location and operation of certain land use types. Through the CUP process, the Project is evaluated for consistency with the County General Plan, County development standards, compatibility with surrounding land uses, availability of public services and potential environmental impacts. The County is also lead agency for SMARA. SMARA provides for reclamation of mined lands with comprehensive reclamation policies and regulations that reduce the adverse environmental effects of mining operations and to ensure that mined lands are reclaimed to a usable condition.

### **1.5.2 Purpose and Need for the Project**

#### **Calcium Carbonate Resources**

The Project would allow the expansion of two existing limestone (calcium carbonate) quarries. Within the United States, productive deposits of white, high purity limestone are found in only a few areas and the Omya deposits are one of these sources. High calcium limestone can be used as whitening in the form of nontoxic fillers and extenders in a large number of products ranging from paper products to environmental cleanup, carpet backing, plastics, PVC, paint, paper and other building products. Limestone can also be used as a substitute for other components in industrial processes and the manufacture of consumer products.

Omya’s Lucerne Valley Processing Plant (LVPP) operations require high brightness, high purity limestone ore (calcium carbonate) of specific quantities and qualities to produce fine ground calcium carbonate for the numerous consumer and industrial products discussed above. To meet current and future product demand, Omya requires reliable and economic resources of high quality limestone ore. This has been achieved through the development of three rare limestone deposits, the White Knob Quarry to the west of the LVPP, and the Butterfield and Sentinel Quarries located to the south of the LVPP. The Project would assure Omya that the LVPP would have the raw limestone resources needed to meet consumer demand.

### **Mineral Resource Zoning**

Omya has petitioned and received from the California Division of Mines and Geology (CDMG) Mineral Resource Zone 2 status (MRZ-2) for the limestone deposits on the Omya claims. The Mineral Resource Zone Boundaries for MRZ-2 involve “*areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood for their presence exists*” (California Geological Survey, 1984). Core drilling, detailed geologic mapping and assay data proved the deposits are significant mineral resources (MRZ-2) and exceeded the MRZ-2 criteria established by the CDMG (Joseph, 1984). Figure 1-4 shows the MRZ zoning of the Omya claim area.

The MRZ-2 rating of the Butterfield and Sentinel Quarries limestone deposits indicates that these quarries are an important mineral source and their value to mining and land use planning is well recognized.

### **SBNF Land Management Plan**

Under the National Forest Management Act (NFMA), the Forest Service is required to identify the best use of forest land, including potential options such as mining, timber, range and recreation and prepare Land Management Plan (LMP), as discussed in Section 1.9.1. The purpose of the SBNF LMP is to articulate the long term vision and strategic management direction for the SBNF and to facilitate the development of activities that will contribute towards the realization of the National Forests’ desired conditions. Therefore, part of the purpose and need for this Project is to facilitate the development of management activities that will contribute towards the realization of the National Forests’ desired conditions as identified in the LMP Southern California National Forest Vision.

The Forest Service is proposing a Project-specific plan amendment due to inconsistencies with the SIO identified in the Project Area. The proposed amendment is analyzed to ensure conformity with the 2012 planning regulations. See the Aesthetics evaluation in Section 3.1 for more details.

THIS PAGE IS INTENTIONALLY BLANK

File: F1 OMYAsb-Reg Loc.CDR (TAG) Page:1 REV: 08/03/2012

**MINERAL LAND CLASSIFICATION MAP**  
of  
**LANDS PETITIONED BY PLUESS-STAUFER, INC.**  
**LIMESTONE RESOURCES ONLY**  
**SAN BERNARDINO COUNTY**

By Stephen E. Joseph  
1984

OFR 84-21 LA  
(PLATE 1A, REVISED 1984)

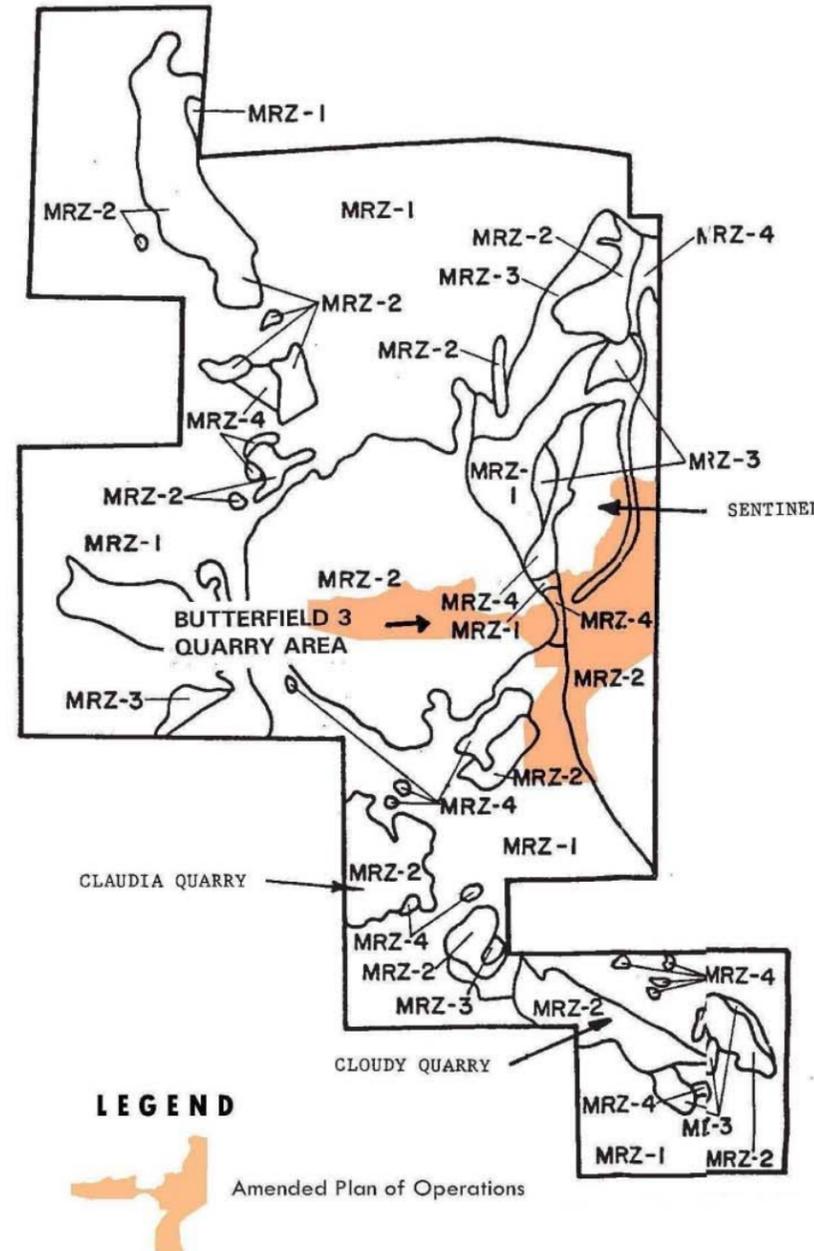
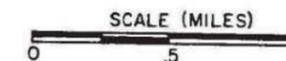
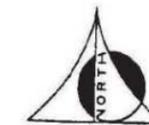
**EXPLANATION**

**MINERAL RESOURCE ZONE BOUNDARIES**

- MRZ-1 Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
- MRZ-2 Areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood for their presence exists.
- MRZ-3 Areas containing mineral deposits the significance of which cannot be evaluated from available data.
- MRZ-4 Areas where available information is inadequate for assignment to any other MRZ zone.

PREPARED IN COMPLIANCE WITH THE SURFACE MINING AND RECLAMATION ACT OF 1975, ARTICLE 4, SECTION 2761

*Stephen E. Joseph*  
STATE GEOLOGIST



Source: California Geological Survey, 1984.

Figure 1-4 Mineral Resource Zone (MRZ) Zoning

THIS PAGE IS INTENTIONALLY BLANK

## **Economic Benefit**

Long-term cumulative economic benefits of limestone mining along the north range front of the San Bernardino Mountains have added to the County economy for decades including tax payments and jobs. The limestone mining industry provides stable high paying jobs and professional careers for many people. The Project would allow continued (up to 40 years) mining of the resource and provide long-term employment for many employees.

Omya helps support Federal, State and local governments and schools through payment of property taxes, excise, fuel and other taxes for the long term. Omya supports local economies through direct purchases of equipment, materials, supplies, and services, and indirect turnover of these expenditures in the economy. Omya also supports local communities through charitable contributions, and employee involvement in various community affairs.

### **1.7 Project Objectives (CEQA)**

The overall intent of the Project is to supply the LVPP with high brightness, high purity limestone ore of specific quantities and qualities to produce fine ground calcium carbonate for numerous consumers and industrial products.

The Project was developed with these specific objectives/goals:

- Continue the mining and recovery of a rare calcium limestone resource;
- Supply the LVPP with sufficient quantities of reliable resources of high quality limestone for the production of a wide range of calcium carbonate products;
- Enable the LVPP to meet consumer demands;
- Make available for consumer and industrial use a recognized valuable mineral resource as identified by the MRZ-2 rating of the Butterfield and Sentinel limestone deposits;
- Provide long-term employment and economic benefits to the local community and County of San Bernardino.
- Minimize additional land disturbance through the expansion of contiguous existing quarries and minimal expansion of existing overburden stockpiles and haul roads;
- Limit the area of disturbance outside the quarries in order to reduce impacts on sensitive plant habitats and viewsheds by developing internal waste rock stockpiles within the completed portions of the quarries;
- Meet the SBNF regulations that require activities to cause no undue and unnecessary degradation;
- Meet the State's and County's requirements;
- Mitigate for impacts to carbonate plants consistent with the Carbonate Habitat Management Strategy by relinquishing mining claims;
- Minimize impacts to sensitive plants and wildlife including bighorn sheep and raptors through quarry design and conservation management programs;

- Reclaim the site for post-mining uses which will include open space habitat and be in compliance with SMARA regulations;
- Contour mining features and revegetate disturbed areas to minimize aesthetic and erosion impacts; and
- Reclaim and maintain the site as necessary to eliminate hazards to public safety.

### **1.8 Proposed Action/Proposed Project (Project)**

The Project includes the expansion of quarry and overburden areas, increased operational years and production, additional internal access road area, and minor adjustments to existing boundaries. The total existing approved operational area is approximately 137.5 acres. The Project would add approximately 94.9 acres for a total operational area of approximately 232.4 acres. The two quarries are adjacent to each other, utilize the same mining equipment, and share overburden stockpiles, haul and access roads. They both provide sized limestone ore to Omya's LVPP. Depending on market demand, average ore production rates to the LVPP would increase to approximately 680,000 tons of ore to the LVPP per year compared to the 3-year average from 2004 – 2006 of approximately 378,000 tons per year of ore to the LVPP. However, the production rate of product being generated at the processing plant and transported off-site to Omya's costumers would not be significantly increased by this Project. The LVPP is not part of the Project.

The following provides a summary of the proposed changes associated with the Project:

- An increase of 30.6 acres at the Butterfield Quarry;
- An increase of 16 acres at the Sentinel Quarry (mostly in-fill);
- An increase in Sentinel Quarry depth by 150 feet;
- An increase of 27.8 acres at the B5 Pad;
- Modifications to existing and planned overburden stockpile areas and haul roads in the Central Area (19.5 acres);
- Addition of a maintenance access buffer around the Sentinel North Pad (1.0 acres);
- An increase in average production from an average of 378,000 tons per year to an average of 680,000 tons per year (ore to the LVPP);
- An increase in the length of operations of 40 years at Butterfield Quarry;
- An increase in the length of operations of 20 years at Sentinel Quarry; and
- An increase in the length of use of the Crystal Creek Haul Road of 10 years until 2068 followed by 10 years for reclamation.

The existing operational hours currently in place at the quarries are not changing with this Project. Mining activities would vary through the year, and could occur 24 hours/day, 7 days/week depending on operational requirements. Blasting would be restricted to daylight hours. Winter snowfall and ore production requirements are the major determining factors for scheduling of mining. Other factors such as market conditions and maintenance requirements also may affect the operating schedule.

The quarries would be multi-bench open pit mines. Several working levels would be operated at any one time to supply the quota of ore needed to meet production demands. The multi-working level concept allows for greater selectivity and blending of rock qualities to meet stringent quality standards of customers, and allows maximum utilization of the resource. Five grades of ore would be selectively mined. The ore would be drilled and blasted, loaded into haul trucks and hauled to the crusher currently located just southwest of the Sentinel Quarry. Crushed ore would be loaded into off-road haul trucks and transported eight miles on the vested Crystal Creek Haul Road to the existing LVPP.

Waste rock, defined as limestone and other rock not suitable for the manufacture of Omya-produced limestone products would be stockpiled within the planned overburden stockpiles and/or backfilled within the quarries' footprints to reduce the size of separate stockpiles, thereby reducing surface disturbance and potential impacts to wildlife habitat, sensitive vegetation, and visual resources.

There would be no operational settling ponds on-site or new runoff diversion channels required. No change in the number of blasts is expected. Blasting occurs approximately once per week at each quarry. Table 1-1 summarizes the existing and proposed production and operational areas.

**Table 1-1 Existing and Proposed Quarries' Production and Operational Areas**

Quarry/Area	Project Proposed Area (acres)	Total Existing and Proposed Area (acres)	Ore Limestone Resources (millions of tons)	Annual Average Excavated (tons)	Annual Average Production – "ore to plant" (tons)	Annual Average Waste – including crusher fines <sup>1</sup> (tons)	Max. Depth (feet above ground surface)
Butterfield	30.6	52.3	7.6	356,500	162,500	194,000	200
Sentinel	16.0	75.6	24.4	1,131,000	517,500	613,500	600
B5 OB Pad	27.8	51.2	---	---	---	---	---
Central Area	19.5	47.8	---	---	---	---	---
Sentinel North Pad	1.0	5.5	---	---	---	---	---
<b>Totals</b>	<b>94.9</b>	<b>232.4</b>	<b>32</b>	<b>1,487,500</b>	<b>680,000</b>	<b>807,500</b>	---

Notes: Sentinel North Pad – Maintenance Buffer.

Volumes are estimated based on drilling data and computer modeling.

Area rounded to nearest tenth of an acre. Totals may be slightly different due to rounding.

In-situ or in-place limestone rock weight to volume ratio estimated at 2 tons per cubic yard.

Waste rock (interburden and overburden) excavated will vary annually depending on area being excavated.

1 – Fines produced from primary on-site crushing estimated at 15% of ore crushed.

The typical equipment list is included as Table 1-2 below. As operations progress, alternate equipment may be required to optimize operations and these are also listed in the table below. The alternate equipment would not substantively change the process described above. Required compliance with air quality regulations and permits would be obtained prior to placing equipment into operation.

**Table 1-2 Typical Quarry Equipment**

Equipment	Typical Number	Net Increase of Additional Equipment	Purpose
Dozer	1	0	Removal of topsoil and waste rock. Construction and maintenance of the haul road, and quarry bench grading.
50 to 100 Ton Off-Road Haul Trucks	8	2	Transportation of excavated material to the primary crusher and to overburden stockpiles onsite and transportation of crushed sized ore to the LVPP.
Drill Rig	1	0	Drill holes for placement of explosives.
Water Truck	1	0	Water spray haul roads, active quarry areas, overburden stockpiles, and general dust control onsite.
Front-End Loaders	2	1	Loading of excavated materials into haul trucks at the quarry and at the primary crusher.
Mobile Crusher/Screening System	---	1	Potential future replacement for existing stationary crusher.
Surface Miner	---	1	Potential future replacement to be used in place of crusher.
Excavator	---	1	Currently limited use for special projects and boulder breaking. Potential future replacement to be used in place of front-end loader.
35 to 45-Ton Haul Trucks	Varies	Varies	Limited use for special projects.
Ancillary Equipment	Varies	Varies	Maintenance vehicles, bobcats, backhoe, pick-ups, etc.

Notes: Similar equipment may be used during the life of the Project.

There are no new structures proposed to be constructed on-site. The existing or new primary crusher would be moved to a pad on the top of completed overburden storage areas approximately 1,000 feet south of its present location to facilitate the southward expansion of the Sentinel Quarry. Alternatively, the existing stationary crusher may be replaced with a mobile crushing/screening system. The on-site structures and facilities currently include the following:

- Truck dump hopper and vibrating feeder;
- Primary screen;
- Jaw crusher;

- Belt conveyors and radial stacker;
- One 40' van trailer and one 50' railroad boxcar containing electrical switchgear, spare parts, tools, and lunchroom;
- Two metal buildings;
- Portable toilets;
- One 10,000 gallon diesel fuel tank (double-walled) for mobile equipment; and
- One 10,000 gallon skid mounted non-potable water tank.

Quarry and overburden stockpile development and expansion would be phased. Concurrent quarry development and reclamation of equipment-accessible mined out portions of the quarries would be included in the phased expansion. Once the final outer limit and bottom of the ore is reached, the quarries would be partly backfilled as the remainder of the quarries are mined out. The Project allows for substantial backfill to be placed in the mined out portions of the quarries, and also provides for an efficient mining plan, minimum disturbance of new ground, phased incremental disturbance of new ground, and concurrent reclamation of the quarries and overburden stockpiles.

The previously approved SMARA 2003 Reclamation Plan includes a site-specific approved Revegetation Plan that identifies growth media salvage, organics placement, seeding and revegetation, seed collection and propagation, irrigation, site cleanup, public safety, rock and fill slope stability, drainage and erosion controls, a monitoring and maintenance plan, and bond release criteria. No changes in the approved Revegetation Plan for the Butterfield and Sentinel quarries are proposed other than increased acreage and timing changes as discussed in detail in Section 2.4.

The Proposed Action (Project) includes a proposed Project-specific amendment to the SBNF Land Management Plan. There is a need for the amendment to address inconsistencies with the SIOs identified in the Project Area. The proposed amendment is analyzed to ensure conformity with the 2012 planning regulations in the Aesthetics evaluation presented in Section 3.1.

## **1.9 Decision Framework**

Given the Project purpose, need and objectives; the Forest Service (Forest Supervisor) and County will review the Project, the issues identified during the scoping process, the alternatives, and the environmental consequences of implementing the Project and other alternatives. They will decide whether to adopt the Project; adopt a different strategy that will still meet the purpose, need and objectives; or take No Action. The following aspects of the Project form the basis (decision framework) for the agencies to make their determinations:

- Compliance with applicable Federal, State and local laws, regulations, guidelines, plans and policies;
- Possible conflicts between the Project and the objectives of Federal, State, Tribal and local land use plans, policies and controls;
- The purpose, need and objectives of the Project;
- Significant environmental effects (direct, indirect and cumulative);

- Significant environmental effects which cannot be avoided;
- Significant irreversible environmental effects;
- Growth-inducing impacts;
- Mitigation measures proposed to minimize the significant effects;
- Alternatives to the Project;
- Whether or not the information in this analysis is sufficient to implement the proposed activities; and/or
- The Forest Supervisor will also decide whether to approve a Project-specific amendment to the SBNF LMP for a reduction in the SIOs for the Project Area in the Desert Rim Place.

## **1.10 Management Direction (NEPA)**

### **1.10.1 Design Criteria**

This section provides an overview of the management direction and design criteria applicable to the Project. It identifies some of the main laws, regulations, executive orders, plans and policies that direct the agencies' decisions. More detailed discussions of the applicable regulatory requirements are provided in Chapter 3 for each environmental resource being evaluated.

#### **USDA Forest Service Administration of the General Mining Law of 1872**

Mining on public lands is authorized under the 1872 Mining Law (as amended) (30 USCA 21-42), the Mining and Minerals Policy Act 1970 (30 USCA 21a), Federal Land Policy and Management Act (FLPMA) of 1976 (as amended) (43 USCA 1701-84), and the National Materials and Minerals Policy, Research and Development Act of 1980 (30 USCA 1601-05). The Forest Service's regulatory responsibilities for oversight of mining activities on Federal lands are set forth in the Forest Service Surface Use Regulations (36 CFR 228 Subpart A – also known as the 228 Regulations), which provides rules and procedures for use of the surface of National Forest System lands in connection with mineral operations. These regulations direct the Forest Service to prepare the appropriate level of NEPA analysis and documentation when proposed operations may significantly affect surface resources. These regulations do not allow the Forest Service to deny entry or preempt the miner's statutory rights granted under the 1872 Mining law. The regulations state that an operator is entitled to access in connection with the operation, and that access must be approved in writing before use can begin. Mine operators planning mineral exploration and development activities which are likely to cause significant disturbance to surface resources are required to submit a Plan of Operations for review by the District Ranger (36 CFR 228.4(a)). The regulations also require the Forest Service to develop mitigation measures to minimize adverse impacts on National Forest resources and include requirements for reclamation.

#### **1897 Organic Administration Act**

This Act grants the Secretary of Agriculture the authority to regulate the occupancy and use of the National Forest System lands. It provides the public with continuing rights to conduct mining activities

under general mining laws and in compliance with rules and regulations applicable to National Forest lands. It also recognizes the rights of miners to access National Forest System lands for prospecting, locating and developing mineral resources.

#### **Multiple-Use Mining Act of 1955**

This Act confirms the ability to conduct mining activities on public lands, locate necessary facilities and conduct reasonable and incidental uses to mining on public lands, including National Forest System lands.

#### **Multiple-Use Sustained-Yield Act of 1960**

This Act requires that the National Forest System lands be administered in a manner that includes consideration of relative values of various resources as part of management decisions. Furthermore, it specifies that nothing in the act be construed to affect the use of mineral resources on National Forest Service lands.

#### **1970 Mining and Minerals Policy Act**

This established the Federal Government's policy for mineral development "to foster and encourage private enterprise in the development of economically sound and stable industries and in the orderly development of domestic resources to help assure satisfaction of industrial, security and environmental needs."

#### **Forest Service Regulations for Mining (36 CFR 228)**

These regulations provide direction on the administration of locatable mineral operations on National Forest Service Lands. The regulations direct the Forest Service to prepare the appropriate level of NEPA analysis and documentation when proposed operations may significantly affect surface resources. These regulations do not allow the Forest Service to deny entry or preempt the miner's statutory rights granted under the 1872 Mining Law. The regulation state that an operator is entitled to access in connection with the operation and that access must be approved in writing before use can begin. The regulations also require the Forest Service to develop mitigation measures to minimize adverse impacts on National Forest resources and include requirement for reclamation. 36 CFR 228.8 states that, "operations shall be conducted so as, where feasible, to minimize adverse impacts on National Forest System surface resources".

#### **Forest Service Manual (FSM) 2800**

The FSM discusses specific responsibilities and considerations for dealing with mining activities and associated Plan of Operations. It states that the Forest Service should minimize or prevent adverse impacts related or incidental to mining by imposing reasonable conditions that do not materially interfere with operations.

**National Forest Management Act (NFMA) of 1976**

The NFMA is the primary statute governing the administration of National Forests and was an amendment to the Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974, which called for the management of renewable resources on National Forest lands. NFMA changed the LMP by obliging the Forest Service to use a systematic and interdisciplinary approach to resource management. It also provided for public involvement in preparing and revising LMPs. It expanded upon the land and resource management plans (L/RMPs) outlined in the RPA, and started by requiring the Forest Service to do an inventory of all its lands, followed by a zoning process to see what uses land was best suited for - dubbed the "suitability determination." These plans required alternative land management options to be presented, each of which has potential resource outputs (timber, range, mining, recreation) as well as socio-economic effects on local communities.

**San Bernardino National Forest Land Management Plan (LMP)**

The Land and Resource Management Plans (LMPs) for the Southern California National Forests describe the strategic direction at the broad program-level for managing its resources. The SBNF LMP is part of the LMP Part 1 Southern California National Forest Vision. The LMPs were prepared according to the requirements of the National Forest Management Act (NFMA), NEPA, and other laws and regulations. The NFMA requires that each LMP be revised every 10 – 15 years. The current LMP for Southern California was revised in 2006.

The purpose of the LMP is to articulate the long-term vision and strategic management direction for each southern California National Forest and to facilitate the development of management activities that will contribute towards the realization of the national forests' desired condition. The LMP defines the parameters (limits) for management, but offers the flexibility to adapt decisions to accommodate rapidly changing resource conditions. The LMP makes six fundamental requirements:

- Establishment of forest-wide multiple-use goals and objectives.
- Determine the suitability and capability of national forest land for resource production.
- Identification of and recommend to, Congress areas as wilderness and wild and scenic rivers.
- Establishment of forest-wide and forest-specific standards.
- Identification of management area prescriptions.
- Establishment of monitoring and evaluation requirements for plan implementation.

The LMPs are completely strategic. They do not make project level decisions nor do they compel managers to implement specific actions or activities. They do contain design criteria and resource specific standards as well as a listing of relevant statutes, regulations, Executive Orders and Memorandums and other management direction applicable to the Forest Service. Together, these provide overarching management direction for the southern California revised land management plans.

The 2012 planning rule guides amendments of the LMP, including the proposed Project-specific amendment. The analysis must document that the amendment conforms with the substantive requirements of the planning regulations including § 219.8 – Sustainability, § 219.9 – Diversity of Plant and Animal Communities, § 219.10 – Multiple Use, and § 219.11 – Timber Requirements Based on NFMA.

### **San Bernardino National Forest Land Management Monitoring Guide**

The SBNF LMP describes monitoring and evaluation as essential for the success of an adaptive approach to national forest management. Monitoring and evaluation provide knowledge and information to keep the forest plan viable. Appropriate selection of indicators and monitoring and evaluation of key results helps the Forest Service determine if the desired conditions identified in the forest plan are being met. Monitoring and adaptive management lead to improved implementation and resource conditions.

Implementation of monitoring is conducted on both a program and project level. For a selected project, monitoring is conducted by a review team who evaluate the effectiveness of applying the design criteria and mitigation measures to the project. If problems in implementation are detected, then the team will identify corrective actions.

To facilitate the implementation of monitoring, SBNF has drafted a Land Management Monitoring Guide. Specific environmental indicators or reference values from the LMP are found in the LMP Monitoring Guide. These include Goal Code 4.1a: Administer mineral and energy resources development while protecting ecosystem health; and Goal Code SBNF Carbonate Habitat, as well as other monitoring criteria and evaluation tools that are relevant to the Project. In 2016 revisions to the Southern California National Forests LMPs were made which added or adjusted monitoring questions. For example, there is now a question that addresses non-native grasses.

### **National Forest Transportation System Roads - Travel Management Decisions**

National Forest Transportation System Roads 3N87, 3N88, 3N88A, and 3N88B occur within the analysis area. All of these roads are currently designated as Administrative Use Only and closed to public motorized access. All the action alternatives (Project and Alternatives 3 and 4) would result in changes in the status of these roads. The Forest Service decision to approve any of the action alternatives would include Travel Management Decisions.

### **California Surface Mining and Reclamation Act**

In 1975 SMARA was enacted to address the need for a continuing supply of mineral resources and to prevent or minimize the negative impacts of surface mining to public health, property and the environment. SMARA provides a comprehensive surface mining and reclamation policy with the regulation of surface mining operations to assure that adverse environmental impacts are minimized and mined lands are reclaimed to a usable condition. SMARA also encourages the production, conservation, and protection of the State's mineral resources. Public Resources Code Section 2207 provides annual

reporting requirements for all mines in the State, under which the State Mining and Geology Board is also granted authority and obligations. SMARA requires that a Reclamation Plan be submitted and approved by the lead SMARA agency.

By way of a Memorandum of Understanding (MOU), the Department of Conservation, the Bureau of Land Management (BLM) and the USFS, have agreed that the statutes and regulations of SMARA are applicable to lands regulated by BLM and USFS. Under the terms of the MOU, the local lead agency (in this case the County) for SMARA remains the lead agency and has the main responsibility to enforce the requirements of SMARA. The local lead agency works cooperatively with the Federal agencies to assure that the requirements of the local ordinances, State statutes and regulations and Federal requirements are met.

### **County of San Bernardino General Plan (2012)**

The County of San Bernardino General Plan includes goals and policies directed towards protecting the community and natural resources within the County. One of the eight elements of the General Plan states that *“the Economic Development (ED) Element establishes policies to encourage and guide economic development within the County.”* (County of San Bernardino General Plan, 2012).

### **San Bernardino Carbonate Habitat Management Strategy (CHMS)**

As discussed in Section 3.4, an intensive collaborative effort between the resource agencies and mining operations in the area led to the development of the CHMS in 2003. The strategy is designed to provide long-term protection for the carbonate endemic plants and also provide for continued mining. Carbonate habitats are protected from mining impacts in perpetuity within the carbonate habitat reserves dedicated and managed as described in the CHMS.

### **Other Federal, State and Local Laws and Regulations**

There are numerous other Federal, State, and local law, regulations, executive orders, guidelines, policies and plans that are part of the design criteria that directs the agency’s decision. The following list identifies some but not all of the additional regulations that are relevant to the Project. As mentioned above, more detailed discussions are provided in the Regulatory Framework Sections of Chapter 3.

- National Environmental Policy Act
- California Environmental Quality Act
- Endangered Species Act
- Clean Water Act
- Federal Water Pollution Control Act
- Clean Air Act
- Resource, Recovery and Control Act (RCRA)
- National Historic Preservation Act
- American Indian Religious Freedom Act

- Native American Graves and Repatriation Act
- Archeological Resource Protection Act
- Executive Order 11593 (cultural resources)
- Executive Order 13186 (Migratory Bird Treaty Act)
- Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments)
- Mojave Desert Air Quality Management District Rules and Regulations
- Federal Conformity
- Federal Land Manager Air Quality Related Values
- Greenhouse Gas Regulations
- California State Water Resources Control Board Rules and Regulations
- Regional Water Quality Control Board Rules and Regulations
- Porter-Cologne Water Quality Control Act

### 1.10.2 Regulatory Agency Roles

Where a project needs approval by more than one public agency, typically one agency will be responsible for preparing the environmental review document for the project. This agency is referred to as the lead agency. Because the Project requires Federal and State/local approvals, there are two lead agencies for this Project. The Forest Service is the lead agency under NEPA and the County of San Bernardino is the lead agency under CEQA. Other agencies involved in the process are cooperating, responsible or trustee agencies.

The roles of the agencies involved in evaluating the Draft EIR/EIS include the following:

- United States Forest Service (San Bernardino National Forest): Lead agency under NEPA.
- County of San Bernardino: Lead agency under CEQA.
- Mojave Desert Air Quality Management District: Cooperating agency under NEPA, responsible agency under CEQA.
- U.S. Fish and Wildlife Service-Section 7 Consultation Carbonate Habitat Management Strategy Plan: Cooperating agency under NEPA, responsible agency under CEQA.
- California Department of Fish and Wildlife – 1602 Streambed Alteration Agreement: Cooperating agency under NEPA, trustee agency under CEQA.
- Regional Water Quality Control Board, Colorado River and Lahontan Regions – 401 Water Quality Certification: Cooperating agency under NEPA, responsible agency under CEQA.
- Government to Government/Native American Heritage Commission.

#### Forest Service

The SBNF is the co-lead agency for this Project under NEPA. The Forest Supervisor of the San Bernardino Nation Forest determined that the preparation of an EIS was required because approving the Amended Plan of Operations and Reclamation Plan could have significant impacts on the environment. The Forest Supervisor will consider the beneficial and adverse impacts of each alternative in deciding whether to

approve this Project or a different alternative and what reasonable measures to impose for the protection of the SBNF surface resources. However, the Forest Supervisor's decision is limited by the regulation governing locatable mineral activities on National Forest System lands (36 CFR 228 Subpart A).

The Forest Service may reasonably regulate mining activities to protect surface resources, but there are statutory and constitutional limits to its discretion when reviewing and approving a Plan of Operation. The Forest Service may reject an unreasonable Plan of Operation but cannot categorically prohibit mining or deny reasonable and legal mineral operations under the mining laws.

In addition, the Forest Supervisor will decide whether to approve a proposed forest plan (also referred to as the LMP) amendment regarding the inconsistencies in the SIO for the Project Area.

### **County of San Bernardino**

The County of San Bernardino is the co-lead agency under CEQA. As defined in CEQA Guidelines Section 15051, the lead agency is the public agency with the greatest responsibility for supervising or approving the Project as a whole. The County, acting as the lead agency under CEQA, determined that there was substantial evidence that the Project could either individually or cumulatively cause a significant effect on the environment; therefore, the County required that an EIR be prepared. CEQA does not require technical perfection in an EIR, but rather adequacy, completeness, and a good-faith effort at full disclosure (CEQA Guidelines Section 15003). Per CEQA Guidelines Section 15042 and within the limits of Section 15040, the lead agency has authority to require feasible changes in any or all activities involved in the project in order to substantially lessen or avoid significant effects on the environment, consistent with applicable constitutional requirements. After considering the Final EIR, the lead agency may decide whether or how to approve or carry out the proposed project. As discussed above, the County is also the local lead agency for SMARA.

### **Cooperating, Responsible and Trustee Agencies**

In addition to the lead agencies under NEPA and CEQA, there are a number of other agencies that have discretionary authority over the Project. A responsible (CEQA) or cooperating (NEPA) agency means a public agency other than the lead agency, which has technical expertise and permitting authority or approval power over some aspect of the overall project. A trustee agency is a State agency having jurisdiction by law over natural resources affected by the project.

A responsible or cooperating agency has more limited authority than the lead agency. They may comment on and require changes to project activities which are within the agency's area of expertise or which are required to be carried out or approved by the agency. Comments from responsible agencies must be as specific as possible (CEQA Guidelines Section 15096, NEPA Handbook Chapter 10 Section 11.31).

## Native American Consultation

To comply with the Executive Order regarding Government-to-Government actions and when a proposed project may have an effect on a reservation, notice and opportunity to comment must be provided to the Native American agencies. This is often accomplished by contacting the Native American Heritage Commission.

In September 2014 Assembly Bill (AB) 52 was signed by the Governor. The law went into effect on July 1, 2015. The CEQA Guidelines Checklist Appendix G is required to be updated accordingly by July 1, 2016.

As discussed in Section 3.5, AB 52 establishes a consultation process with all California Native American Tribes on the Native American Heritage Commission (NAHC) list (Federal and Non Federal recognized tribes). A new class of cultural resources was established, Tribal Cultural Resources, which takes into consideration Tribal cultural values in determination of project impacts and mitigations. It also requires meaningful Tribal consultation. A Tribal cultural resource includes:

- A site feature, place, cultural landscape, sacred place or object which is of cultural value to a Tribe; and
- Eligible for the California Historic Register or a local historic register or the lead agency, at its discretion, chooses to treat the resource as a Tribal cultural resource.

Within 14 days of a decision to undertake a project or determination that a project application is complete, the lead agency must provide written notification to the Tribes that requested placement on the Agency's Notice List. The Tribes have 30 days to request consultation.

Although AB 52 was not law when the NOP for this Project was provided, a notification was provided to the NAHC. The lead agencies did not receive any requests for consultation from the NAHC or Native American Tribes.

### 1.11 Required Permits, Licenses, and Other Entitlements

The Project must comply and in some cases obtain permits and/or approvals associated with Federal, State and local regulations, as applicable. These are summarized in Table 1-3.

**Table 1-3 Anticipated Agency Approvals, Permits or Compliance Reviews**

Agency Name	Permit/Approval/Compliance
<b>Federal</b>	
USFS	NEPA/EIS
	General Mining Law of 1872 (Mining Act)
	Forest Service Regulations for Mining (36 CFR 228)
	SBNF Land and Resource Management Plan (LRMP)

Agency Name	Permit/Approval/Compliance
US EPA	Endangered Species Act (1973)
	National Historic Preservation Act (amended 1992)
	American Indian Religious Freedom Act
	Federal Water Pollution Control Act
	Clean Water Act National Pollutant Discharge Elimination System (NPDES) Permit
	Clean Air Act
US Fish and Wildlife Services	Endangered Species Act Section 7 Consultation
US Army Corp of Engineers	Clean Water Act Section 404 Nationwide Permit
<b>State</b>	
Department of Mine Reclamation (DMR)	California Surface Mining and Reclamation Act (SMARA) Surface Mining Permit Reclamation Plan FACE
	California Code of Regulations (CCR) Title 14, Division 2, Chapter 8, Subchapter 1, Article 9 0 Reclamation Standards
Department of Conservation (DOC)	Review of Reclamation Plan and FACE
Cal EPA – DTSC	Hazardous Waste Generator Regulations CCR Title 22, California Health and Safety Code, Hazardous Materials Business Plan (implemented by CUPA)
Mojave Desert Air Quality Management District	Permit to Operate, Air Quality Prohibitory Regulations
Colorado River Basin Regional Water Quality Control Board and Lahontan Regional Water Quality Control Board	Porter Cologne Water Quality Act, Clean Water Act, National Pollutant Discharge Elimination Systems Permit, Report of Waste Discharge (WDR)
California Department of Fish and Wildlife	Section 1600, Streambed Alteration Agreement, State Endangered Species Consultation, Incidental Take Permit (ITP)
State Historic Preservation Office (SHPO)	National Historic Preservation Act Section 106 Consultation
<b>Local</b>	
County of San Bernardino, Land Use Service Department	CEQA/EIR Lead Agency
	Mining and Land Reclamation Condition Use Permit
	SMARA Lead Agency
	Development Code, Land Use Zoning
	General Plan

Agency Name	Permit/Approval/Compliance
County of San Bernardino, Fire Department	Hazardous Materials Business Plan, Emergency Response
City of Lucerne Valley	Community Plan

### 1.12 Integration of Related Environmental Review Requirements

As identified above in Table 1-3, numerous other agencies have regulations and requirements that affect the Project. These additional environmental review processes are integrated into the evaluations, assessments and determinations of potentially significant impacts and mitigation measures identified in this Draft EIR/EIS.

### 1.13 Public Involvement

The involvement of the public during the NEPA/CEQA process is an integral part of the environmental analysis. Public involvement helps to refine the proposed project, identify issues, explore possible alternatives and identify interested and affected persons. The following describes the activities taken to ensure that the public has been appropriately involved in this process.

#### 1.13.1 Initial Scope of the Analysis

The public scoping process provided a mechanism for focusing and clarifying the issues to be addressed in the Draft EIR/EIS by actively obtaining input from the public and interested Federal, State, Tribal, and local agencies. Information received during the scoping assisted the Forest Service and the County in identifying potential environmental issues, impacts, project alternatives, and mitigation measures associated with the Project.

The Forest Service published a Notice of Intent (NOI) in the Federal Register on February 28, 2013. The County distributed the Notice of Preparation (NOP) and Initial Study to the California State Clearinghouse on February 22, 2013, and posted the NOP with the County Clerk. A joint NOP/NOI was mailed to the agencies, organizations and individuals on the Forest Service and County mailing lists.

In order to ensure that the public agencies, organizations and individuals had access to the technical documents supporting the Amended Plan of Operations and Reclamation Plan, the scoping period was extended two times, once to April 16 and then again to June 6, 2013.

The joint NOP/NOI was also published in the following local newspapers:

- Lucerne Valley Reader,
- Big Bear Grizzly, and
- San Bernardino County Sun.

The notices provided supplementary Project information, Forest Service and County contact information for commenting, dates and locations for scoping meetings, a list of the potential environmental impacts and environmental protection measures. Copies of the scoping notices and the Initial Study are provided in Appendices A and B, respectively. The Initial Study and the Amended Plan of Operations and Reclamation Plan were posted at the following locations:

- San Bernardino National Forest website at:  
<http://www.fs.fed.us/nepa/fs-usda-pop.php/?project=32613>;  
and/or;
- County of San Bernardino website at:  
<http://cms.sbcounty.gov/lus/Planning/Environmental/NoticesDeterminations/Desert.aspx>.

The following two public scoping meetings were held:

- March 11, 2013 at the Big Bear Discovery Center, 40971 North Shore Drive (Highway 38), Fawnskin, California 92333 from 5:00 PM to 7:00 PM PST; and
- March 12, 2013 at the Lucerne Valley Community Center, 33187 Highway 247 East, Lucerne Valley, California 92356 from 5:00 PM to 7:00 PM PST.

The scoping meetings provided the public and government agencies the opportunity to receive information on the CEQA/NEPA process and the Project and to provide verbal and written comments. Approximately 6 people attended the meeting in Big Bear and 7 people attended the meeting in Lucerne Valley. Thirteen letters/emails were received, eight from governmental agencies and five from organizations or individuals. Table 1-4 provides the list of commenters and their affiliations.

**Table 1-4 Commenters and Affiliations**

Commenter	Affiliation	Date
Alan J. De Salvio	Mojave Desert Air Quality Management District	March 5, 2013
Annesley Ignatius	County of San Bernardino, Department of Public Works	March 7, 2013
Jeff Brandt	California Department of Fish and Wildlife	April 16, 2013
Jeanne Geselbracht	United States Environmental Protection Agency, Region IX	March 26, 2013
Ian MacMillan	South Coast Air Quality Management District	March 28, 2013
Daniel Kopulsky	California Department of Transportation, District 8	April 15, 2013
Tom Browne	Lahontan Regional Water Quality Control Board	June 7, 2013
Dave Singleton	Native American Heritage Commission	February 26, 2013
Chuck Bell	Lucerne Valley Economic Development Association	March 12, 2013
Ed LaRue	Desert Tortoise Council, Ecosystems Advisory Committee	March 20, 2013
Ileene Anderson	Center for Biological Diversity	June 4, 2013

Commenter	Affiliation	Date
Steve Loe	Biological Consultant	April 15, 2013
Richard Wright	Resident of Big Bear	March 18, 2013

Comments received during the scoping period are part of the Administrative Record for this Draft EIR/EIS. A Scoping Report was prepared that summarizes the notification process, meetings and comments received during the scoping period. A copy of the Scoping Report is provided as Appendix A.

### 1.13.2 Opportunities for Public Involvement with the Draft EIR/EIS

A Notice of Availability (NOA) for the Draft EIR/EIS was published in the Federal Register and San Bernardino County Sun, which mark the beginning of a 45-day public review period. The comment period provides the public and government agencies the opportunity to review the Draft EIR/EIS and to provide verbal and written comments. In addition, notices were sent to the agencies, organizations and individuals on the San Bernardino County and Forest Service mailing lists. A copy of the NOA is provided in Appendix A.

All comments may be submitted to Maya Rohr at Sespe Consulting, Inc. at the following location:

- Sespe Consulting, Inc.  
Attn: Maya Rohr  
1565 Hotel Circle South, Suite 370  
San Diego, CA 92108  
Email: [mrohr@sespeconsulting.com](mailto:mrohr@sespeconsulting.com)  
Phone: (619) 894-8669  
Fax: (805) 667-8104

Copies of the Draft EIR/EIS were distributed to other regulatory agencies, elected officials and/or other interested organizations or individuals. The document has been made available on both the Forest Service and County websites for the project:

- San Bernardino National Forest website at: <http://www.fs.fed.us/nepa/fs-usda-pop.php?project=32613>; and/or,
- County of San Bernardino website at: <http://cms.sbcounty.gov/lus/Planning/Environmental/NoticesDeterminations/Desert.aspx>.

### 1.13.3 Final EIR/EIS

Comments received in response to the Draft EIR/EIS will be addressed in a Response to Comment document which together with the Draft EIR/EIS will constitute the Final EIR/EIS. The Forest Service and County will prepare the Final EIR/EIS and a MMRP. Copies of the Final EIR/EIS and MMRP will be provided to other regulatory agencies, elected officials and/or other interested organization or individuals. The documents will also be posted on the Forest Service and County websites.

The Forest Service and the County will address protests and prepare the ROD, Notice of Determination (NOD), Findings of Fact and Statement of Overriding Considerations (if necessary). In accordance with 36 CFR 218, a project-level pre-decisional administrative review process will be provided. This directs the Forest Service to issue a draft decision with the ROD to allow for an objection process prior to the issuance of the ROD. This is in lieu of the Federal post-decisional appeal process used since 1993. Upon approval of the Final EIR/EIS by the County Planning Commission, there will be a 30-day statute of limitations on court challenges to the approval under CEQA (The determination by the Planning commission is final unless appealed within 10 days). There is a six year statute of limitations under the Administrative Procedure Act for NEPA.

This Project is subject to comment and pre-decisional administrative review pursuant to Forest Service Regulations 36 CFR § 218 and appeal under 36 CFR § 214. Only those who submit timely Project-specific written comments during a public comment period are eligible to file an objection during the objection filing period. Individuals or representatives of an entity submitting comments must sign the comments or verify identity upon request. Comments on this Project will be accepted for 45 days following publication of the NOA in the Federal Register and the San Bernardino County Sun, which is the exclusive means for calculating the comment period. It is the commenter's responsibility to ensure timely receipt of comments. The Proposed Action (Project) also includes a Project-specific forest plan amendment to reduce the SIOs in the Project Area. The review process under 36 CFR § 218, not the review process for Forest Plans (36 CFR § 219), applies to this amendment.

#### **1.13.4 Scoping Comments**

This section provides a brief summary of the written and verbal comments received during the scoping period and the public meetings. In order to fully identify the issues raised, copies of the letters/emails are provided in the Scoping Report (Appendix A).

#### **Biological Resources**

Several commenters expressed concerns regarding potential impacts to biological resources. The following list summarizes the key concerns:

- The need to conduct a survey of desert tortoises.
- The need to update the outdated studies provided on the web pages.
- Surveys and studies should be conducted within one year of submittal.
- Work closely with the appropriate agencies and ensure the studies are reviewed and approved by these agencies (i.e.; USFS, USFWS, CDFW).
- Conduct adequate surveys (e.g.: more than one season or late in the season).
- Follow applicable protocols and guidelines referenced in comments.
- List all petitioned, listed, threatened, endangered, and/or sensitive species and habitats.
- Conduct surveys (include maps) and bio assessments for the identified species/habitats.
- Address the lead agency obligations under Section 7 of the Endangered Species Act.

- Identify migratory wildlife and potential impacts.
- Identify non-jurisdictional riparian and wetland habitats.
- Identify the carbonate habitat and describe the details of the CHMS.
- Discuss the consistency/compliance that the project has had and will have with the CHMS.
- Assess the effectiveness of the CHMS.
- Reliance on CHMS mitigation strategy is not adequate since CHMS was never “jumpstarted”.
- Do not defer mitigation measures.
- Discuss whether there is a need for an Incidental Take Permit.
- Unavoidable impacts to ephemeral, intermittent and perennial streams must be compensated with the creation of a restoration in-kind habitat with a minimum 3:1 replacement to impact ratio (potentially 5:1 ratio).
- Support for the quit claim of acreage under the CHMS but it must address recent survey results and appropriate replacement ratios.
- Conduct a thorough jurisdictional delineation (JD) and reference “A Review of Stream Processes and Forms in Dryland Watersheds.”
- Address potential impacts on Big Horn Sheep, mule deer and other native mammals and reptiles.
- Address potential impacts on Golden Eagle, Spotted Owl and other raptors and avian species.
- Prepare a raven/raptor protection plan.
- Map cryptobiotic soils.
- If necessary, provide off-site compensation for unavoidable impacts through acquisition and protection of habitats.
- Address potential concerns with domestic dogs.
- Contact the California Natural Diversity Database (CNDDDB).
- Host a site visit for the California Department of Fish and Wildlife (CDFW) staff.

### **Air Quality**

Several commenters expressed concerns regarding potential impacts to air quality. The following list summarizes the key concerns:

- Ensure that the CEQA guidelines are followed.
- Address all phases of the Project (construction and operations).
- Include stationary, area, fugitive, and vehicular sources.
- Include direct and indirect sources.
- Quantify PM 2.5 per the South Coast Air Quality Management District (SCAQMD) recommended methods.
- Address regional and local impacts.
- Compare localized impacts to the SCAQMD Localized Significance Thresholds (LST).
- If project generates emissions from heavy duty trucks, conduct a health risk assessment (HRA).
- If there are significant impacts, use all feasible mitigation measures.
- Describe the existing air quality and the National Ambient Air Quality Standard (NAAQS).

- Conduct model for comparison to the NAAQS.
- Discuss consistency with the Federal Conformity requirements – General Conformity de-minimis thresholds and provide a General Conformity Determination made between the lead agency and the MDAQMD (Mojave Desert Air Quality Management District).
- Describe any required air permits.
- Address all Wilderness Areas (class I and II), Nitrogen deposition and visibility impacts.
- Conduct air quality monitoring.
- Calculate emissions for Hazardous Air Pollutant (HAPs).
- Address contributions to Greenhouse Gases (GHG) mitigation measures.
- Describe the air quality baseline.
- Consider using chemical suppressants to control dust on the roads in order to conserve water.

### **Water Resources**

Several commenters expressed concerns regarding potential impacts to water resources. The following list summarizes the key concerns:

- Note that the Project crosses regional water board boundaries and is within areas of the Lahontan Water Board and Colorado Water Board.
- Describe all existing water resources in the Project vicinity and the cumulative impact area.
- Describe the baseline for groundwater and surface water in regards to quantity and quality.
- Address groundwater adjudication.
- Describe and assess drainage patterns for pre-mining, current operations, proposed operations and post-closure.
- Include hydrologic and topographic maps.
- Address erosion potential/concerns.
- Address sedimentation concerns.
- Identify 25 year and 100 year flood plain issues.
- Discuss water quality standards.
- Describe any water resources permitting requirements.
- Conduct a full delineation of surface water resources.
- Consult with United States Army Corp of Engineers (USACE) and Water Boards when performing the necessary JD to ensure that the full extent of both State and Federal jurisdictional areas are accurately documented.
- Identify impacts to the Waters of the US/State.
- The Project overlays several named and unnamed ephemeral stream beds.
- Update and describe the project's Storm Water Pollution Prevention Plan (SWPPP).
- Identify all beneficial uses.
- Evaluate surface water discharge/diversion.
- Identify the potential for hazardous material releases.
- Describe all sources of water required for the project.

- Discuss the potential impact on local wells.
- Conduct water quality monitoring.

### Other Comments

The following concerns were also identified by one or more commenters:

- Evaluate alternatives per CEQA/NEPA requirements.
- Evaluate cumulative impacts per CEQA/NEPA requirements.
- Consider Environmental Justice issues.
- Conduct Native American consultations.
- Describe nearby land use.
- Describe pollution prevention techniques.
- Describe current compliance with SMARA and the Reclamation Plan and future requirements.
- Compare the Reclamation Plan requirements with the mitigations identified for CEQA.
- Update the Revegetation Plan in the Reclamation Plan.
- Address visual impacts and unnatural appearance of the benches in the quarry.
- Consider the concern that some commenters had with the reclamation at Cloudy and Claudia quarries.

## 1.14 Issues

### 1.14.1 Environmental Issues Identified for Detailed Study

Using the Initial Study (Appendix B) prepared by the County under CEQA and the comments received from agencies, organizations and the public, the Forest Service and County Interdisciplinary Team (ID Team) separated the issues into significant (as directed by the Council of Environmental Quality regulations (40 CFR 1500.4(g) and 1501.7)) and non-significant issues. Significant issues include those that are directly or indirectly caused by implementing the Project, and can be used to drive development of additional alternatives, and/or mitigation measures. Non-significant issues are defined as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, LMP, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council of Environmental Quality NEPA regulations explain this delineation in Sec. 1501.7, “...*identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)...*”. A brief description of the key issues is presented below in Table 1-5 followed by a discussion of the non-significant issues that were eliminated from detailed study.

An analysis of the substantive requirements, in conformity with the planning regulations related to the proposed plan amendment, is mentioned below and can be found in more detail in Section 3.1 – Aesthetics. The analysis includes the related substantive requirement(s) and the rationales for why they are related to the forest plan amendment. "Related" should consider the scope and scale of amendment, the purpose of it, and the effects of it.

**Table 1-5 Identified Issues/Areas of Study**

Issue	Impact on	Issue Statement	Factors for Alternative Comparison
1	Aesthetics	The Project will create changes in the landscape which could impact aesthetics.	<ul style="list-style-type: none"> <li>• Qualitative assessment of change in landscape form seen from viewpoints over time</li> <li>• Forest Service LMP Scenic Integrity Objective designations</li> <li>• Effectiveness of design features and Best Management Practices (BMPs)</li> <li>• Proposed forest plan amendment</li> </ul>
2	Air Quality	Mining and reclamation activities could increase the amount of dust and airborne pollutants. Stationary, area, fugitive and vehicular sources of emissions from direct and indirect sources could result in environmental impacts. Both criteria and toxic emissions could pose a concern.	<ul style="list-style-type: none"> <li>• Criteria emission estimates compared to background, and MDAQMD and CEQA thresholds</li> <li>• Toxic emission estimates compared to guidelines and MDAQMD and CEQA thresholds</li> <li>• Particulate emissions impact on carbonate plant habitat/plants</li> <li>• Effectiveness of design features and BMPs</li> </ul>
3	Greenhouse Gas Emissions	Greenhouse gases have been implicated in global climate change and there are Federal, State and local policies and guidelines which address the concern. The estimated GHG emissions could result in a cumulative contribution to greenhouse gases.	<ul style="list-style-type: none"> <li>• Compare cumulative contribution to applicable policies, guidelines and significance thresholds</li> <li>• Effectiveness of design features and BMPs</li> </ul>
4	Biological Resources	Sensitive species have been identified on the Project Site. The Project could result in an incidental take of or impact to an endangered, threaten or sensitive species of plants or animals. The Project could result in a loss of habitat for some species. Of specific concern are the carbonate-endemic plants, the big horn sheep and raptors.	<ul style="list-style-type: none"> <li>• Compliance with responsible/trustee agencies regulatory and permitting requirements</li> <li>• Consistency with CHMS</li> <li>• Loss of habitat</li> <li>• Potential impact on nesting or range</li> <li>• Potential for incidental take</li> <li>• Effectiveness of design features and BMPs</li> </ul>

Issue	Impact on	Issue Statement	Factors for Alternative Comparison
5	Geology and Soils	The slopes within the mine excavation or resulting from reclamation of the quarries could be unstable. Slopes within the quarry need to be suitably stable against gross failure for the anticipated long-term conditions, including the effects of seismic shaking. Soil erosion and loss of top soil could result from mining activities and reclamation.	<ul style="list-style-type: none"> <li>• Regulatory standards for slope cuts/steepness</li> <li>• Geotechnical design standards</li> <li>• Effectiveness of design features and BMPs</li> </ul>
6	Hydrology and Water Quality – Surface Water, Erosion and Drainage	Stormwater runoff and drainage from the Project could result in erosion and sediment or other pollutants reaching surface water and degrading water quality.	<ul style="list-style-type: none"> <li>• Compliance with responsible/trustee agencies regulatory and permitting requirements</li> <li>• Impact from stormwater runoff and drainage from operations</li> <li>• Impact from potential sediment and erosion</li> <li>• Impact to Waters of the State/US</li> <li>• Effectiveness of design features and BMPs</li> </ul>
7	Hydrology and Water Quality – Groundwater	Water for mining operations and dust control will be obtained from wells. This could impact the availability of water for nearby wells and/or water quality of groundwater.	<ul style="list-style-type: none"> <li>• Compliance with responsible/trustee agencies regulatory and permitting requirements</li> <li>• Impact on water availability in wells</li> <li>• Impact on water quality based on Colorado Regional Water Quality Control Board, Lahontan Regional Water Quality Control Board and CWA standards and regulations</li> <li>• Effectiveness of design features and BMPs</li> </ul>

#### 1.14.2 Environmental Issues Scoped Out of the Detailed Study

Based on the findings of the Initial Study and from the comments received during the scoping period, the following environmental issues were determined not to be significant and were eliminated from detailed study in this Draft EIR/EIS. However, due to some public interest in several areas that were eliminated during scoping, brief discussions have been included in the Draft EIR/EIS (Forestry, Cultural, Hazards/Hazardous Materials and Noise). A more thorough discussion of why these issues were not furthered analyzed is provided in the Initial Study in Appendix B.

**Agriculture and Forestry:** The California Resources Agency defines Prime Farmland, Unique Farmland, or Farmland of Statewide Importance for San Bernardino County as farmland which include dryland grains of wheat, barley, oats and dryland pastures. The Project does not meet these characteristics nor is the Project Site designated as agricultural land use or Williamson Act land. Although the Project would result in the conversion of forest land to traditional non-forest use, the mining land use has been included in the SBNF Land Management Plan and in the Carbonate Habitat Management Strategy. Therefore, it was determined that the Project would not result in a significant impact to these resources. Although there were no comments received during the scoping period regarding these resources, the Draft EIR/EIS includes a brief discussion of these potential impacts.

**Cultural Resources:** No cultural sites have been identified within or adjacent to the Project. Cultural resources surveys (Archeological Survey 1998 and Cultural Resources Inventory 1984) were conducted by the Forest Service. Although there were no comments received during the scoping period regarding these resources, the Draft EIR/EIS includes a brief discussion of these potential impacts.

**Hazards and Hazardous Materials:** The Project would involve the use of materials common to the mining industry and includes the transport, storage and use of fuels, lubricants and explosives. The operator would comply with all applicable Federal, State and local safety rules and regulations regarding the management and use of hazardous materials and waste. The overall use of blasting would remain the same as current quarry operations (approximately one blast per week in each quarry). Blasting would be conducted by licensed individuals in accordance with Cal-OSHA and other safety requirements. Activities associated with the Project would not impede existing emergency response plans for the Project Site and/or other land uses in the Project vicinity. Per the San Bernardino County General Plan, the Project is located in a Fire Safety Review Area (FS-1). The Project would not contribute to or be impacted by surrounding fuel loads and a fuel modification zone would not be required. Although there were no comments received during the scoping period regarding these issues, the Draft EIR/EIS includes a brief discussion of the potential impacts.

**Land Use and Planning:** Other than the inconsistency with the SBNF Land Management Plan SIOs and the need for the proposed Project-specific plan amendment addressed in the Aesthetics evaluation presented in Section 3.1, the Project would be consistent with all applicable land use policies, and regulations of the County of San Bernardino General Plan and the Lucerne Valley Community Plan.

**Mineral Resources:** The Project would be consistent with the County's policy that protects the current and future availability of mineral resources. Regulation and reclamation of the Project Site as required by SMARA would permit the continued availability of the mineral resources and provide for the protection and subsequent beneficial use of those minerals while minimizing impacts on the environment. Omya has received from the CDMG Mineral Resource Zone 2 status (MRZ-2) for the limestone deposits on the Omya claims. No impact to mineral resources is expected and this impact has not been further evaluated in this Draft EIR/EIS.

**Noise:** Mining operations are required to conform with applicable County noise control regulations. The active quarries are located near the Range Crest in the central portion of the mountain range. There are no residences for over 2 miles in any direction from the quarries and one or more mountain ridges are present in between the quarries and residences. Operations and blasting have occurred in these quarries for over 35 years with no observed adverse impact on people, structures, or wildlife. Although it is unlikely that there would be an impact associated with noise, the Draft EIR/EIS includes a brief discussion of the potential impacts. Except to the extent that the potential impacts associated with noise are addressed in the Biological Resources Section of the Draft EIR/EIS, this impact will not be further evaluated.

**Population and Housing:** The Project would not create a substantial number of new jobs at the site and would not induce substantial population growth in the area, either directly or indirectly. Nor would it displace substantial numbers of existing housing units or require the construction of new housing units. No impacts to population or housing would result from the Project and further evaluation has been excluded from this Draft EIR/EIS.

**Public Service:** The Project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or altered governmental facilities in order to maintain acceptable service ratios, response time or other performance objectives for any of the public services, including fire and police protection, schools, parks or other public facilities. No impacts to public services would result from the Project and further evaluation has been excluded from this Draft EIR/EIS.

**Recreation:** The Project would not induce population growth in the adjacent areas and would not result in the increase use of park facilities or other recreational facilities in the region. No impacts are anticipated and this issue has been excluded from this Draft EIR/EIS.

**Transportation and Traffic:** Existing and proposed operations include transporting crushed ore in off-road haul trucks eight miles on the vested Crystal Creek Haul Road to the LVPP. The haul road is closed to the public. The Project would not result in a significant increase in material being transported from the processing plant on public roads; therefore, no significant change to the current level of truck transportation on public roads would result. The Project would not affect mass transit, freeways, pedestrian and bike paths because there are none in the vicinity. No impacts are anticipated and this issue has been excluded from this Draft EIR/EIS.

**Utilities and Service Systems:** No wastewater is or would be discharged from the on-site operations. Water used to control dust is obtained, and would continue to be obtained from two existing, permitted wells. No surface water would be used in the operation. All operations on-site would continue to comply with the NPDES General Permit for Stormwater Discharges. The Project Site is not within the service area of a public water supplier or a public sewer system. The Project would not require any additional solid waste services. Except to the extent that the potential impacts associated with stormwater runoff are addressed in the Hydrology and Water Quality Section of the Draft EIR/EIS, this impact will not be further evaluated.

**1.15 Review of Existing Decisions and Documents**

Consistent with NEPA and CEQA guidelines, this Draft EIR/EIS has also incorporated by reference other existing decisions, studies, analyses, and reports. These are either included in the appendices to this Draft EIR/EIS or made reasonably available to the public by the lead agencies (e.g. websites). Information from documents incorporated by reference has been summarized in the appropriate sections of the Draft EIR/EIS.

## **2.0 ALTERNATIVES, INCLUDING THE PROPOSED ACTION/PROJECT**

### **2.1 Introduction**

In accordance with NEPA and CEQA requirements, this Section of the Draft EIR/EIS provides a detailed description and comparison of the Project and other alternatives. The alternatives to the Project were developed based on issues identified in the Initial Study, comments presented during the scoping period and recommendations of the ID Team. These alternatives represent a range of possible actions that respond to the purpose and need for the Project, the Project objectives, the significant issues, and the applicable Federal, State and local laws and regulations.

It should be noted that the Project is inconsistent with the SBNF Land Management Plan SIOs for the Desert Rim Place. A Project-specific amendment to the LMP would be prepared should the Proposed Action (Project) or another action alternative be selected (see Sections 3.1.3.1 through 3.1.3.4 in Section 3.1 – Aesthetics for a description of the Project-specific LMP amendment).

As mentioned in Section 1.4, the requirements associated with the evaluation of alternatives are somewhat different between NEPA and CEQA. The following provides a brief description of these requirements.

#### **2.1.1 NEPA Requirements**

NEPA implementing regulations (40 CFR 1502.14) note the following with regard to alternatives:

*“Based on the information and analysis presented in the sections on the Affected Environment (40 CFR 1502.15) and the Environmental Consequences (40 CFR 1502.16), the environmental impacts of the proposal and the alternatives are presented in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public. In this section agencies shall:*

- *Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives that were eliminated from detailed study, briefly discuss the reason for their elimination.*
- *Devote substantial treatment to each alternative considered in detail so that the reviewers may evaluate the comparative merits.*
- *Include reasonable alternatives not within the jurisdiction of the lead agency.*
- *Include the alternative of no action.*
- *Identify the lead agency’s preferred alternative in the draft and final versions of the EIS.*
- *Include appropriate mitigation measures not already included in the proposed action or other alternatives.”*

Forest Service Handbook (FSH) 1909.15, Chapter 23.3 echoes this requirement, adding the following with regard to the development and analysis of alternatives.

*“The EIS shall document the examination of reasonable alternatives to the proposed action. An alternative should meet the purpose and need and address one or more significant issues related to the proposed action. Since an alternative may be developed to address more than one significant issue, no specific number of alternatives is required or prescribed (36 CFR 220.5(e)).”*

### **2.1.2 CEQA Requirements**

The guiding principles for the selection of alternatives for analysis in an EIR are provided in the CEQA Guidelines Section 15126.6. CEQA requires that the discussion of *“a range of reasonable alternatives to the project, or the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible.”*

The CEQA Guidelines Section 15126.6(f)(1) allows the following factors to be taken into consideration when evaluating the feasibility of the alternatives:

- Site suitability;
- Economic viability;
- Availability of infrastructure;
- General Plan consistency;
- Other plan or regulatory limitations;
- Jurisdictional boundaries;
- Whether the proponent can reasonably acquire, control or otherwise have access to the alternative site;
- Only locations that would avoid or substantially lessen any of the significant effects of the project need to be considered.

## **2.2 Alternatives Considered in Detail**

Reasonable alternatives were developed that respond to the significant issues, reduce potential environmental impacts, address the purpose of and need for the Project and the Project objectives. Alternatives that did not meet the purpose of and need for the Project or the Project objectives, that did not resolve environmental conflicts and/or were not available or feasible were eliminated from detailed consideration. Section 2.7 further discusses the alternatives that were considered but eliminated from detailed study.

The Forest Supervisor and County identified four alternatives for detailed analysis in this Draft EIR/EIS. Each alternative is summarized below and a detailed analysis of the potential impacts associated with the alternatives is provided in Section 3.

### **2.2.1 Alternative 1: No Action – Continue Mining under Current Entitlements**

Under this alternative, Omya would not expand the Butterfield and Sentinel Quarries. The existing mining activities located on 137 acres within the 954 acres of unpatented placer claims controlled by Omya would continue in accordance with the approved POO and Reclamation Plans and other Federal, State and local regulations.

### **2.2.2 Alternative 2: Proposed Project**

Alternative 2 is the Project (Proposed Action). It reflects the activities identified in the Amended POO and Reclamation Plan submitted to the Forest Service and the CUP application submitted to the County. Figure 2-1 shows the existing quarry operations and the proposed operations under Alternative 2, the Project. Figure 2-2 illustrates the proposed reclamation mine plan for the Project.

### **2.2.3 Alternative 3: Partial Implementation – Butterfield Quarry Expansion Only**

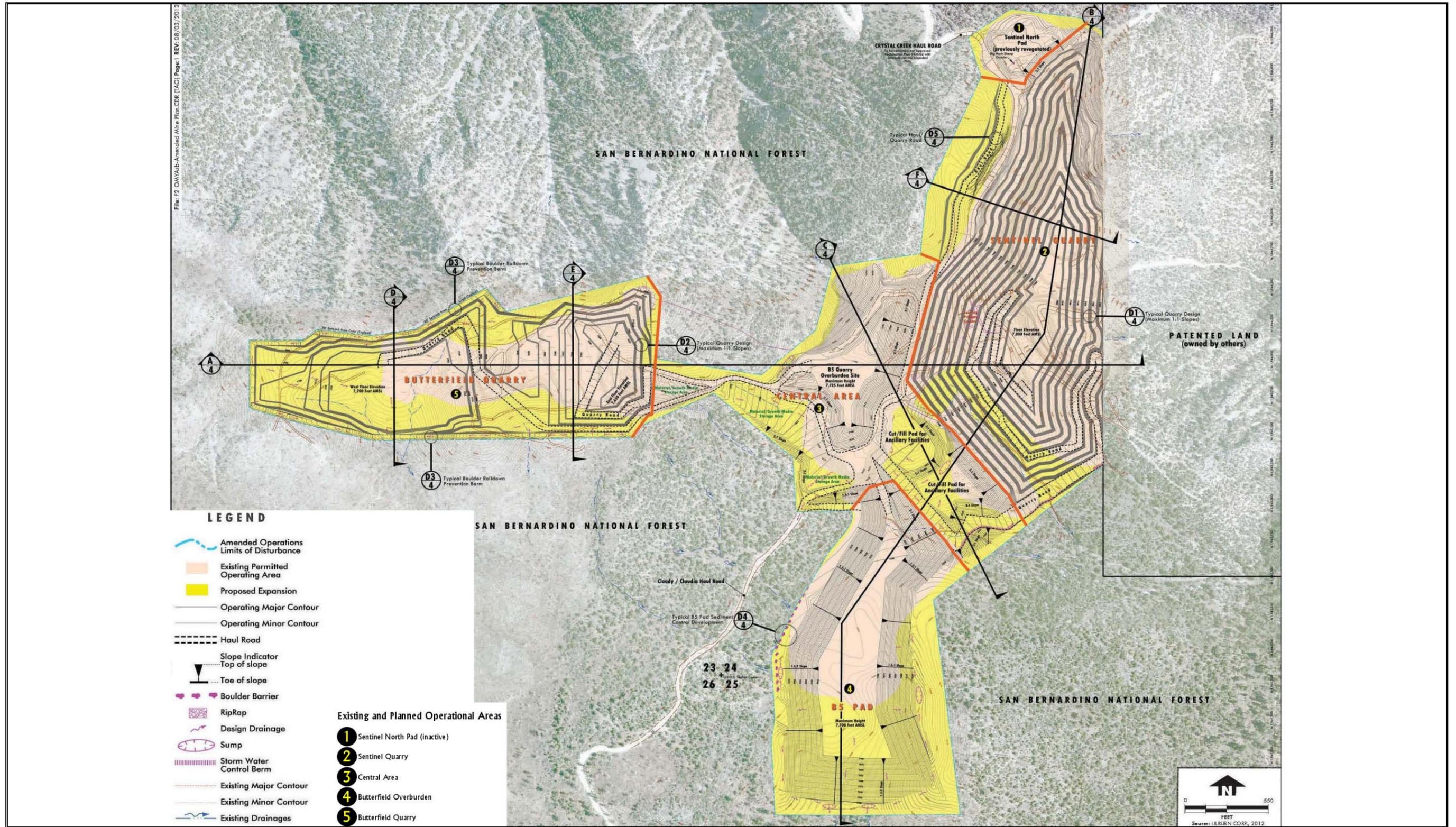
Under Alternative 3 only the Butterfield Quarry would be expanded. The Sentinel Quarry would continue to be mined under its current POO and Reclamation Plan and the B5 overburden pad would not be expanded from its approved area. In this alternative the Butterfield Quarry would have a shorter duration of 20 years instead of 40 years as proposed in Alternatives 2 and 4. This alternative would also have a smaller footprint than Alternative 2 by approximately 50 acres. Figure 2-3 shows the mine plan for Alternative 3.

### **2.2.4 Alternative 4: Mixed Production with the White Knob Quarry to Meet Omya’s Processing Plant Capacity**

This alternative would assume that instead of the Butterfield and Sentinel Quarries providing 100% (680,000 tpy) of the ore to the LVPP, an alternative production mix between the quarries would be evaluated. A key objective of this alternative is to minimize potential impacts associated with air emissions. As determined by the air quality analysis discussed in Section 3.3.5, if the Butterfield Sentinel quarries produced only 77% of the ore instead of 100% the ore going to the LVPP, the PM<sub>10</sub> emissions would be below certain significance levels, but this alternative would still require the same air quality mitigations as the Project in order to stay under all the air quality significance thresholds.

In addition, this alternative would limit Omya’s operational flexibility and potentially prevent Omya from meeting the market demand for high quality limestone. This is because the quality of limestone varies between the ore deposits and often Omya is required to mix resources, or exclude resources from various deposits/quarries in order to obtain a final product that meets the necessary purity levels. It is not possible to predict when resources from one deposit/quarry would be required to “sweeten” the mix in order to accomplish this. In addition, if White Knob were to shut down for some un expected reason, and production limitations were imposed that rely on a certain ratio mix specified this alternative, it could prevent Omya from meeting the market demand. As recently approved, the White Knob quarry is able to

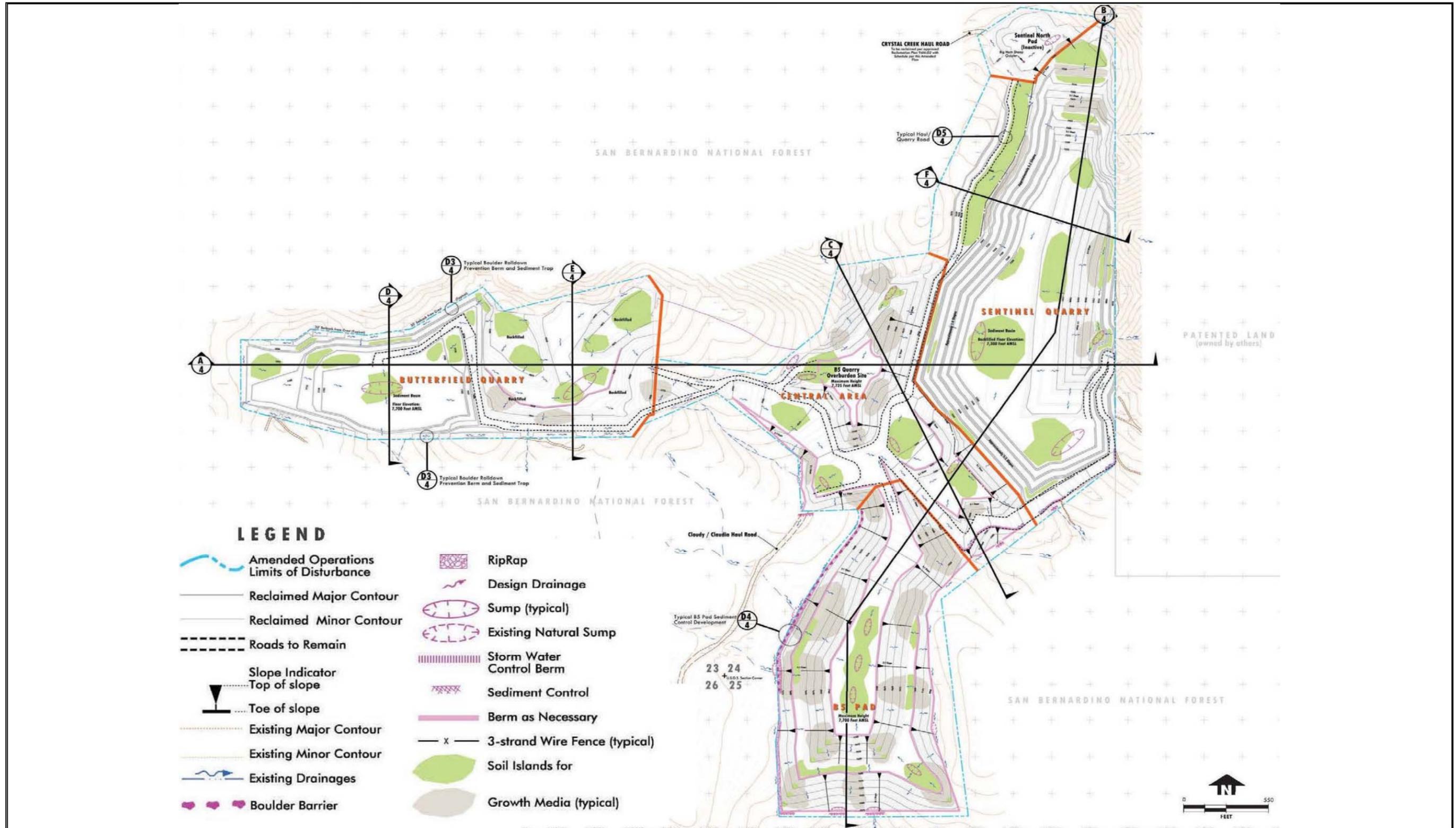
provide 100% of the material to the LVPP and as such it would be consistent to allow 100% of the Butterfield and Sentinel Quarries to as well (which would not be feasible in this alternative).



Source: Lilburn 2015

Figure 2-1 Existing Quarries and Proposed Operations (Project)

THIS PAGE IS INTENTIONALLY BLANK



Source: Lilburn 2015

Figure 2-2 Proposed Amended Mine Plan (Project)

THIS PAGE IS INTENTIONALLY BLANK

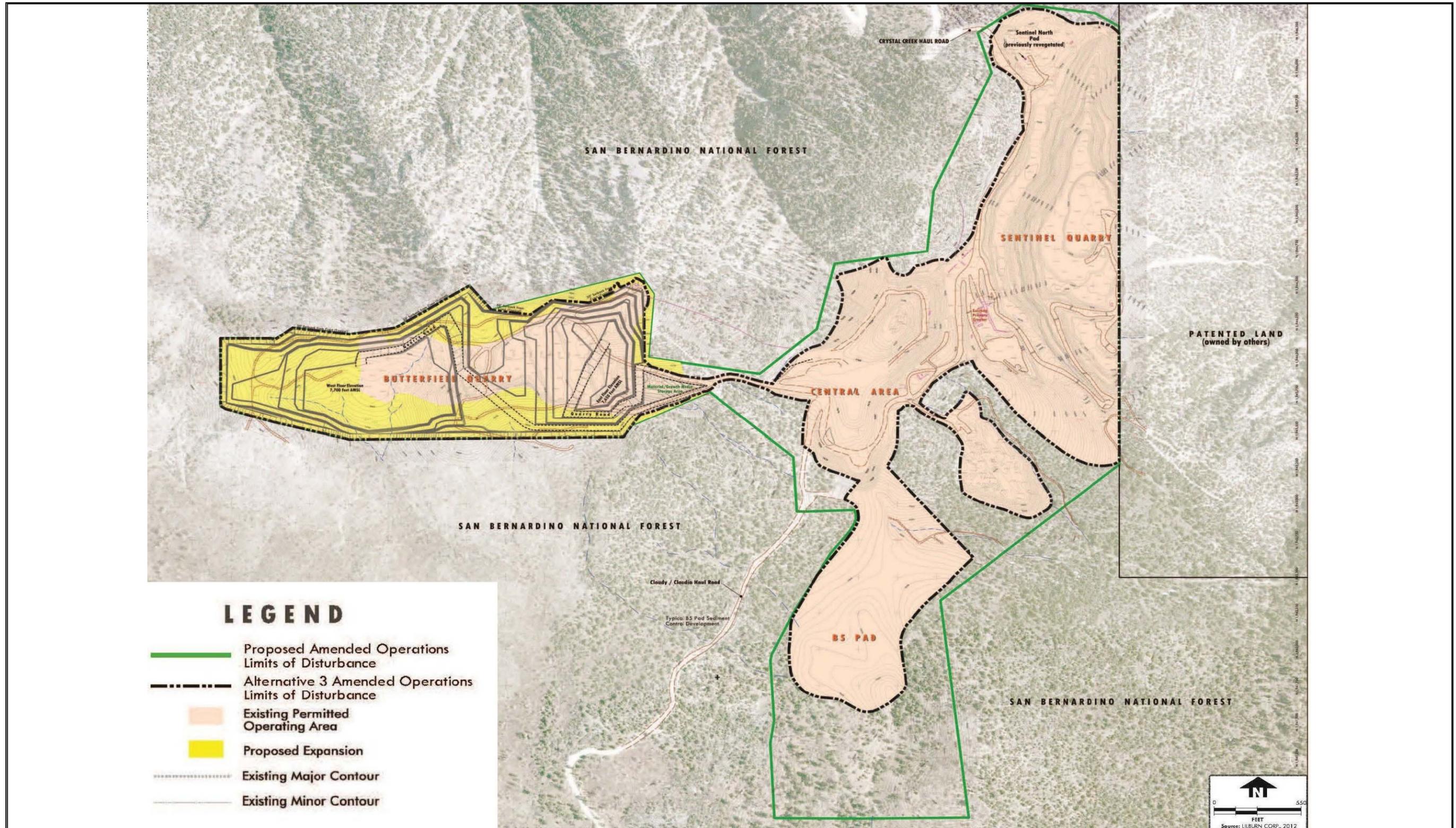


Figure 2-3 Alternative 3 - Partial Implementation

THIS PAGE IS INTENTIONALLY BLANK

### 2.2.5 Comparison of Alternatives

Table 2-1 provides a comparison of the components of the four alternatives that were carried forward for detailed analysis.

**Table 2-1 Comparison of Alternatives Analysis for Butterfield – Sentinel Quarries**

<b>Project Element</b>	<b><u>Alternative 1</u> No Action/No Project<sup>1</sup></b>	<b><u>Alternative 2</u> Proposed Action</b>	<b><u>Alternative 3</u> Partial Implementation Butterfield Expansion Only</b>	<b><u>Alternative 4</u> Mixed Production to Meet Omya LVPP Capacity</b>
Proposed New Area (acres)	0	94.9	30.6	94.9
Total Area – Existing and Proposed (acres)	137.5	232.4	168.1	232.4
Total Material Excavated <sup>2</sup>	12 (7.6 ore; 4.4 waste rock)	59.5 (27.2 ore; 32.3 waste rock)	25.5 (13.5 ore; 12 waste rock)	59.5 <sup>3</sup> (27.2 ore; 32.3 waste rock)
Maximum Depth (feet amsl)	7,810 (Butterfield) 7,150 (Sentinel)	7,650 (Butterfield) 7,000 (Sentinel)	7,650 (Butterfield) 7,150 (Sentinel)	7,650 (Butterfield) 7,000 (Sentinel)
Life of Mine Extension (years)	NA	40	20	40
Years at 680,000 tons per year	11	40	20	40
Final Reclamation Year	Year 30	Year 50	Year 30	Year 50

Note: 1 - With the No Action/No Project Alternative, Omya would not expand either quarry.

2 - Ore to plant; waste rock and fines (millions of tons)

amsl: above mean sea level

3 - It may not be feasible to excavate 59.5 MTPY in this Alternative due to the requirement for the mixed production split with White Knob and potential resource limitations such as required purity levels and operational logistics of quarries.

### 2.3 Mining Characteristics Common to All Alternatives

The following sections describe the aspects of the Project and the other alternatives that would not differ regardless of which alternative is implemented. The descriptions of these common features are not repeated in the discussions of each individual alternative.

### 2.3.1 Location

The Butterfield and Sentinel Quarries are located approximately 7.5 miles south of the community of Lucerne Valley and 5 miles north of Big Bear Lake. They are on public lands within the SBNF in San Bernardino County, California (see Figures 1-1 and 1-2). The quarries are located entirely within portions of approximately 954 acres of unpatented placer claims controlled by Omya. The quarry sites for the four alternatives are located within portions of the following claims in Table 2-2:

**Table 2-2 Mining Claims**

Claim Name	Area (acres)	Section	Township	Range
Crystal Creek 1	160	23	3N	1W
Crystal Creek 2	160	23	3N	1W
Crystal Creek 13	160	24	3N	1W
Crystal Creek 14	160	25	3N	1W
King 3	160	24	3N	1W
Crystal Creek 4	80	23	3N	1W
Slope North	74	23	3N	1W

### 2.3.2 Environmental Setting and Land Use

The Butterfield and Sentinel Quarries are bounded on the south, west and north by mountainous undeveloped Forest Service lands and to the east by patented open space with an active limestone mine called Furnace Canyon Quarry. Other than mining, which has historically been active in the area since the 1950's, land use in the mountainous area has typically involved the occasional use by hikers and hunters; however, off-highway Vehicle (OHV) use and fuel wood cutting have increased as more access roads have been built.

Omya has petitioned and received from the California Division of Mines and Geology (CDMG) Mineral Resource Zone 2 status (MRZ-2) for the limestone deposits on the Omya claims. Core drilling, detailed geologic mapping and assay data prove the deposits are significant mineral resources (MRZ-2) and exceeded the MRZ-2 criteria established by the California Department of Conservation Division of Mines and Geology (Joseph, 1984).

The LMP, Part 2 San Bernardino National Forest Strategy (September 2005) defines the Project area as the "Desert Rim Place" with small portions of the site also in "the Big Bear Backcountry Place." These areas are described as "a high desert, remote landscape formed by complex geological faulting." Much of the land in and around these areas are valued in production of large quantities of high quality limestone

mineral deposits. There is an abundance of road recreation opportunities, prehistoric habitations, a gold mining history, scenic character, biological diversity, mountain meadows, and conifer forest ecosystems.

The quarries are within the CHMS, a habitat conservation plan for carbonate soil types. The carbonate soils, which include limestone, provide a unique habitat for five federally listed threatened or endangered plant species. These species are endemic to carbonate soils. An intensive collaborative effort led to the development of the CHMS in 2003. The strategy is designed to provide long-term protection for the carbonate endemic plants while also providing for long-term continued mining in the San Bernardino Mountains. Certain areas of the carbonate habitat reserves are protected from mining impacts in perpetuity by being dedicated and managed as described in the CHMS. A Memorandum of Understandings and Agreement was signed in 2003 by Omya, the USFS, BLM, San Bernardino County, Specialty Minerals, Mitsubishi Cement Company, California Native Plant Society, and the Cushenbury Mine Trust stipulating that the signatories will implement the CHMS for the dual purpose of conserving threatened and endangered carbonate plants and streamlining the permitting of mining operations.

The listed carbonate-endemic plants are managed by the USFS, San Bernardino County, and other public agencies under the CHMS. Effects to listed carbonate-endemic plants are addressed under the CHMS and mitigated by permanently relinquishing unpatented mining claims or transferring private property into the public domain, and by management of off-site plant occurrences as outlined in the CHMS.

Botanical surveys by both USFS and Omya-contracted botanists have been conducted in the mine expansion areas during the past 30 years and have identified populations of Cushenbury Puncturebract (formerly Cushenbury Oxytheca), one of the five federally listed endangered plants, as being in the Project area. No occurrence of the other four listed carbonate endemic plant species have been recorded on or adjacent to the Project Site.

All the alternatives would be consistent with the provisions of the CHMS.

National Forest Transportation System Roads 3N87, 3N88, 3N88A, and 3N88B occur within the Project analysis area. All of these roads are currently designated as Administrative Use Only and closed to public motorized access. The Project as well as the other action alternatives would result in changes in the status of these roads. The Forest Service decision to approve any of the action alternatives would include Travel Management Decisions as follows.

The Project and Alternative 4 would result in burial of the west half of 3N87 which has already been buried in part by the Sentinel Quarry Expansion project of 2002. About 0.6 miles of this route beginning at Forest Road 3N16 would be decommissioned and removed from the National Forest Transportation System, leaving a gated 0.6 mile long administrative road originating at Forest Road 3N54 and terminating at the Sentinel Quarry operating area. This remaining administrative road provides access to private land owned by Specialty Minerals Inc., to the east side of the Sentinel Quarry operating area, and to Southern California Edison powerlines.

Forest Road 3N88 is the Crystal Creek Haul Road, including the haul road to Cloudy and Claudia Quarries. This road is to be reclaimed in segments upon completion of mining. Reclamation of the Cloudy and Claudia segments would continue as currently specified in the Reclamation Plan. The segment connecting the Butterfield and Sentinel quarries with the processing plant in Lucerne Valley would remain in use. The Project and Alternative 4 would extend this period of use, and the final reclamation date, by 20 years. All segments of 3N88 would ultimately be decommissioned and removed from the National Forest Transportation System upon final reclamation.

Forest Roads 3N88A and 3N88B are road spurs that would be displaced by the Project other action alternatives. These spurs would be decommissioned and removed from the National Forest Transportation System.

### **2.3.3 History**

Mining on the properties now controlled by Omya began by the Sentinel Mining Company during the late 1950s and has been, more or less, continuous since 1958. The Crystal Creek Haul Road was started in 1958 and was extended to the top of the mountain at that time. Mining of the Sentinel deposit began by La Habra Products during the early 1970's and mining of the Butterfield deposit began by Pluess-Stauffer (later renamed Omya) during the late 1970's.

Omya acquired the mining and processing operation in 1976 introducing extensive geologic exploration and quarry development programs. Omya has continuously mined these quarries since that time. Geologic mapping, sampling and core drilling continue to the present day, and have substantially increased known limestone resources. The Butterfield and Sentinel resources are adequate to allow mining to continue through 2055 at present and projected rates of mining.

In 1975, SMARA was enacted by the California Legislature to address the need for a continuing supply of mineral resources, and to prevent or minimize the negative impacts of surface mining to public health, property and the environment. On January 11, 1988, the Forest Service approved an Omya Umbrella Plan of Operations and Reclamation Plan which included the Sentinel, Butterfield, Cloudy, and Claudia Quarries and associated haul roads. The current approved Plan of Operations and Reclamation Plan (94M-02) was approved by the County (SMARA lead agency) and the Forest Service in 1994. The site is designated with CA Mine ID# 91-36-0052.

In 2002/2003 Omya submitted a Sentinel Quarry Area Expansion Plan of Operations and Reclamation Plan and received approval for the expansion from the Forest Service. The 2003 Reclamation Plan included a site specific approved revegetation plan, including growth media salvage, organics placement, seeding and revegetation, seed collection and propagation, irrigation, monitoring and maintenance plans and bond release criteria. All the alternatives would incorporate the conditions of the previously approved plans.

### **2.3.4 Timing**

The amount of limestone in the Butterfield and Sentinel Quarries is sufficient to operate the existing LVPP for more than 40 years and it is anticipated that the LVPP would continue operations for a minimum of 40 years under any of the alternatives (considering that the White Knob Quarry also provides limestone to the LVPP).

### **2.3.5 Mining Operations**

The Butterfield and Sentinel Quarries are multi-bench open pit mines and would continue to operate in this manner. Several working levels could be operated at any one time at each quarry to supply the quota of ore needed to meet production demands. The multi working level concept allows for greater selectivity and blending of rock qualities to meet stringent quality standards of customers, and allows maximum utilization of the resource.

Numerous grades of ore are and would continue to be selectively mined from the quarries. The ore would continue to be drilled and blasted about once per week for each quarry, loaded into haul trucks and taken to the crusher currently located southwest of the Sentinel Quarry. As discussed below, the crusher would be relocated in Alternatives 2 and 4. Crushed ore would then be loaded into haul trucks and transported 8 miles on the vested Crystal Creek Haul Road to the LVPP.

All mining activities would be conducted in accordance with the BMPs and other Project design features which are incorporated into the Project and other alternatives.

### **2.3.6 Pre-Mining Activities of Undisturbed Lands**

The following activities would be conducted prior to mining and overburden/waste rock stockpile development in order to limit disturbed areas and to facilitate ongoing and future reclamation and revegetation:

- Excavation and development limits would be located and marked in the field;
- Specified plants that can tolerate transplant would be salvaged to the degree possible, stored in a nursery and replanted on reclaimed land as areas become available for revegetation;
- As feasible, seeds of specified plants would be collected and either used for revegetation or stored appropriately for maximum future viability; and
- Salvageable soils and/or growth media would be placed in separate identified stockpiles for use as a seed bank and seedbed during reclamation. Soil stockpiles would be clearly marked and managed to limit wind and water erosion.

### **2.3.7 Equipment Used**

The equipment listed in Table 2-3 is currently used in mining of the Butterfield and Sentinel Quarries and would continue to be used for the Project. Additional or alternate equipment may also be required to

optimize operations during the Project, as identified in the table below. Required compliance with air quality regulations and permits would be obtained prior to placing equipment into operation. Alternatives 1 and 3 would most likely not require additional equipment due to the limited duration of quarry operations.

**Table 2-3 Typical Quarry Equipment - Butterfield and Sentinel Quarries**

Equipment	Typical Number	Net Increase of Additional Equipment	Purpose
Dozer	1	0	Removal of topsoil and waste rock. Construction and maintenance of the haul road, and quarry bench grading.
50 to 100 Ton Off-Road Haul Trucks	8	2	Transportation of excavated material to the primary crusher and to overburden stockpiles onsite and transportation of crushed sized ore to the LVPP.
Drill Rig	1	0	Drill holes for placement of explosives.
Water Truck	1	0	Water spray haul roads, active quarry areas, overburden stockpiles, and general dust control onsite.
Front-End Loaders	2	1	Loading of excavated materials into haul trucks at quarry and at the primary crusher.
Mobile Crusher/Screening System	---	1	Potential future replacement for existing stationary crusher.
Surface Miner	---	1	Potential future replacement to be used in place of crusher.
Excavator	---	1	Currently limited use for special projects, and boulder breaking. Potential future replacement to be used in place of front-end loader.
35 to 45-Ton Haul Trucks	Varies	Varies	Limited use for special projects.
Ancillary Equipment	Varies	Varies	Maintenance vehicles, bobcats, backhoe, pick-ups, etc.

### 2.3.8 Slope Stability

A Slope Stability Investigation was prepared by CHJ Consultants in 2014 (see Appendix H). CHJ concluded that the proposed mine excavations and reclamation (backfilling) of the quarries would be suitably stable against gross failure for the anticipated long-term conditions including the effects of seismic shaking, and meet the factor of safety criteria for static and seismic conditions. Project design features, as discussed in Section 2.3.17 Avoidance, Minimization and Environmental Protection Measures and in Section 3.7 Geology, would be implemented during mining. At the end of mine life, a final slope stability assessment report would be prepared for the Forest Service and County to assess the final slopes as part of the site closure and SMARA compliance.

### **2.3.9 Overburden and Waste Rock**

The quarries would continue to operate year round; however, quarry development and overburden removal would typically occur during winter months. Overburden and waste rock at the Butterfield and Sentinel Quarries are composed of off-color and/or impure limestone and dolomite, and a very small (less than 1%) amount of altered intrusive dike and clay material. Overburden and waste rock are nontoxic, naturally occurring rock material, but which are of insufficient quality (purity and brightness) to process for ore. Limestone waste rock and overburden do not have the chemical composition to create acid mine drainage, which can be a concern associated with the outflow of acidic water from metal mines. BMPs and Project design features (see Table 2-4 and Sections 3.3 Air Quality, 3.6 Geology and 3.8 Hydrology and Water Quality) would be in place to minimize dust emissions and runoff/erosion concerns.

### **2.3.10 Ore Crushing System**

Ore from the Butterfield and Sentinel Quarries would be hauled to the primary crusher and screens for size reduction, screening, and sorting of ore grades. Stockpiles of sorted ore would be made by the radial stacker at the crusher. From these stockpiles, haul trucks would be loaded and the crushed ore would be transported to the LVPP.

The primary crushing area is currently located immediately south of the Sentinel Quarry. In the Alternatives 2 and 4, a stationary-type crusher would be relocated to the ancillary facilities pad south of the expanded Sentinel Quarry as shown in Figure 2-2. The following discussion applies to both crusher locations, as no change in the crushing process is planned, only moving the crusher to another previously disturbed site in Alternatives 2 and 4.

The crusher area accommodates the crusher and support facilities. Commercial high voltage power lines and transformers are available for power. The existing crusher plant has approved permits to operate which are renewed annually by MDAQMD (see Section 3.3 Air Quality). The permits outline specific conditions which must be met to maintain air quality standards and limits on daily and hourly production rates. The existing POO and Reclamation Plan and air quality permit allow for a maximum of 5,000 tons per day and 600 tons/hour of ore crushed which is sufficient to accommodate the increased excavation rate identified in the proposed alternatives. Therefore, no change in the existing crusher air quality permits would be necessary.

Existing dust controls in the crusher and quarry areas would continue to be used. These include a baghouse and foam and fog sprays at the crusher and the use of magnesium chloride and water for dust suppression on the Crystal Creek Haul Road, quarry roads and ramps. Monitoring is also required by the MDAQMD permit.

Haul trucks and diesel equipment would meet the requirements of the California Air Resources Board's (CARB) off-road diesel vehicles regulation to reduce diesel pollutants.

Diesel fuel for mobile equipment would be stored at the crusher site in an approved above ground storage tank (AST) with appropriate secondary containment and spill control. The AST would be in compliance with the California Aboveground Storage Petroleum Act (ASPA) requirements and appropriately identified in the Hazardous Materials Business Plan (HMBP). Mine equipment would be fueled at the crusher site. Scheduled equipment maintenance would occur at the main plant site. Minor or emergency repairs may be conducted at the quarry. Waste oil generated at the mine site would be collected and transported for offsite disposal by approved methods and by properly trained and licensed personnel per the California Department of Toxic Substance Control (DTSC) and County hazardous waste generator rules and regulations.

The following is a listing of the equipment and support facilities for the ore crushing system:

- Truck dump hopper and vibrating feeder;
- Primary screen;
- Jaw crusher;
- Belt conveyors and radial stacker;
- One 40 foot van trailer and one 50 foot railroad boxcar containing electrical switchgear, spare parts, tools, and lunchroom;
- Two metal buildings;
- Portable toilets;
- One above ground diesel storage tank (double-walled) for mobile equipment; and
- One skid mounted non-potable water tank.

As discussed above, alternate equipment may be required to optimize operations. These may include the utilization of a mobile crusher which would be capable of being set up near the face of the quarry to reduce handling of the ore. A mobile crusher could also be moved from quarry to quarry as needed. Required compliance with air quality regulations and permits would be obtained prior to using a mobile crusher.

### **2.3.11 Production Water**

The water usage for the alternatives, including the Project, would not result in a significant change from the current mining operations water requirements. Adequate dust control would be maintained for all alternatives. Note that the use of magnesium chloride on roads and other active mine areas, the addition of a baghouse on equipment in the ore crushing system, and the occurrence of typically wet winter weather can all contribute to reducing the amount of water needed to control dust.

Water used to control dust is, and would continue to be, obtained from two previously permitted sources, a well located at the LVPP site and a well located in Crystal Creek Canyon near Turnout 5 on the Crystal Creek Haul Road (refer to Figure 1-2). Both existing wells are permitted by the State of California Water Resources Control Board and County of San Bernardino Department of Environmental Health Services (Permit #06259026). The LVPP well has been assigned recordation number 36011 by the California State

Water Resources Control Board. Bottled drinking water for employees at the mining area is brought to the site as necessary. No surface water is, or would be, used in the operation.

No treatment facilities would be needed. Water would continue to be hauled in a water truck and sprayed on the haul roads and active mining and overburden areas to minimize fugitive dust. The water truck would work during active quarry operations as needed to control visible dust. This water would typically evaporate and at times percolate; therefore, the dust control activities would not result in any wastewater or run-off.

The Mojave Water Agency (MWA) is a State Water Project contractor, a regional groundwater management agency, and serves as Watermaster for the adjudicated Mojave Basin in which Omya's wells are located. Omya has a verified base annual production allocation of 23 acre-feet per year (AF/yr) for its two wells and water production over the past 5 years (2007 through 2011) has been 19, 14, 14, 14, and 14 AF/yr, respectively (18<sup>th</sup> Annual Report, MWA 2012). Per the Water Supply Assessment (WSA) (Lilburn, 2013), the expected increase of water usage for the Project of 1.5 AF/yr would not exceed Omya's base allocation, nor would the other identified alternatives.

### **2.3.12 Erosion and Sedimentation Control**

The objective of drainage control measures is to manage runoff to minimize or prevent erosion and to promote settling of suspended solids before the runoff leaves the site. Numerous erosion and sedimentation controls have been implemented as needed in the existing mining and stockpile areas to control, minimize or prevent off-site sedimentation. Runoff is directed into quarry pits, and many culverts, dips, or drains direct water off roads. A large number of energy dissipaters, sediment catchment basins or sumps, rip rap, berms, and/or hay bales trap sediment and minimize the potential for off-site transport. Operations also limit surface disturbance to minimum areas and concurrent reclamation and revegetation would stabilize disturbed pads and slopes.

Omya has, and will continue to, work with the Forest Service in the design and implementation of drainage controls along roads and other facilities. Existing erosion and sedimentation controls are inspected and approved by both Forest Service and Omya personnel. The quarry sites are visually inspected after major precipitation events to determine if any substantial erosion is evident such as sheet, rill or gully erosion or any surficial instability. Appropriate erosion control measures are maintained as necessary and additional controls implemented where new erosion is observed. The erosion and sediment control measures that are currently in place for mining operations would continue to be implemented for the Project and other alternatives. The Project design features and BMPs for erosion and sediment control are identified in Table 2-4 and Sections 3.3 Air Quality, 3.6 Geology and 3.8 Hydrology and Water Quality, as well as in the SWPPP located in Appendix I.

### **2.3.13 Stormwater Pollution Prevention Plan (SWPPP)**

Operations on-site comply with a NPDES General Permit for Stormwater Discharges associated with industrial activities. In accordance with the Industrial General Permit (IGP), Omya has a SWPPP that identifies BMPs which have been, and would continue to be, implemented during ongoing and proposed mining operations. The SWPPP and IGP requirements include specific prohibitions, effluent levels, source identification, practices to reduce pollutants, assessment of pollutant sources, materials inventory, preventative maintenance program, spill prevention and response procedures, general stormwater management practices, training, record keeping, sampling procedures and monitoring program. A revised IGP was adopted on April 1, 2014 and became effective on July 1, 2015. The Omya SWPPP has been updated to address the new requirements. See Appendix I for a copy of the SWPPP.

### **2.3.14 Blasting**

Drilling and blasting operations would be conducted by licensed individuals in such a manner as to meet or exceed Mine, Safety and Health Administration (MSHA) and California Safety and Health Administration (CalOSHA) requirements. Blasting would typically be conducted about once each week at each quarry during daylight hours. Blasting operations would involve drilling, placement of charges, and detonation of the charges by a blaster with all required licenses and permits for handling explosives. All explosives and detonators would be transported, handled, and stored in accordance with all Federal, State, and local regulations.

The blasting agent used at the quarries, ammonium nitrate and fuel oil (ANFO) explosives, would not be stored at the quarry sites. These hazardous materials have been and would continue to be stored separately in magazines located at designated locations at Omya's Lucerne Valley operations per Federal, State, and local regulations. The explosives are only transported to the quarry site as necessary.

Blasts in the Omya quarries are, and would continue to be, relatively small to maximize selectivity. There are no residences for over 2 miles in any direction from the Project or other alternatives, and one or more major mountain ridges are present in between quarries and residences. Blasting has occurred in these existing quarries for over 35 years with no adverse impact on people, structures, or wildlife. The blasts cannot be seen, heard or felt in any residential areas.

### **2.3.15 Sanitation**

Portable toilets are supplied for use by employees and are located at the crushing area.

### **2.3.16 Public Access and Safety**

Access to the Butterfield and Sentinel Quarries (and any other portion of the Omya operation) is limited to employees and authorized personnel. Access is controlled during the workweek by operating personnel. During off hours, access is restricted by warning signs and fences. The legal access roads have lockable gates and signs informing the public the roads are closed to public access. Warning signs notify

the public that the mining area has restricted access and that the roads are not public access roads. During non-operating hours the gates are closed and locked.

### 2.3.17 Avoidance, Minimization and Environmental Protection Measures

Numerous Project design features, BMPs and environmental protection measures are incorporated into the mining activities that minimize or avoid potential impacts. Table 2-4 is a summary of the key Project design features, BMPs and environmental protection measures already proposed as part of the Project. Additional Project design features and BMPs are provided in the following detailed descriptions of the alternatives and in the specific environmental resource evaluation sections (Section 3 Affected Environmental Consequences). If it is determined in Section 3 Affected Environmental Consequences that the Project design features are not sufficient to minimize the potential impact to less than significant, then additional mitigation measures are identified to further reduce the potential impact. Identified Mitigation Measures are summarized in Table ES-1 and discussed in detail in Section 3 for each resource areas/effects evaluated. A summary table/cross reference of all proposed Project design features, SBNF design features/environmental minimization measures and identified Mitigation Measures is provided in Table 2-11.

**Table 2-4 Key Design Features and Environmental Protection Measures Incorporated into All Alternatives**

<b>Key Design Features and Environmental Protection Measures Incorporated into All Alternatives</b>	
<b>General Biological Resources</b>	
GEN-1.	<p>Omya shall minimize disturbance or hazards to surrounding vegetation, habitat, and wildlife, such as toxic substances, dust, noise, and lighting, as follows:</p> <ol style="list-style-type: none"> <li>a) New lighting shall be established at the minimum necessary to meet safety requirements, and shall be shielded to avoid lighting the surrounding habitat and the night sky;</li> <li>b) Except as necessary to survey or maintain the safety of the mine site, the Project's disturbance footprint shall be limited to areas designated for mining and related activities;</li> <li>c) Equipment staging areas and other construction or related habitat disturbance shall be limited to areas within the new or existing quarry footprint(s) and shall be designed and operated to the goal of minimizing impacts to adjacent habitat and sensitive biological resources;</li> <li>d) Design future overburden to be placed or backfilled into existing overburden areas and completed quarries as much as feasible to avoid possible impacts to existing Cushenbury oxytheca populations.</li> <li>e) Any soil bonding or weighting agents to be used on unpaved surfaces shall be non-toxic to wildlife and plants and non-attractants for wildlife;</li> <li>f) All vehicles and equipment shall be maintained in proper working condition to minimize the potential for spill of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials; except as necessary to repair or remove disabled vehicles or equipment, vehicle servicing shall take place only at a designated area;</li> </ol>

<b>Key Design Features and Environmental Protection Measures Incorporated into All Alternatives</b>	
	<ul style="list-style-type: none"> <li>g) All trash and food-related waste shall be secured in self-closing animal-proof containers and removed daily from the site;</li> <li>h) Only authorized personnel (including CDFW, USFWS and USFS) shall bring firearms or weapons to the site;</li> <li>i) No recreational target shooting will occur on NFS lands within the permit area.</li> <li>j) Standard erosion control measures shall be implemented for all phases of construction and operation where sediment run-off from exposed slopes may enter native soils or habitat or jurisdictional streambeds; and</li> <li>k) Disturbed soils and roads within the Project Area shall be stabilized to reduce erosion potential.</li> </ul>
GEN-2.	<p><i>Employee Training:</i> Omya shall conduct wildlife/plant awareness programs for employees (including new employee orientation and annual refresher trainings). The program will address bighorn sheep, desert tortoise, raptors, other animals of the area, and rare plants. This will include the importance of avoiding harassment/disturbance, adherence to speed limits, adherence to defined project boundaries, reporting guidelines, etc. CDFW and USFS will provide assistance in developing the training program.</p>
GEN-3.	<p><i>Fencing:</i> Omya shall minimize potential impediments to wildlife movement across the site by fencing only those areas within the facility where access must be restricted for safety or security reasons; identifying likely or potential wildlife movement routes across or around the site and avoiding or minimizing potential new barriers to wildlife movement in those areas.</p> <p>In the event fencing is necessary during construction and/or extraction activities, project personnel shall ensure that any such fence meets existing specifications that have been developed to preclude accidental entanglement of bighorn sheep, deer and other animals. Biologists from the Forest Service and CDFW will be consulted for appropriate fence guidelines.</p>
GEN-4.	<p><i>Reclamation:</i> Reclamation of the quarries shall include the creation of angled pathways and interlacing reclaimed benches in order to facilitate the movement of bighorn sheep and other wildlife through the quarries. These benches will be created as the mining sequence is completed and prior to restoration.</p>
GEN-5.	<p><i>Pets and Domestic Animals:</i> Omya employees shall not bring pets or domestic animals to the work site. Omya will not authorize the housing or grazing of domestic animals on their property.</p>
GEN-6.	<p>Maintain facilities and grounds in a manner that minimizes any potential impacts to hunting or scavenging raptors and other predators/scavengers (e.g., minimize storage of equipment near active quarries that may attract prey, remove trash/garbage daily, etc.). All trash and food-related waste shall be secured in self-closing animal-proof containers and removed daily from the site. Avoid practices that attract/enhance prey populations and opportunities for raptor hunting or scavenging near active quarries,</p>

<b>Key Design Features and Environmental Protection Measures Incorporated into All Alternatives</b>	
	haul roads, and processing areas. This would also help discourage the spread of non-Native birds; to discourage the spread of disease and pathogens, etc.
GEN-7.	Reduce vehicle collision risk to raptors and other scavengers by removing animal carcasses from haul and access roads.
GEN-8.	<i>Disturbance Avoidance:</i> Omya employees and contractors will not use Omya roads in order to access National Forest lands for recreation or hunting. Access for personal use will be through National Forest system roads and trails that are open to the general public.
GEN-9.	<i>Blasting:</i> Prior to blasting activities within the Project Area, mine employees shall conduct a visual inspection (with both naked eyes and binoculars) for a minimum of five minutes to ascertain the presence or absence of bighorn sheep, deer, golden eagles, peregrine falcons or other large animals. If animals are located within the blast area, mine employees shall wait until animals have moved from the area or may use sound such as shout, vehicle or air horns to move them out of the blast area prior to detonation of any blasting materials.
GEN-10.	<i>Biomass Disposal:</i> All woody vegetation to be cleared from the surface (quarry site, haul road, etc.) will be disposed of as follows: All vegetation and organic material will be chipped and/or stockpiled or applied to inactive quarry benches, overburden piles, or on sidecast areas along roads and quarries. This should be done as part of phased reclamation to minimize stockpile duration and associated weed risk.
GEN-11.	The withdrawal and quit-claim of specified unpatented mining claims (discussed below under Carbonate plants) is also designed to mitigate for the loss of wildlife habitat.
<b>Salvage and Recovery of Plants</b>	
PLANT-1.	In coordination with the Forest Service, Omya will provide for the collection of seed and other propagules as needed in support of the revegetation plan. Propagules shall be collected within the Project Area to the extent possible.
PLANT-2.	In coordination with the Forest Service, Omya will provide for salvage of rare native plants within the Project Area to be propagated and/or transplanted to protected habitat reserve areas at the discretion of the Forest Service.
<b>Carbonate Endemic Plant Species</b>	
CARB-1.	As specified under the CHMS, and within the Project Area, Omya or the Forest Service may at their discretion salvage carbonate endemic plant species (whole plants, cuttings, or seed), and propagules of associated species, to aid in carbonate habitat revegetation efforts on or off-site.
CARB-2.	For Threatened/Endangered Plants: Omya would, upon withdrawal, quit-claim specified unpatented mining claims held within San Bernardino National Forest, and

<b>Key Design Features and Environmental Protection Measures Incorporated into All Alternatives</b>	
	convey specified patented lands, which have been verified by the Forest Service to contain occupied endangered species habitat as mitigation for impacts of the expansion on Cushenbury oxytheca ( <i>Acanthoscyphus parishii</i> var. <i>goodmaniana</i> ) pursuant to the CHMS.
<b>Geology and Soils</b>	
GEO-1.	Control of surface drainage, erosion, and sedimentation of the proposed haul road and quarry operations would involve the following primary components currently being implemented for existing operations: <ul style="list-style-type: none"> <li>a) Limiting surface disturbance to the minimum area required for active operations</li> <li>b) Diverting runoff, where operationally feasible, such that runoff from undisturbed areas does not enter the area of active operations.</li> <li>c) Using ditches, sediment basins and localized control and maintenance measures to intercept and control runoff along the haul road.</li> <li>d) Stabilizing disturbed areas through regrading, revegetation and other restoration practices.</li> <li>e) Direct runoff into the quarries, sediment catchment basins, sumps and culverts.</li> </ul>
GEO-2.	Dispose of sediment from runoff control basins to pre-approved sites rather than side cast and to the greatest extent possible, side-casting into the Crystal Creek drainage will be avoided.
GEO-3.	Control runoff, drainage, off-site transport and erosion at fill and overburden pads by: <ul style="list-style-type: none"> <li>a) Constructing berms near the crest of the pads.</li> <li>b) Placing rip rap, catchment basins and/or energy dissipaters along the toe of the fill and in the drainage below the fill slope.</li> </ul>
GEO-4.	Inspect slope conditions in quarries after a significant seismic event. Quarry operations will be stopped until a qualified geotechnical engineer inspects slopes for unsafe or unstable conditions.
GEO-5.	Routinely inspect quarries for unsafe and unstable conditions.
GEO-6.	Implement quarry design and procedures recommendations identified in approved slope stability investigations and per SMARA requirements.
GEO-7.	Implement BMPs in accordance with the most current Industrial General Stormwater Permit and per the Omya's SWPP Plan.
GEO-8.	Minimize ground disturbance to the minimum that is required to construct and operate the quarry.
<b>Scenery</b>	
SCEN-1.	Surface disturbances shall be limited to those areas identified in the Mine Reclamation Plan. Disturbances outside of these areas shall be prohibited.

<b>Key Design Features and Environmental Protection Measures Incorporated into All Alternatives</b>	
SCEN-2.	Backfill eastern half of the Butterfield Quarry and portions of the Sentinel Quarry, as feasible.
SCEN-3.	Waste rock shall be deposited into waste rock stockpiles within the quarry footprint to reduce the area of disturbance and visual impact outside of the quarry and to reduce internal slopes and aid in revegetation.
SCEN-4.	Placement of darker materials, as available, on outside of highly visible slopes.
SCEN-5.	Approved color staining methods should be used on highly visible slopes that are not susceptible to raveling to reduce color contrast.
SCEN-6.	Locate replacement crusher or a new mobile crusher system out of viewshed.
SCEN-7.	Reclamation and revegetation shall be implemented per the approved Reclamation Plan on completed benches concurrent with mining. As areas become available, implement concurrent reclamation/revegetation of completed quarries and overburden stockpiles to reduce visual impacts through backfilling, re-contouring and slope reduction, growth media and habitat log placement, revegetation with native plant species, and colorization as applicable.
SCEN-8.	MDAQMD dust controls shall be implemented to reduce visible dust plumes.
<b>Air Quality, GHG, Health Risk</b>	
AIR-1.	Comply with all relevant MDAQMD regulations and permit conditions to minimize air emissions.
AIR-2.	Ensure the baghouse for the stationary crusher is in good operating condition as required by the permit.
AIR-3.	Use water or chemical suppressants to control dust at the quarry, crusher site, overburden pads and haul/quarry roads.
AIR-4.	Ensure that diesel equipment and vehicles meet the required CARB diesel regulations.
AIR-5.	Mining activities will be limited or stopped during significant wind events.
<b>Stormwater</b>	
SW-1.	Comply with the SWPPP BMPs (see Appendix K).
<b>Groundwater</b>	
GW-1.	Ensure that water production will remain within Omya's designated FPA.
GW-2.	Comply with all water quality and hazardous materials management regulatory requirements and identified BMP/design features.

<b>Key Design Features and Environmental Protection Measures Incorporated into All Alternatives</b>	
GW-3.	Comply with SMARA and reclamation activities identified in the approved Reclamation Plan.
<b>Hazardous Materials</b>	
HM-1.	Comply with the Hazardous Materials Business Plan, SWPPP, SPCC Plan and BMPs as required by these plans and hazardous materials and waste regulatory requirements.
HM-2.	Ensure that the use, transport, management, storage and disposal of fuels (i.e.; diesel and gasoline) and other hazardous materials used for mining operations (i.e.; motor oil, transmission fluids, hydraulic fluids, lubricating greases, brake fluids and/or antifreeze) are in accordance with Federal, State and local hazardous materials and waste management regulations.
HM-3.	Inspect and maintain the fuel storage tank to ensure that the secondary containment (i.e.; double wall tank) and spill prevention controls are operating as required.
HM-4.	Maintain an updated Hazardous Materials Business Plan and hazardous materials inventory per CUPA requirements.
HM-5.	Minimize blasting events to the extent possible (approximately once per week per quarry) and only during daylight hours.
HM-6.	The transportation, storage and handling of explosives will be conducted in accordance with regulatory requirements and only with licensed, trained and qualified professionals.
HM-7.	Maintain all emergency response and spill equipment in proper operating condition and have available at areas where hazardous materials and waste are managed, transported and/or stored.
HM-8.	Ensure all personnel are appropriately trained in hazardous materials and waste management, including spill prevention and response procedures.
<b>Reclamation</b>	
REC-1.	Comply with all aspects of the Reclamation Plan and SMARA requirements.
REC-2.	Reclamation of the quarries shall include the creation of angled pathways and interlacing reclaimed benches in order to facilitate the movement of bighorn sheep and other wildlife through the quarries. These benches will be created as the mining sequence is completed and prior to restoration.

Key Design Features and Environmental Protection Measures Incorporated into All Alternatives	
Employee Training	
TR-1.	Develop an Employee Training Awareness Plan that addresses training requirements, as necessary to comply with relevant regulations and approval conditions and mitigations identified in the Final EIR/EIS.

### 2.3.18 Reclamation and Revegetation

The Forest Service approved the previous Omya Umbrella Plan of Operations and Reclamation Plan in 1988 and the Reclamation Plan (94M-02) was approved by the Forest Service and the County in 1994. The Forest Service and County approved the Sentinel Quarry Area Expansion Plan of Operations and Reclamation Plan in 2002/2003. The 2002/2003 Plans includes mining and operation of the current Butterfield and Sentinel Quarries.

The Sentinel Quarry Area Expansion Plan of Operations and Reclamation Plan (2003) includes a detailed Revegetation Plan that was also reviewed and approved by the Forest Service and the County. No changes to the approved reclamation and revegetation methods are proposed for any of the alternatives being considered other than the timing and some specific details that are slightly different between the alternatives. A more detailed discussion of the final reclamation activities common to all the alternatives is provided Section 2.4. Specific details for each alternative are provided in Section 2.5. A copy of the Reclamation Plan is provided in Appendix C.

Article 9, Section 3700 of SMARA states the following:

*“Reclamation of mined lands shall be implemented in conformance with standards in this Article (Reclamation Standards). The standards shall apply to each surface mining operation to the extent that:*

- *They are consistent with required mitigation identified in conformance with CEQA; and*
- *They are consistent with the planned or actual subsequent use or uses of the mining site.”*

Omya would reclaim the quarry sites to meet both Forest Service Minerals Regulations (36 CFR 228, Subpart A) under the jurisdiction of the Forest Service and SMARA regulations implemented by the County. The objectives of this Reclamation Plan are to:

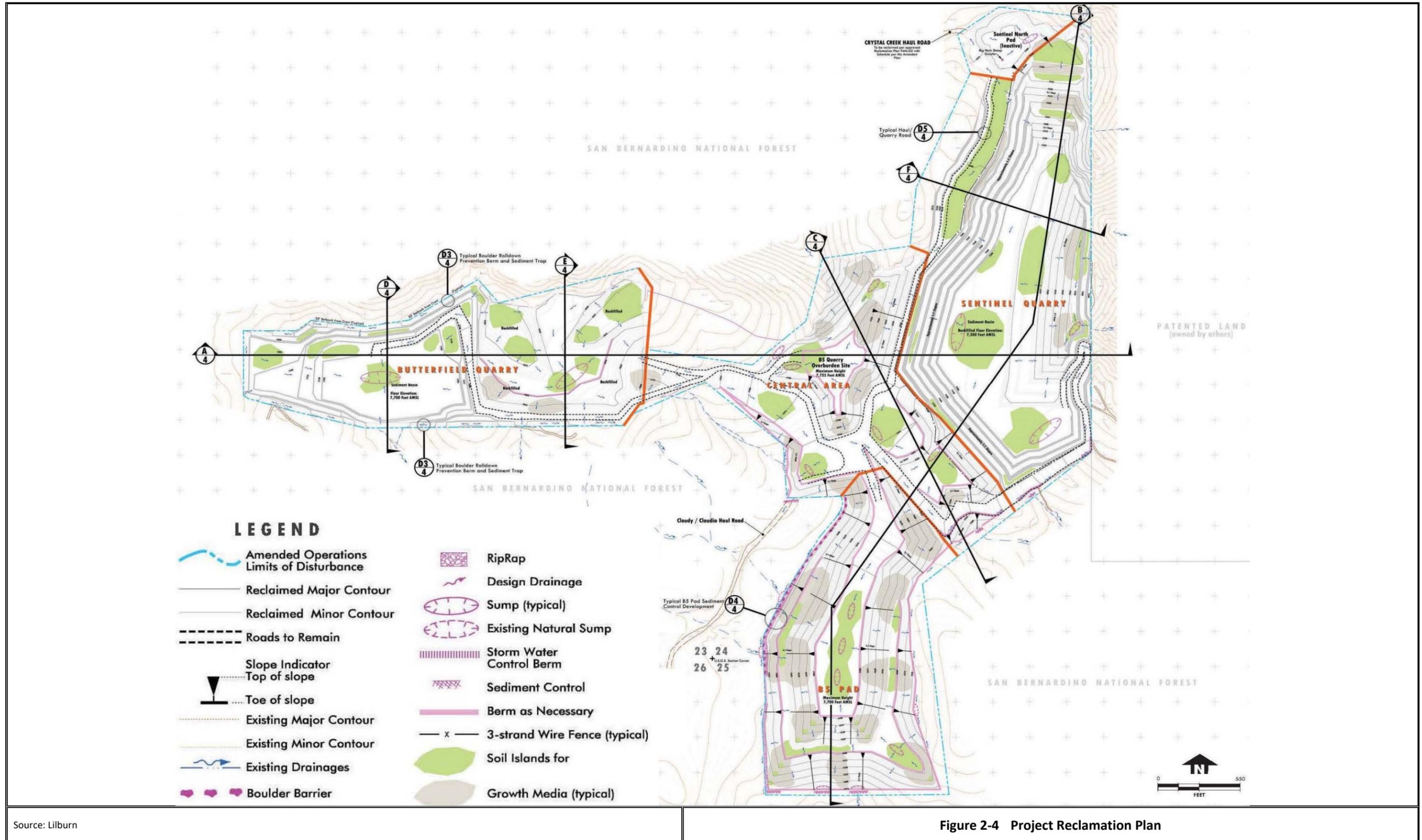
- Eliminate or reduce environmental impacts from mining operations;
- Reclaim in a usable condition for post-mining end uses which will include open space/habitat;
- Reshape mining features and revegetate disturbed areas to return biological productivity and to minimize aesthetic impacts; and
- Reclaim the site as necessary to eliminate hazards to public health and safety.

Because of the phased nature of the mining development, reclamation concurrent with mining can only occur to a limited degree due to safety and logistical reasons. Reclamation would start with the initiation of mining and would include the following activities, as feasible:

- Salvaging and stockpiling of grubbed organics, soils, growth media, seeds, and re-locatable plants and cuttings for propagation and direct deposition and/or re-planting to available reclamation areas during clearing of areas to be developed;
- Ongoing seed collection on-site and/or adjacent to the site and propagation of seeds, salvaged plants and cuttings at local nursery by a contracted revegetation contractor;
- Backfilling of the eastern half of the Butterfield Quarry and portions of the Sentinel Quarry as feasible (not applicable to Alternative 1);
- Sloping and grading of completed quarries and stockpile slopes for safety, slope stability, and erosion control;
- Placement of darker materials, as available, on outside of more visible slopes and colorization if shown successful for slopes not susceptible to raveling to reduce color contrast;
- Ripping of compacted areas prior to revegetation;
- Covering approximately 30% of equipment accessible horizontal areas with salvaged soil, growth media and organics utilizing the island concept;
- Reclamation of on-site roads after reclamation of quarries and pads certified complete as determined by Forest Service in order to allow access to all reclamation areas;
- Revegetation – hand seeding and direct seeding followed by imprinting, seedling planting, and hydroseeding, as appropriate;
- Irrigation, as needed, for 2 years to maximize establishment; and
- Monitoring and remediation until success criteria achieved.

Although mining would be more or less continuous, the development of the quarries and their ultimate timing for reclamation would be linked to operational parameters and product demand needs. Mining operations may experience unscheduled phasing changes due to various market/economic demands and variation in material quality since the natural deposit is not of uniform quality. The Forest Service and the County would be updated in the annual monitoring report on the status of operational and reclamation phases.

The Reclamation Plot Plan for the Project and Alternatives 4 is included as Figure 2-4 Project Reclamation Plan. Reclamation would consist of sloping excavated cuts and benches to meet the designed approximate 1H:1V overall slope. The individual benches would be approximately 60 feet vertical at 70° and 30 to 35 feet wide at Sentinel; and 50 feet vertical at 70° and at least 25 feet wide at Butterfield. Slopes may be flatter where backfilled with waste rock. Bench heights also would vary with material encountered. Reclamation of the quarries would include the creation of angled pathways and interlacing reclaimed benches in order to facilitate the movement of bighorn sheep and other wildlife.



Source: Lilburn

Figure 2-4 Project Reclamation Plan

THIS PAGE IS INTENTIONALLY BLANK

## 2.4 Final Reclamation Common to All Alternatives

Final reclamation would take place within the 10 years after termination of mining. All remaining equipment, stockpiles, and internal roads not needed for site access, reclamation, and revegetation and general site monitoring would be reclaimed. Final sloping of quarry walls, backfilled areas, and overburden stockpiles, erosion control, and revegetation of any unreclaimed areas and waste rock stockpiles would be conducted. Some roads may be left on-site for use in the revegetation and monitoring activities and for overall site public safety. Ongoing maintenance of fencing, signs, and erosion control would be conducted. Roads that are unnecessary for site and quarry access would be ripped, covered with available growth media, and revegetated. Other on-site roads needed for quarry and pad access would be reclaimed after reclamation of quarries and pads are certified complete as determined by Forest Service in order to allow access to all reclamation areas.

The Crystal Creek Haul Road would continue to be needed for access from Lucerne Valley to the quarries during the mining and reclamation phases. After receiving certification from the Forest Service and County that reclamation and revegetation of the quarries have achieved success criteria, this road would be reclaimed per the approved Reclamation Plan.

### 2.4.1 Revegetation

A detailed Revegetation Plan was prepared and approved by both the Forest Service and the County in 2002/2003. The Revegetation Plan is included in Appendix C (as Appendix 5 to the Amended Reclamation Plan). There are no substantive changes to the approved Revegetation Plan, only the timing and number of acres have been updated. Therefore this section includes only a summary of the approved plan.

Revegetation would include ripping, placement of growth media and organics (logs), and revegetation during the fall planting season. The island concept would be utilized and would cover approximately 30% of the equipment-accessible horizontal surface in a manner which would allow maximum visual enhancement and revegetation success. The islands would trap windblown seeds and attract wildlife to aid in seed dispersal. Irrigation would occur for 2 years as needed, followed by monitoring for 10 years or until success criteria are met.

The existing woodlands on-site are characterized by slow-growing tree species (pinyon pine, juniper, and Jeffrey pine). The Revegetation Plan objective is to establish “islands” with salvaged topsoil and organics to create conditions favorable for the early-successional plants such as perennial grasses, rabbit brush, fremontia, and sage brush. Nursery-grown pinyon pine, canyon live oak, western juniper, manzanita, and curl-leaf mountain mahogany would be planted when the sites are deemed favorable for planting and seeding of “climax” trees and shrubs.

Revegetation is summarized as follows:

- Ripping the surface to a depth of 2 feet for moisture and seed collection;

- Placement of available growth media utilizing the island concept to cover approximately 30% of equipment accessible horizontal surfaces, 1.5' to 2' thick;
- Placement of organics (logs) at a rate of 10/acre;
- Seeding with locally native species and revegetation per methods described in the Revegetation Plan;
- Staking or flagging reclaimed areas to eliminate additional disturbance;
- Irrigation maximum of 2 years as recommended; and
- Monitoring and maintenance; and application of remedial activities, if necessary, including but not limited to additional seeding and planting, plant protection, irrigation, and change of seed and plant mix.

#### **2.4.2 Growth Media Salvage and Storage**

Despite rocky outcrops and lack of soil, much of the soil, growth media and vegetative material are salvaged prior to mining. The following methods have been successful on-site in the past years:

- Timber cutting and removal to storage site;
- Clearing and grubbing with stumps and remaining vegetation removed to storage site; and
- Soil salvaging of available growth media stockpiled separately from overburden and clearly identified.

Growth media has been, and would continue to be, salvaged from quarry and overburden site development activities. It is preferred to distribute the salvaged soil, growth media and organic material directly to active reclamation sites in order to minimize the storage period and reduce seed mortality. Growth media has been, and would continue to be, stored in three areas labeled Material/Growth Media Storage Areas generally located east of Butterfield and northwest of the B5 Pad (see Reclamation Plot Plan Figure 2-4). Salvaged material may also be temporarily stored on available areas on the overburden stockpile areas during the course of operations. Permanent and temporary material/growth media stockpiles would be stockpiled separate from overburden and clearly identified. Existing soil and growth media piles have and would continue to have berms around the perimeter to retain growth media and prevent soil loss and downstream sedimentation.

#### **2.4.3 Plant Salvage**

Where possible, perennial grasses and other shrubs which are likely to survive transplantation, would be salvaged for storage and propagation at the nursery. For grasses, whole plants may be salvaged and then cut into multiple clumps rather than the taking of cuttings. Cuttings from manzanita and other shrubs as recommended may be collected.

#### **2.4.4 Seed Collection**

Effective revegetation requires a dependable seed supply. Omya has arranged for ongoing collection and storage of species utilized in revegetation. Some seed is, and would continue to be, used for nursery propagation, but most is sown onto revegetation sites to maximize cover and diversity of native species.

Seeds would be collected, cleaned, and stored by various techniques. Available seeds would vary from year to year, and collecting adequate quantities would necessitate regular monitoring throughout summer to identify sites where various species are in seed. Records of seed sources, including substrate (carbonate or granitic) and elevation, are maintained so that seeds would be reintroduced into appropriate environments. Omya has, and would continue to, propagate native plants in a nursery through its revegetation contractor. Seed collection has been ongoing at the Omya sites since 1995.

#### **2.4.5 Plant Propagation**

A combination of greenhouse-grown stock, seeding, natural seed banks, and natural dispersal is, and would continue to be, used for revegetation. Omya has contracted with local restoration specialists to store and propagate plant materials. Plants are grown with minimal fertilization and watering, in containers designed to maximize root/shoot ratios. All nursery-grown plants destined for out planting onto carbonate soil are raised in similar soil. Planting is, and would continue to be, coordinated with revegetation experts to assure an adequate supply of the necessary species as they are needed for planting.

#### **2.4.6 Site Preparation**

The site would be sloped per the Reclamation Plan and graded for slope stability and erosion control. Compacted areas would be ripped to depth of 2-feet if feasible due to the rock material to relieve compaction and to create an uneven surface. This would aid in collecting wind borne seeds and moisture and create more favorable microhabitats.

#### **2.4.7 Seeding**

Broadcast seeding, direct seeding, seedling planting and/or hydroseeding would be utilized and usually occurs during the fall season. Irrigation, if recommended, would continue for a maximum of two years. At planting, seed would be either mixed or raked into the top layer of replaced soil, or applied during surface imprinting or use of a sheep's foot attachment to increase seed germination, moisture infiltration and minimize erosion. In some cases, application would be tripled and cages placed to allow for loss to granivores.

The specific seed mixture and revegetation methods are detailed in the Revegetation Plan (see Appendix C) and are listed in Table 2-5.

**Table 2-5 Recommended Plant Species for Revegetation**

<b>Perennial Grasses</b> for application as seed and mycorrhizal nursery stock: minimum 5 species greenhouse propagation by seed or cutting, outplanted as mycorrhizal 'plugs,' to provide mycorrhizae when not reclaimed with biologically active topsoil; direct seeding total 40 lb. per acre elsewhere.	
Common name	Latin name
Indian ricegrass Parish's needlegrass Squirreltail Fendler's bluegrass Nodding bluegrass	<i>Achnalherwn hymenoides (Oryzopsis h,)</i> <i>Achnalherum parishii (Sripa coronala depauperala)</i> <i>Elymus elymoides (Sitanion hystlr)</i> <i>Poafendleri</i> <i>Poa secunda</i>
<b>Shrubs: for application as nursery stock:</b> greenhouse propagation by seed or cuttings; outplanted as "deep pot" stock.	
Common name	Latin name
Greenleaf manzanita Curleaf mountain mahogany	<i>Arclostaphylos patula</i> <i>Cercocarpus Ledifolius)</i>
<b>Shrubs: for application as seed:</b> 8 species minimum, total shrub seed application 60 lb/acre minimum; pretreatment Emery 1988 and/or USDA Forest Service 1974.	
Common name	Latin name
Great basin sagebrush Douglas rattleweed California fremontia Curleaf mountain mahogany Common rabbitbrush Curleaf rabbitbrush California buckwheat San Bernardino Mtn buckwheat Snakeweed Grinnells penstemon	<i>Artemisia tridentala</i> <i>Astragalus douglassii</i> <i>Fremoniodendron californicum</i> <i>Cercocarpus Ldifolius</i> <i>Chrysothamnus nauseosus</i> <i>Chrysothamnus viscidiflorus</i> <i>Eriogonum fasciculatum</i> <i>Eriogonum microthecum var. corymbosoides</i> <i>Guitierrezia sarothre</i> <i>Penstemon grinneuui</i>
<b>Trees for application as nursery stock:</b> minimum 3 species; greenhouse propagation from seed, outplanted as "deep-pot" stock.	
Common name	Latin name
Western juniper Pinyon pine Canyon live oak	<i>. occidentalis</i> <i>Pinus monophylla</i> <i>Quercus chysolepis</i>

Source: "Revegetation Plan - Omya Mining Operations on USDA Forest Service Land San Bernardino National Forest," Tierra Madre Consultants 1996.

#### **2.4.8 Irrigation**

Irrigation would be conducted as needed (up to 2 years) to allow the revegetated areas to receive adequate moisture to become established but to not create a dependence on artificial irrigation.

#### **2.4.9 Weed Control**

The purpose of the weed control is to reduce or eliminate the occurrence of non-native invasive plant species deemed harmful by the Forest Service that may invade the site where mining activities have removed the native plant cover and where active and natural revegetation is taking place. Non-native invasive species (weeds) can compete with native plant species for available moisture and nutrients and consequently interfere with revegetation of the site.

The occurrence of weeds on-site shall be monitored by visual inspection. The goal is to prevent weeds from becoming established and depositing seeds in areas to be revegetated at a later date. No areas would be allowed to have more than 10 percent of the ground cover provided by non-native invasive plant species. If inspections reveal that non-native invasive weeds are becoming or have established on-site, then removal would be initiated under Forest Service direction. Inspections shall be made in conjunction with revegetation monitoring. Weed removal would be accomplished through manual, mechanical or chemical methods depending on the specific circumstances. Reports of inspections and weed control implementation shall be part of the annual reclamation report.

#### **2.4.10 Herbivore Exclusion**

Deer, sheep, burros and rabbits all can do serious damage to revegetation areas. If a problem develops on revegetation sites, Tubex, TreePees and hardware cloth cages could be placed around individual plants to allow them to establish.

#### **2.4.11 Success Criteria**

A Monitoring Plan and success criteria have been previously approved by both the Forest Service and the County, and meets both Federal and State requirements. No changes are proposed.

SMARA requires that reclaimed sites provide wildlife habitat "*at least as good as that which existed before ... mining,*" and that reclaimed sites must be "*similar to naturally occurring habitats in the surrounding area.*" SMARA also requires the operator to demonstrate that vegetation on reclaimed sites has been self-sustaining without irrigation, fertilization, or weeding for a minimum of two years prior to release of performance bond. The Forest Service requires that revegetated sites reach 50% of pre-disturbance vegetation cover and 15% of pre-disturbance species richness by the end of a ten-year monitoring period for release of the performance bond.

The approved quantitative success criteria described in the existing Revegetation Plan is currently being implemented at Omya operations within the National Forest. Based on comments from DMR, the success criteria provided below has been included in the Amended Reclamation Plan to more clearly address current guidelines. The Revegetation Plan provided in the Amended Reclamation Plan (located in Appendix C of this document) provides a detailed description of the success criteria.

- **Cover:** 37% cover all native perennials combined per 50-m x 1-m transect.
- **Species Richness:** 5 species native perennials per 50-m x 1-m transect.
- **Density:** 20 native perennials per 50-m x 1-m transect.

The first two to three years would measure survivor of planted stock, need for weeding, and successful establishment of seeded native plants. In later years monitoring would focus on the site's resemblance to undisturbed vegetation in terms of the criteria above. This schedule could be revised depending on the results of the revegetation effort and the meeting of the success criteria. Monitoring data would be reviewed and verified by the Forest Service and County.

#### **2.4.12 Cleanup**

All clean-up operations would be conducted within one year of the termination of mining. Scrap material, refuse, residual equipment, and surplus materials would be removed, recycled, and/or disposed of at an appropriate landfill site. Excess material piles and disturbed areas would be regraded for positive drainage, scarified, and revegetated. Although none should exist, any remaining spillage of fuel, oil, grease, or hazardous materials would be cleaned up in accordance with EPA, DTSC and County regulations.

#### **2.4.13 Post Reclamation and Future Mining**

The planned land uses subsequent to mining is open space and wildlife habitat compatible with SBNF LMP directives. The quarry areas are surrounded by SBNF lands on the west, south, and north and by the privately held land to the east (patented open space with an active limestone mine). The area is known to have additional limestone resources and mining could be undertaken in the vicinity of the site in the future with additional entitlements.

#### **2.4.14 Reclamation Assurance**

Omya would continue to post an updated reclamation assurance annually in an amount sufficient to pay for the cost of reclamation for existing disturbance and incorporating required reclamation costs per the Amended Reclamation Plan (94M-02). As the quarries are within Forest Service lands, the Forest Service and the County would annually review the updated reclamation financial assurance cost estimate (FACE); as annual updates are required by SMARA. The County also requires the reclamation assurance to be reviewed and approved by the California DMR.

Omya most recently submitted its annually updated FACE to the County in July 2017. As of July 2017, Omya currently has a Financial Assurance Mechanism in the form of a letter of credit in the approved amount on file payable to the County, Forest Service, and DOC-DMR.

## 2.5 Comparison of Project Alternatives

### 2.5.1 Alternative 1: No Action – Continue Mining under Current Entitlements

CEQA and NEPA both require an alternative where nothing changes with the current site and activities. This is referred to as the “No Project” Alternative under CEQA and the “No Action” Alternative under NEPA. These terms can be used interchangeably but typically the term “No Action” Alternative is used in this Draft EIR/EIS.

Under CEQA Section 15126.6(e)(3)(B), the “No Project” Alternative consists of an analysis of the circumstance under which the project does not proceed. With the CEQA “No Project” Alternative, the County would not approve the Amended POO and Reclamation Plan for the proposed expansion nor issue the CUP.

Under NEPA and 36 CFR 228.5, the Forest Service must decide whether to approve the Plan of Operations as submitted by Omya, require changes or additions that are necessary for the Plan of Operations to meet the requirements of the regulations for environmental protection in 36 CFR 228.8, or select the “No Action” Alternative.

The No Action alternative does not imply that the limestone resource would never be fully developed, only that the resource would not be developed under this submitted Plan of Operations. Because Omya owns the rights to mine the limestone deposits, another POO could be submitted in the future to develop the remainder of the resources or Omya could request a time extension to continue mining the currently approved areas. It would result in the Butterfield and Sentinel Quarries not being expanded at this time and the additional 378,000 tpy of high quality limestone that would be generated from the quarry expansions would not be available to the LVPP in the near future. This would reduce operational flexibility and could impact the ability of the LVPP meeting current and future product demands. The No Action Alternative would prevent up to approximately 94.9 acres of land from being disturbed, minimizing the impact on habitat for certain species of concern. However, approximately 200 acres (or less in Alternative 3) of unpatented mining claims would not be quit claimed to the Forest Service for additional Carbonate Habitat.

The No Action Alternative would result in the following differences between the analysis for the Project and other alternatives:

**Aesthetics:** Approximately 94.9 acres of land (unpatented placer claims) would remain undisturbed in the No Action Alternative. The area of disturbance from the Project and other alternatives would not be visible from any developed or populated areas; however, the quarry expansions would be visible from

elevated areas to the south and southeast within the SBNF. Therefore, the No Action Alternative could potentially minimize the visual impact from elevated areas in the SBNF.

Since there has been, and would continue to be, mining in the area and the visual impact of these operations has existed for more than forty years; the No Project Alternative would not realistically alter the current visual impact or significantly minimize the potential impacts associated with the other alternatives.

**Agriculture and Forestry Resources:** The No Action Alternative would prevent approximately 94.9 acres of land within the SBNF from being converted to non-forest land. However, this land is located within unpatented placers claims controlled by Omya. The mining use has been included in the SBNF LMP and in the CHMS therefore the conversion to non-forest land is not considered a significant impact.

The Project and other alternatives are located in an area that could not be used for agriculture. The No Action Alternative would not substantially lessen any significant impacts associated with these resources.

**Air Quality, Greenhouse Gases and Health Risk Assessment (HRA):** Because of the shortened life of the mining operations and corresponding exposure time to receptors, the potential cancer risk as estimated in the Air Quality Assessment and HRA, would be minimally less for No Action Alternative. However, as discussed above, mining could continue under another Plan of Operations if approved in the future. The No Action Alternative may also result in less use of some of the equipment identified for Alternatives 2 and 4, but this would result in minimal reductions of the air emissions. Therefore, the No Action Alternative would not substantially lessen any significant impacts associated with air quality.

**Biological Resources:** The No Action Alternative would potentially reduce impacts to biological resources. It would prevent approximately 94.9 acres of land from being disturbed and the potential loss of habitat and/or impact to certain sensitive, endangered or species of concern.

The *Cushenbury Puncturebract* (previously known as *Oxytheca*), a Federally listed endangered plant species endemic to carbonate soils, has been identified in some of the areas included in the other alternatives. However, mining use has been included in the CHMS and effects to listed carbonate-endemic plants is allowed under the CHMS if appropriately mitigated. Alternatives 2 (the Project), 3 and 4 would mitigate this potential impact by permanently relinquishing, through a quit claim, carbonate-endemic plant habitat to the Forest Service. The No Action Alternative would not allow for these habitat areas to be protected from future mining operations.

The No Action Alternative could potentially lessen the impact to other biological resources such as raptors and bighorn sheep by limiting the amount of disturbed acreage associated with the quarry expansions. However, because mining activity at the proposed site has been in existence since the 1950s, the Project and other alternatives would not result in a significant increase to noise or nuisances in the area that would be likely to impact these species. In addition, Omya has or will be entering into raptor and bighorn

sheep conservation strategies with the resource agencies and other local mining operations, regardless of which alternative is selected.

There is no riparian vegetation on site of the Project or other alternatives. Most of the western areas were burned in recent fires (Willow Fire and Butler Fire in 2007).

As summarized on Table 2-4 and described in Section 3.4 Biological Resources with implementation of the Project design features, BMPs and identified mitigation measures, none of the other alternatives would result in a significant impact; therefore, the No Action Alternative would not substantially lessen any significant impacts associated with these resources and it could impact the permanent conservation of approximately 200 acres of carbonate-endemic plant habitat from being established.

**Cultural Resources:** Cultural resources surveys were conducted by the Forest Service which included the areas potentially impacted by all the alternatives. These surveys did not identify any cultural sites within or adjacent to the Project alternative or other alternatives. Since it does not appear that any of the alternatives could result in a significant impact to cultural resources, the No Action Alternative would not substantially decrease potential significant impacts associated with these resources.

**Geology and Soil Resources:** The mine design for all the alternatives was determined to be generally stable and all the alternatives would comply with the mining and safety regulatory requirements. In addition, all the alternatives would implement the same Project design features, and comply with the soil erosion control measures identified in the site SWPPP. Therefore, the No Project Alternative would not substantially decrease potential significant impacts associated with these resources.

**Hazards and Hazardous Materials:** The potential impacts associated with mining operations would remain with the No Action Alternative because the existing mining operations at the quarries would continue. In addition, compliance with established design features and BMPs minimizes potential concerns to less than significant levels for all the alternatives. Therefore, since none of the alternatives could result in a significant impact, the No Action Alternative would not substantially decrease potential significant impacts associated with these resources.

**Hydrology and Water Quality:** Stormwater runoff has not been a significant concern with the existing mining operations. With the continued implementation of the Project design features, BMPs and recently updated SWPPP, the potential impacts associated with the Project and other alternatives would be less than significant.

Although the other alternatives could increase the current use of water by approximately 10%, because a relatively small amount of water is required for current operations, the increase is not considered a significant impact to the water supply and is still within the MWA base allocation for Omya of 23 af/yr.

Therefore, since none of the alternatives could result in a significant impact, the No Action Alternative would not substantially decrease potential significant impacts associated with these resources.

**Mineral Resources:** The No Action Alternative could impact the ability for the LVPP to meet future production requirements. Because the site is recognized as an area with valuable proven mineral resources (MRZ-2) and there are few mineral deposits with the level of quality that is found in the Omya quarries, the No Project Alternative could negatively impact the availability of a resource that is needed for the manufacturing of many commercial and industrial products. The No Action Alternative would also limit the flexibility of operations at the Omya facility. Therefore the No Action Alternative could have a significant impact to availability of mineral resources.

**Noise:** The noise associated with the existing mining operations has not created a significant impact in the past and none of the quarry expansions alternatives would result in an increase level of noise. The operations are required to conform to all applicable County and MSHA noise control requirements. Therefore, since none of the alternatives would result in a significant impact, the No Action Alternative would not substantially lessen any significant impacts associated with these resources.

### 2.5.2 Alternative 2: Proposed Project

The following identifies aspects of the mining operations and reclamation activities for Alternative 2 (the Project) that are different than the detailed discussions provided in Section 2.2.1 Characteristics Common to All Alternatives and Section 2.4 Final Remediation Common to All Alternatives.

#### Summary

Omya submitted an Amended Plan of Operations and Reclamation Plan to the Forest Service and a Mining and Land Reclamation CUP Application to the County for the expansion of the Butterfield and Sentinel Quarries. The expanded operations identified in these plans are the activities being considered in this Draft EIR/EIS under Alternative 2 - Proposed Project.

Known limestone resources will accommodate an increase to approximately 32 million tons of ore beyond what is currently identified in the POO and Reclamation Plan. This allows for a proposed additional 40 years of operations for Butterfield and a proposed additional 20 years for the Sentinel Quarry. Depending on market demand, the combined Butterfield and Sentinel Quarries average ore production rates would increase to approximately 680,000 tons of ore hauled to the LVPP per year (see Table 2-6).

**Table 2-6 Alternatives 2 and 4: Planned Production and Operational Areas**

Quarry or Area	Proposed (acres)	Existing and Proposed Area (acres)	Ore Limestone Resources (millions of tons)	Annual Average Excavated (tons)	Annual Average Production (ore to plant) (tons)	Annual Average Waste – including crusher fines <sup>1</sup> (tons)	Waste – including crusher fines <sup>1</sup> (millions of tons)	Max. Depth (feet)
Butterfield Quarry	30.6	52.3	7.6	356,500	162,500	194,000	7.8	200

Quarry or Area	Proposed (acres)	Existing and Proposed Area (acres)	Ore Limestone Resources (millions of tons)	Annual Average Excavated (tons)	Annual Average Production (ore to plant) (tons)	Annual Average Waste – including crusher fines <sup>1</sup> (tons)	Waste – including crusher fines <sup>1</sup> (millions of tons)	Max. Depth (feet)
Sentinel Quarry	16.0	75.6	24.4	1,131,000	517,500	613,500	24.5 <sup>2</sup>	600
B5 Pad	27.8	51.2	---	---	---	---	---	---
Central Area	19.5	47.8	---	---	---	---	---	---
Sentinel North Pad Maintenance Buffer	1.0	5.5	---	---	---	---	---	---
<b>Totals</b>	<b>94.9</b>	<b>232.4</b>	<b>32</b>	<b>1,487,500</b>	<b>680,000</b>	<b>807,500</b>	<b>32.3<sup>2</sup></b>	<b>---</b>

Notes: Volumes are estimated based on drilling data and computer modeling.

Area rounded to nearest tenth of an acre. Totals may be slightly different due to rounding.

In-situ or in-place limestone rock weight to volume ratio estimated at 2 tons per cubic yard.

Waste rock (interburden and overburden) excavated would vary annually depending on area being excavated.

1 – Fines produced from primary onsite crushing estimated at 15% of ore crushed.

2 – Includes relocation of some existing waste rock to allow western and southern expansion of Sentinel Quarry.

## Mining Operations

### *Pre-Mining Activities of Undisturbed Lands:*

Section 2.3.6 provides a general discussion on pre-mining activities common to all the alternatives. The pre-mining activities for Alternative 2 would be the same as the activities described in Section 2.3.6.

### *Quarry Operations:*

The Butterfield and Sentinel Quarry proposed expansion consists of 30.6 acres and 64.3 acres respectively, resulting in a total expansion of 94.9 acres for the Project. Omya has provided the Forest Service a mitigation land proposal consistent with the CHMS that would relinquish approximately 200 acres of unpatented claims for carbonate plant habitat mitigation.

The Butterfield Quarry expansion consists of 30.6 acres and includes expansion of the existing quarry approximately 900 feet to the west and 200 feet to the north and south, incorporating those areas previously defined as Butterfield 2, Butterfield 3, and the previously mined and reclaimed Butterfield 4, and the partial filling of the quarry with overburden. These areas would all be included into the overall Butterfield Quarry footprint for a total disturbance area of approximately 52.3 acres and limestone resources of 7.6 million tons.

The Sentinel Quarry revisions consist of an additional 64.3 acres of disturbance and include expansion of the quarry (16.0 acres), the B5 Pad (27.8 acres), and the Central Area with overburden fill pads, growth media storage, and additional haul road areas (19.5 acres) and a maintenance access buffer around the Sentinel North Pad (1.0 acres). These areas would all be included into the overall Sentinel Quarry footprint (currently 115.8 acres) for a total disturbance area of approximately 180.1 acres and limestone resources of 24.4 million tons. These changes allow for substantial optimization of the quarry's operational activities.

***Slope Stability:***

As described in Section 2.3.8, Characteristics Common to All Alternatives, a "Slope Stability Investigation" was prepared by CHJ Consultants in July 2012 (see Appendix H) and Project design features and BMPs were identified. The Project would implement the design features and BMPs as described.

***Phased Quarry Development:***

Although mining is more or less continuous, the development of the quarries is linked to operational parameters and product demands. Estimated phasing for the Project is provided in Table 2-7. Mining operations may experience unscheduled phasing changes due to various market/economic demands and variation in material quality since the natural deposit is not of uniform quality. The Forest Service and the County would be updated in the annual monitoring report on the status of operational phases.

**Table 2-7 Alternatives 2 and 4: Butterfield and Sentinel Quarries Phased Development Schedule**

Phase No.	Locations	Years	Duration (years)	Cumulative Years
1	<p><u>Sentinel Quarry</u> – Mine approx. 200 feet into southwest expansion area and west into the B5 Quarry fill. Relocation of waste rock to overburden pads.</p> <p><u>Butterfield Quarry</u> – Mine east half to approx. 7,750-foot elevation.</p> <p><u>Central Pads</u> – Slope B5 Quarry fill with Sentinel Quarry pushback. Utilize overburden for road and pad fills.</p> <p><u>B5 Pad</u> – Phased expansion with placement of material from quarries.</p> <p><u>Crusher</u> – Put new crushing system into service when available.</p>	2018-2027	10	1-10
2	<p><u>Sentinel Quarry</u> – Mine approx. 200 feet into southwest expansion area and initiate backfilling on north slope.</p> <p><u>Butterfield Quarry</u> – Mine east half to approximate final quarry floor depth of 7,650 feet. Initiate mining in western half of quarry.</p> <p><u>Central Pads</u> – Complete filling and sloping of old B5 Quarry area; initiate reclamation and revegetation.</p> <p><u>B5 Pad</u> – Phased expansion with placement of material from quarries.</p>	2028–2037	10	11 - 20

Phase No.	Locations	Years	Duration (years)	Cumulative Years
3	<p><u>Sentinel Quarry</u> – Mine approx. 200 feet into southwest expansion area; continue backfilling on north slopes.</p> <p><u>Butterfield Quarry</u> – Complete eastern half to 7,650-foot depth. Continue mining in western half and initiate placement of overburden in completed east half.</p> <p><u>Central Pads</u> – B5 Quarry fill completed; ongoing revegetation/monitoring/remediation as needed.</p> <p><u>B5 Pad</u> – Phased expansion with placement of material from quarries.</p>	2038-2047	10	21 -30
4	<p><u>Sentinel Quarry</u> – Mine approx. 200 feet into southwest expansion area; complete backfilling on north slopes and initiate slope reduction to 2H:1V.</p> <p><u>Butterfield Quarry</u> – Complete mining on west half to 7,700 feet. Complete backfilling of eastern half to approximate original contour.</p> <p><u>Central Pad</u> – B5 Quarry fill; Reclamation completed.</p> <p><u>B5 Pad</u> – Stockpile completed; initiate reclamation and revegetation.</p>	2048-2057	10	31 -40
5	<p>Final Reclamation  <u>Remove crusher</u> and other plant equipment (within one year after completion of mining).  <u>Sentinel Quarry</u> – Finish sloping of backfill to 2H:1V; revegetate per Plan; maintain erosion control; monitor revegetation progress; and conduct remediation as necessary until success criteria achieved.  <u>Butterfield Quarry</u> – Finish sloping of quarry and backfill; revegetate; maintain erosion control; monitor revegetation progress; and conduct remediation as necessary until success criteria achieved.  <u>Central Pads</u> – Finish sloping of backfill; revegetate; maintain erosion control; monitor revegetation progress; and conduct remediation as necessary until success criteria achieved.  <u>B5 Pad</u> – Ongoing revegetation monitoring and remediation as needed.  <u>Crystal Creek Haul Road</u> – Maintained for reclamation and monitoring access to Butterfield – Sentinel Quarries.</p>	2058 - 2067	10	41-50
5A	<p><u>Crystal Creek Haul Road</u> – Reclaim per approved Reclamation Plan. Remove outside berm, place at toe of cut, install erosion controls, and revegetate (year 2068). Maintain erosion control; monitor revegetation progress; and conduct remediation as necessary years 2068 to 2077.</p>	2068 - 2077	10	51-60

Notes: All elevations are above mean sea level (amsl).

Phasing and development of the quarries are dependent on operational parameters and product demand needs. Mining operations may experience unscheduled phasing changes due to various market/economic demands and variation in material quality since the natural deposit is not of uniform quality. This would be especially true for

Alternative 4 due to the split production requirement with White Knob. The Forest Service and the County would be updated in the annual monitoring report on the status of operational phases.

***Butterfield Quarry:***

The Butterfield Quarry is generally mined in 25-foot cuts with a 25-foot horizontal safety bench every 50 vertical feet. Generally, bench width is  $\frac{1}{2}$  wall height. Face angle averages 70 degrees. Bench heights and widths would vary with deposit geometry and have been determined based on results in detailed studies of the geologic structure, over 30 years of mining experience at this specific mine site, and consultations with various experts including government and private sector (see Figure 2-5) for Butterfield Quarry Cross Sections).

Pit ramps are 30 to 50 feet wide and grade is 12 to 15% depending on conditions. The operating plan is designed with overall pit slopes of about 45 to 50 degrees (about 1:1 overall slope). The highest level of the Butterfield Quarry is approximately 7,900 feet amsl and mining would ultimately reach the 7,650 feet amsl level in the eastern half and 7,700 feet amsl in the western half. The quarry would have up to eight benches. The estimated limestone resources are 7.6 million tons of ore with approximately 7.7 million tons of waste rock to be stockpiled within the central pad area, B5 Pad, or the eastern half of the quarry as backfill.

The proposed expansion includes phases or pushbacks starting in the year 2018 and described in 10-year intervals for a total of 5 phases including a 10-year Phase 5 for reclamation. Mining would occur on several levels within the Butterfield Quarry. During Phases 1 and 2, the eastern half of the quarry (approximately 16 acres) would be progressively developed to the south, west, and north to planned boundary limits.

During Phase 3, mining would be initiated in the western portion of the Butterfield Quarry. Excavations would continue until the end of Phase 4 to the planned floor depth of 7,700 feet amsl or approximately 200 feet below the northern rim. Note that an area in the center of the quarry would only be excavated to a depth of 7,850 feet amsl due to deposit geometry.

During mining of the western half of the Butterfield Quarry, concurrent backfilling of the eastern quarry area would occur. Ultimately the eastern portion would be completely backfilled to approximate original contours as shown in Figure 2-5. The overburden would be progressively placed in the eastern portion of the Butterfield Quarry, but only after those portions of the quarry have reached their final outer limit and the ore has been mined out.

The quarry would be mined from east to west. Backfill would progressively follow mining as the limits of the ore are reached. When backfill areas are not available, alternate overburden sites would be utilized.

The Project allows for substantial backfill to be placed in the mined out portion of the Butterfield Quarry, and also provides for an efficient mining plan, consistent mining costs, better selectivity, even royalty payment distribution to claim owners, and the most flexibility in overburden placement. Furthermore, it

allows concurrent reclamation of the quarry and overburden site, minimizes disturbance of new ground, and requires phased, incremental disturbance of new ground only as necessary for both quarry and overburden sites.

***Sentinel Quarry:***

The Sentinel deposit is mined in a generally uniform manner in 30-foot cuts with a 30 to 35-foot horizontal safety bench every 60 vertical feet. Generally, bench width is  $\frac{1}{2}$  wall height. Face angle averages 70°. Bench heights would vary with material encountered and have been determined based on the results of detailed studies of the geologic structure, over 30 years of mining experience in this specific mine site, and consultations with various experts including government and private sector.

Pit ramps are 30 to 50 feet wide and grade is 10 to 15% depending on conditions. The operating plan is designed with overall pit slopes of about 45° to 50° (about 1H:1V overall slope). The highest level of the Sentinel Quarry is 7,600 feet amsl. Mining would ultimately reach the 7,000-foot amsl elevation, and the quarry would have 11 benches or more on the north, west, and south (see Figure 2-6 for Sentinel Quarry Cross Sections).

The quarry would be progressively developed (pushed back) to the south, west, and east property line, and eventually deepened to the footwall to reach the final depth of 7,000 feet amsl. Several mining and development mining phases have been previously approved in the existing mine and reclamation plans. The proposed expansion includes five new additional phases or pushbacks starting in the year 2018 and described in 10-year intervals for a total of 5 phases including a 10-year Phase 5 for reclamation.

Phases 1 and 2 would progressively develop (push back) the quarry wall to the western and proposed southern limits, and eastward to the property line. During Phase 1, a new stationary or mobile crusher would be put into service. During Phases 3 and 4, the Sentinel Quarry would be mined in incremental pushbacks to the lateral extent and final depth of 7,000 feet. Waste material would be backfilled starting on the northern wall and gradually filling the quarry to an estimated elevation of 7,550 feet on the north slope and to approximately 7,300 to 7,325 feet on the quarry floor. Backfill slopes would be reduced to 2H:1V during final reclamation. The final backfilled floor would be graded to drain towards the high wall on the south and west and would have capacity to retain all quarry run-off for a 100-year precipitation event.

***Equipment Used:***

Section 2.3.7 provides a description of the equipment that would be used during mining operations common to all the alternatives. The equipment used for the Project is identified on Table 2-3.

**Overburden or Waste Rock Stockpile:**

Section 2.3.9 provides a general discussion on overburden and waste rock common to all the alternatives. Additional detail regarding the Project is provided below.

Currently overburden, interburden, and fines are deposited into the old Butterfield 5 (B5) Quarry site, central pads' area, and the B5 Pad. Material placed into these areas includes both waste rock and material stockpiled for potential future use. Material stockpiling would continue throughout the life of the operation. Waste rock is also planned to be backfilled into the Butterfield and Sentinel Quarries as areas are mined out. The Project proposes the revisions shown in Table 2-8 to handle the estimated overburden from the planned expansion of mining.

**Table 2-8 Alternatives 2 and 4: Planned Overburden Areas and Storage Capacities**

Storage Area	Existing Area (acres)	Planned Expansion Area (acres)	Total Area (acres)	Estimated Overburden Quantity (mt)
B5 Overburden Pad	23.4	27.8	51.2	11.67
Central Pads	28.3	19.5	47.8	1.45
Sentinel Quarry Backfill <sup>1</sup>	59.6	16.0	75.6	14.4
Butterfield Quarry Backfill <sup>1</sup>	21.7	30.6	52.3	4.8
Sentinel Quarry North	4.5	1.0	5.5	Reclaimed
<b>Totals</b>	<b>137.5</b>	<b>94.9</b>	<b>232.4</b>	<b>32.32</b>

Notes: mt – millions of tons based on loose or swelled cubic yards.

Areas rounded to nearest tenth of an acre. Totals may be slightly different due to rounding.

Waste rock (interburden and overburden) excavated would vary annually depending on area being excavated and includes fines produced from onsite crushing estimated at 15% of ore crushed and relocation of existing waste rock to allow western and southern expansion of Sentinel Quarry

1 - Backfill would be within the quarry footprint.

**B5 Pad (Overburden Stockpile):**

The existing approved B5 Pad of approximately 23.4 acres would be progressively extended to the south with overburden from the Butterfield and Sentinel Quarries when backfilling areas of these quarries are not available. As overburden removal progresses during Phases 1-4, the pad would be incrementally built out southward to its planned height of 7,700 feet amsl. Capacity of the B5 Pad is estimated at up to 11.67 million tons and is expected to reach capacity by the end of Phase 4. Reclamation in the form of sloping to 2H:1V and revegetation would occur concurrently where operationally feasible. Slope reduction of remaining slopes would begin during Phase 4, and be completed during Phase 5 (see Figure 2-7 for B5 Pad and Central Area Cross Sections).

The extended B5 Pad is largely underlain by non-carbonate rock and is thus not habitat for the endangered carbonate plant species. The majority of the overburden placed at the site is carbonate rock and thus the expansion of the B5 Pad would create habitat for endangered species.

***Central Area - B5 Quarry Backfill Site:***

During Phase 1 (years 1 - 10), overburden and waste rock would continue to be placed at the B5 Quarry overburden site to the existing height of 7,775 feet amsl. In order to expand the Sentinel Quarry to the west, a portion of the B5 Quarry fill would be removed and the waste rock would be relocated to an alternate overburden location. It is planned to backfill the B5 Quarry as shown on the mining and reclamation plans (see Figure 2-7). Reclamation of this area would occur concurrently where operationally feasible and continue when backfilling is completed during Phase 3. Slopes would be contoured at 2H:1V and revegetated.

***Central Area for Future Crusher Site, Growth Media Storage, and Haul Roads:***

In order to expand the Sentinel Quarry southward, the waste rock to the south of the Sentinel Quarry would be incrementally excavated as part of the quarry pushbacks as described in the phased development and placed at the following available overburden or infrastructure sites:

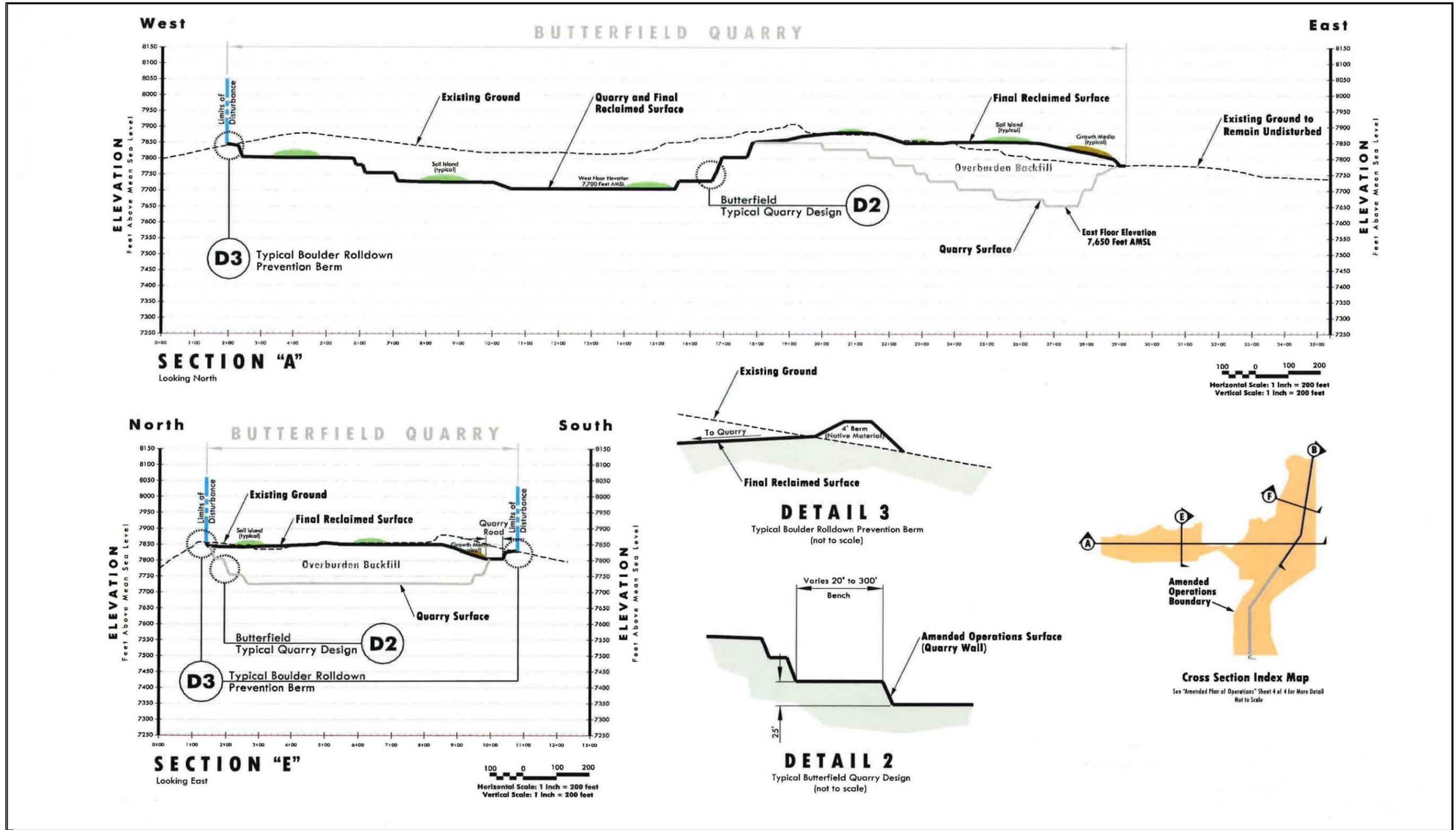
- Pads for ancillary uses and the future crusher site to the south;
- B5 Pad;
- Fill for haul road development; and
- Sentinel Quarry backfill on its north slopes.

Two pads would be developed southwest of the Sentinel Quarry with waste material. The upper pad would be built using cut and fill methods. The lower pad would be constructed using waste material as fill. The lower pad would be about 2.75 acres with an elevation of 7,625 amsl and the upper pad would be approximately 2 acres. These pads would be used for ancillary uses and the potential crusher facility relocation from within the Sentinel Quarry likely by the end of Phase 1. Slopes would be 2H:1V and run-off control berms would be constructed around the rims of the pad.

***Sentinel Quarry Backfill:***

Omya would backfill the Sentinel Quarry as mining is completed from north to south. Up to 14.4 million tons of waste material would be placed as backfill, up to an approximate elevation of 7,550 feet amsl at the north end of the quarry and 7,300 feet amsl at the southern end of the quarry. The final reclaimed quarry floor including its planned backfill, would be designed to gently slope towards the western and southern highwall and to create a retention basin with sufficient capacity to handle potential run-off for a 24-hour, 100-year precipitation event.

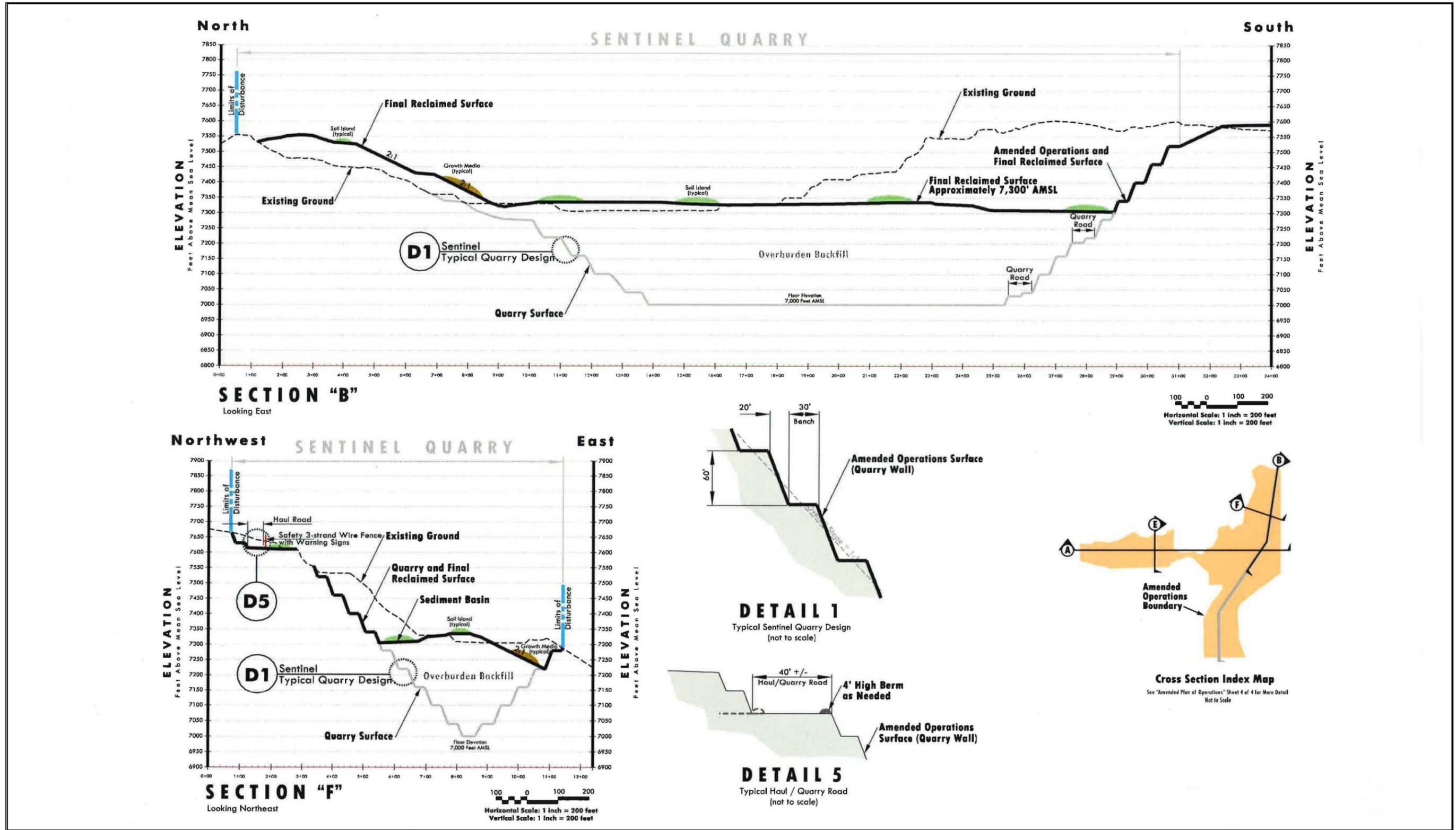
The backfilling would also eliminate the excavated step-benches on the north and the lower levels of the quarry and would be more favorable for revegetation. Backfilling greatly reduces the size of potential new overburden sites limiting additional impacts to undisturbed lands and to biological and visual resources.



Source: Lilburn, 2015

Figure 2-5 Butterfield Quarry Cross Sections

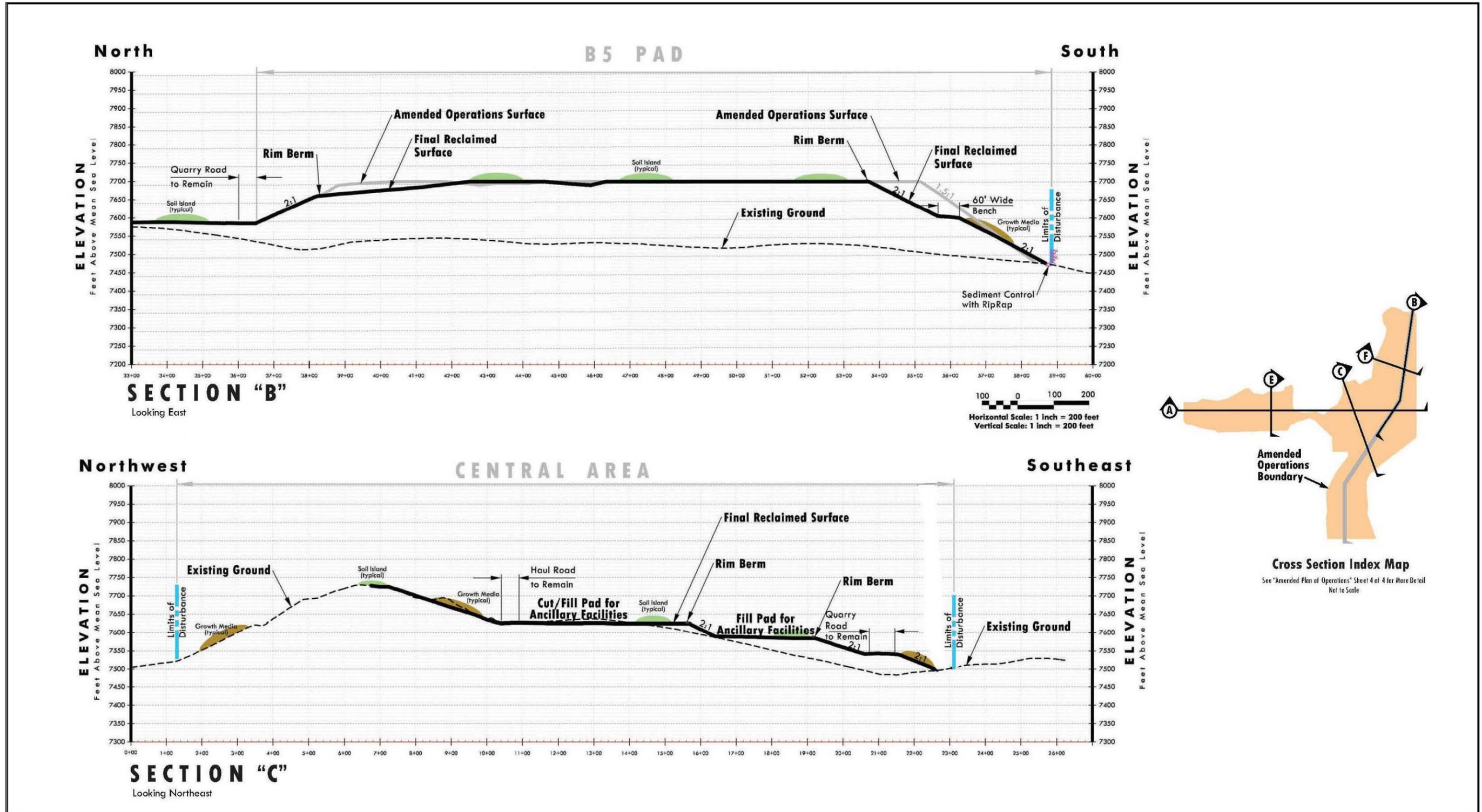
THIS PAGE IS INTENTIONALLY BLANK



Source: Lilburn, 2015

Figure 2-6 Sentinel Quarry Cross Sections

THIS PAGE IS INTENTIONALLY BLANK



Source: Lilburn, 2015

Figure 2-7 B5 Pad and Central Area Cross Sections

THIS PAGE IS INTENTIONALLY BLANK

***Butterfield Quarry Backfill:***

Extensive use of the Butterfield Quarry for backfilling is also planned. The Butterfield Quarry would be generally mined east to west. The overburden from the western half of the quarry would utilize the existing overburden stockpiles during Phases 1 and 2 while the ore in the eastern part is still being mined. As mining is completed in the east and initiated in the western area of the quarry during Phase 3, backfilling of the eastern half of the Butterfield pit would occur. The eastern half of the quarry would be backfilled to approximate original contours of 7,850 to 7,875 feet. The Project would allow up to 4.8 million tons of backfill to be placed in the Butterfield Quarry concurrent with mining. Reclamation of the backfill would be undertaken during Phase 5.

***Ore Crushing:***

Section 2.3.10 provides a general discussion on ore crushing common to all the alternatives. In the Project, a stationary-type crusher would be relocated to the constructed pad for auxiliary equipment south of the expanded Sentinel Quarry as shown on Figure 2-2.

***Production Water:***

Section 2.3.11 provides a discussion on production water that is common to all the alternatives. The expected increase in water usage for the Project is approximately 1.5 ac/ft per year which when combined with Omya's current use, is still well within Omya's MWA base allocation.

***Erosion and Sedimentation Control:***

Section 2.3.12 provides a discussion on production water that is common to all the alternatives. The Project would implement the design features and BMPs as described in Section 2.3.12.

***Stormwater Pollution Prevention Plan (SWPPP):***

Section 2.3.13 provides a discussion on the SWPPP that is common to all the alternatives. The Project would implement the Project design features and BMPs as described in Section 2.3.13.

***Blasting:***

Section 2.3.14 provides a discussion on blasting that is common to all the alternatives. The blasting procedures would not change in the Project.

***Sanitation:***

Section 2.3.15 provides a discussion on sanitation that is common to all the alternatives. This would not change for the Project.

**Public Access and Safety:**

Section 2.3.16 provides a discussion on public access and safety that is common to all the alternatives. This would not change for the Project.

**Avoidance, Minimization and Environmental Protection Measures:**

The Project design features, BMPs and other environmental protection measures are discussed in Section 2.3.17.

**Reclamation Plan:**

Other than the phasing of the reclamation activities, the general approach and methods used for reclamation as described in Sections 2.3.18 and 2.4 would be essentially the same for all the alternatives. Table 2-9 provides a summary of the reclamation phasing for Alternatives 2 and 4.

**Table 2-9 Alternatives 2 and 4: Reclamation Phasing**

Phase	Years of Operation (estimated*)	Planned Reclamation Activities
1	1 – 10	<u>Newly developed areas</u> – Salvage and stockpile plants and cuttings, organics, seeds, and soil. <u>Central Area</u> – Initiate sloping of B5 Quarry fill to 2H:1V and for erosion control.
2	11 – 20	<u>Newly developed areas</u> – Salvage and stockpile plants and cuttings, organics, seeds, and soil. <u>Sentinel Quarry</u> – Initiate backfilling on mined north slopes as become available. <u>Central Area</u> – Complete filling and sloping of B5 Quarry; initiate revegetation. <u>Butterfield Quarry</u> – Salvage and stockpile plants and cuttings, organics, seeds, and soil from western area as mining develops. <u>B5 Pad</u> – Initiate sloping to 2H:1V where feasible and for erosion control.
3	21 -30	<u>Sentinel Quarry</u> – Continue backfilling from north as mined slopes become available. <u>Central Pads</u> – B5 Quarry reclamation complete; revegetation, monitoring, and remediation as needed. <u>Butterfield Quarry</u> – Salvage and stockpile plants and cuttings, organics, seeds, and soil from western area as mining develops. Initiate placement of overburden in completed east half as available. <u>B5 Pad</u> – Stockpile completed; initiate reclamation and revegetation.

Phase	Years of Operation (estimated*)	Planned Reclamation Activities
4 (Final Mining Phase)	31 – 40	<p><u>Sentinel Quarry</u> – Complete north slope backfilling and initiate sloping to 2H:1V and for erosion control; revegetation on completed backfill areas.</p> <p><u>Central Area</u> – B5 Quarry reclamation complete; Revegetation, monitoring, and remediation as needed.</p> <p><u>Butterfield Quarry</u> – Complete backfilling of eastern half to approximate original contour of approx. 7,850 to 7,875 feet.</p> <p><u>B5 Pad</u> – Ongoing revegetation monitoring and remediation as needed.</p>
5 Final Reclamation	41 – 50	<p><u>Remove crusher</u> and other plant equipment (within one year after completion of mining).</p> <p><u>Sentinel Quarry</u> – Finish sloping of backfill to 2H:1V; revegetate all areas not previously revegetated; maintain erosion control; monitor revegetation progress and conduct remediation as necessary until success criteria achieved.</p> <p><u>Butterfield Quarry</u> – Finish sloping of quarry and backfill; revegetate; maintain erosion control; monitor revegetation progress and conduct remediation as necessary until success criteria achieved.</p> <p><u>Central Area</u> – Finish sloping of backfill; revegetate; maintain erosion control; monitor revegetation progress; and conduct remediation as necessary until success criteria achieved.</p> <p><u>B5 Pad</u> – Ongoing revegetation monitoring and remediation as necessary until success criteria achieved.</p> <p><u>Onsite Roads</u> – Reclaimed after reclamation of quarries and pads certified complete as determined by Forest Service in order to allow access to all reclamation areas.</p> <p><u>Crystal Creek Haul Road</u> – Maintained for reclamation and monitoring access to Butterfield – Sentinel Quarries.</p>
5A Crystal Creek Road	51 – 60	<p><u>Crystal Creek Haul Road</u> – Reclaim per approved 1994 Reclamation Plan. Remove outside berm to toe of cut, install erosion controls, and revegetate (year 2068). Maintain erosion control; monitor revegetation progress; and conduct remediation as necessary years 2067 to 2075.</p>

### Comparison of Potential Impacts

Alternative 2 (the Project) would result in the following differences between the analysis for the No Action Alternative and other alternatives:

**Aesthetics:** More land would be disturbed in the Project than in the No Action Alternative and Alternative 3. The Project and Alternative 4 would result in the same amount of disturbance. The area of disturbance from the Project and other alternatives would not be visible from any developed or populated areas; but, the quarry expansions would be visible from elevated areas to the south and southeast within the SBNF. Therefore, the Project could potentially increase the visual impact from elevated areas in the SBNF. However, since there has been and would continue to be mining in the area and the visual impact of these operations has existed for more than forty years, the Project would not realistically alter the current visual impact or significantly increase the potential impacts associated with the other alternatives.

**Agriculture and Forestry Resources:** The Project and Alternative 4 would result in more acres of land within the SBNF being converted to non-forest land than in the No Action Alternative and Alternative 3. However, this land is located within unpatented placers claims controlled by Omya. The mining use has been included in the SBNF LMP and in the CHMS; therefore, the conversion to non-forest land is not considered a significant impact. The Project and other alternatives are not located in an area that could be used for agriculture.

**Air Quality, Greenhouse Gases and Health Risk Assessment (HRA):** Because of the extended life of the mining operations and corresponding exposure time to receptors, the potential cancer risk as estimated in the Air Quality Assessment and HRA, would be minimally higher for the Project and Alternative 4 than for the No Action Alternative and Alternative 3. Also, additional equipment may be required for the Project and Alternative 4, which would result in minor increases of the air emissions. However, these increases would not be considered significant and would not substantially change potential impacts associated with air quality.

**Biological Resources:** The Project and Alternative 4 would disturb more habitat than the No Action Alternative or Alternative 3 and therefore would potentially increase impacts to biological resources, especially the carbonate plant habitat. However, the Project, as well as Alternatives 3 and 4 would mitigate this potential impact by permanently relinquishing, through a quit claim, carbonate-endemic plant habitat to the Forest Service in accordance with the CHMS.

The increased disturbance resulting from the Project and Alternative 4 would also impact other biological resources such as raptors and bighorn sheep. However, because mining activity at the proposed site has been in existence since the 1950s, the Project and other alternatives would not result in an increase to noise or nuisances that would be likely to cause significant impacts to these species.

There is no riparian vegetation on site of the Project or other alternatives. Most of the western areas have already been impacted by recent fires (Willow Fire and Butler Fire in 2007).

As described in Section 3.4 with implementation of the Project design features and proposed mitigations measures, the Project or other alternatives would not result in a significant impact.

**Cultural Resources:** Cultural resources surveys were conducted by the Forest Service which included the areas potentially impacted by all the alternatives. These surveys did not identify any cultural sites within or adjacent to the Project or other alternatives. Since it does not appear that any of the alternatives could result in a significant impact to cultural resources, none of the alternatives would substantially lessen impacts associated with these resources.

**Geology and Soil Resources:** The mine design for all the alternatives was determined to be generally stable and all the alternatives would comply with the mining and safety regulatory requirements. In addition, all the alternatives would implement the same Project design features, and comply with the soil

erosion control measures identified in the site SWPPP. Therefore, none of the alternatives would substantially change any potential impacts associated with these resources.

**Hazards and Hazardous Materials:** The potential impacts associated with mining operations would be the same in all the alternatives and the same BMPs and design measures would be implemented to reduce potential impacts to less than significant. Therefore, since none of the alternatives could result in a significant impact, the Project would not substantially lessen any significant impacts associated with these resources.

**Hydrology and Water Quality:** Stormwater run-off has not been a significant concern with the existing mining operations. With the continued implementation of the Project design features and BMPs, the potential impacts associated with mining operations would not be increased by the Project or other alternatives.

Although the Project could increase the current use of water by approximately 10%, because a relatively small amount of water is required for current operations, the increase is not considered a significant impact to the water supply and is still within the MWA base allocation of 23 af/yr for Omya.

Therefore, the Project would not substantially increase significant impacts to these resources as compared to the other alternatives.

**Mineral Resources:** The Project as well as Alternatives 3 and 4, to a limited extent, would allow for a valuable ore to be accessed and delivered to the LVPP so that the plant could meet future production requirements. However, as described previously, Alternative 4 would require a mix of ore from the Butterfield and Sentinel Quarries and the White Knob Quarry respectively, and would limit Omya's operational flexibility and potentially prevent Omya from meeting the market demand for high quality limestone. This is because the quality of limestone varies between the ore deposits and often Omya is required to mix resources, or exclude resources from various deposits/quarries in order to obtain a final product that meets the necessary purity levels. For this reason, Alternative 4 could prevent Omya from meeting the market demand. Alternative 3 would only allow for the expansion of the Butterfield Quarry therefore limiting the amount of ore that could be made available to meet future market demands.

**Noise:** The noise associated with the existing mining operations has not created a significant impact in the past and none of the quarry expansions alternatives would result in an increase level of noise. The operations are required to conform to all applicable County and MSHA noise control requirements. Therefore, since none of the alternatives could result in a significant impact, the Project would not substantially increase any significant impacts associated with these resources.

### 2.5.3 Alternative 3: Partial Implementation - Butterfield Quarry Expansion Only

#### Summary

Alternative 3, Partial Implementation, would only allow the expansion of Butterfield Quarry as described in Alternative 2, Proposed Project. Alternative 3 would not allow for the expansion of the Sentinel Quarry, Central Area, and the B5 Overburden Pad. This alternative results in a shorter duration of 20 years through the year 2035 instead of 40 years and a smaller footprint by approximately 50 acres. Total accessible ore reserves are reduced by 50% from 27.2 million tons to 13.5 million tons.

Butterfield Quarry would be expanded as proposed. Sentinel Quarry would continue to be mined under its current POO and Reclamation Plan and the B5 Overburden Pad expansion would be reduced by 23 acres (see Figure 2-3). With this alternative, the final Sentinel Quarry would be 150 feet less deep and 10.8 acres smaller than Alternative 2, Proposed Project. Mining in the quarries would last approximately 20 years rather than 40 years. However, this alternative fails to meet the Project objectives for the following reasons:

- Precludes backfilling Sentinel Quarry because proven reserves would be buried by overburden;
- Does not allow access to additional ore reserves at Sentinel Quarry;
- Adequate overburden capacity not available (precludes expansion of B5 Overburden Pad and backfilling of Sentinel Quarry);
- Additional approval would still be required for future Sentinel Quarry expansion; and
- Does not meet Omya's objectives in securing long-term (40-year) economic ore reserves to supply the LVPP.

#### Mining Operations

All aspects of mining operations for Alternative 3 are the same as those described for Alternative 2 Project except as described below.

#### ***Phased Quarry Development:***

Alternative 3 phasing for a 20-year operational duration followed by approximately 10 years of reclamation is estimated below in Table 2-10. Although mining is more or less continuous, the development of the quarries is linked to operational parameters and product demands. Mining operations may experience unscheduled phasing changes due to various market/economic demands and variation in material quality since the natural deposit is not of uniform quality. The Forest Service and the County will be updated in the annual monitoring report on the status of operational phases.

**Table 2-10 Alternative 3 - Phased Development Schedule**

Phase No.	Locations	Years	Duration (years)	Cumulative Years
1	<p><u>Sentinel Quarry</u> – Mined to approved limit horizontally (per 2003 Sentinel Quarry Plan).</p> <p><u>Butterfield Quarry</u> – Mine east half to approximate final quarry floor depth of 7,650 feet. Initiate mining in western half of quarry.</p> <p><u>Central Area</u> – Complete filling and sloping of old B5 Quarry area; initiate reclamation &amp; revegetation.</p> <p><u>B5 Overburden Pad</u> – Phased expansion with placement of material from quarries (per 2003 Sentinel Quarry Plan).</p> <p><u>Crusher</u> – Put new crushing system into service if available.</p>	2018-2027	10	1-10
2	<p><u>Sentinel Quarry</u> – Mine to approved depth of 7,150 feet</p> <p><u>Butterfield Quarry</u> – Complete mining on west half to 7,700 feet. Complete backfilling of eastern half to approximate original contour.</p> <p><u>Central Area</u> – Monitor revegetation progress; conduct remediation as necessary until success criteria achieved.</p> <p><u>B5 Overburden Pad</u> – Phased expansion to approved footprint with placement of material from quarries.</p>	2028– 2037	10	11 – 20
3	<p><b>Final Reclamation</b></p> <p><u>Remove crusher</u> and other plant equipment (within one year after completion of mining).</p> <p><u>Sentinel Quarry</u> – Finish sloping of backfill to 2H:1V; revegetate per Plan; maintain erosion control; monitor revegetation progress; and conduct remediation as necessary until success criteria achieved.</p> <p><u>Butterfield Quarry</u> – Finish sloping of quarry and backfill; revegetate; maintain erosion control; monitor revegetation progress; and conduct remediation as necessary until success criteria achieved.</p> <p><u>Central Area</u> – Monitor revegetation progress; and conduct remediation as necessary until success criteria achieved.</p> <p><u>B5 Overburden Pad</u> – Stockpile completed; implement revegetation / monitoring / remediation as needed.</p> <p><u>Crystal Creek Haul Road</u> – Maintained for reclamation and monitoring access to Butterfield – Sentinel Quarries.</p>	2038- 2047	10	21-30
4	<p><u>Crystal Creek Haul Road</u> – Reclaim per approved Reclamation Plan. Remove outside berm, place at toe of cut, install erosion controls, and revegetate (year 2046). Maintain erosion control; monitor revegetation progress; and conduct remediation as necessary years 2047 to 2055.</p>	2048-2057	10	31-40

Notes: All elevations are above mean sea level (amsl).

Phasing and development of the quarries are dependent on operational parameters and product demand needs.

Mining operations may experience unscheduled phasing changes due to various market/economic demands and

variation in material quality since the natural deposit is not of uniform quality. The Forest Service and the County will be updated in the annual monitoring report on the status of operational phases.

***Overburden and Waste Rock:***

Overburden, interburden, and fines would be deposited into the old Butterfield 5 Quarry site and the eastern half of the Butterfield Quarry; and deposited in the B5 Overburden Pad and a portion of the northern half of Sentinel Quarry per the approved Sentinel Quarry plan. Material placed into these areas includes both waste rock and material stockpiled for potential future use. Material stockpiling would continue throughout the life of the operation.

Alternative 3 precludes expansion of B5 Overburden Pad onto an additional 27.8 acres. It also precludes additional backfilling of Sentinel Quarry because proven reserves would be buried by overburden. Therefore, adequate overburden capacity is not available with this Alternative.

***Ore Crushing:***

Ore crushing activities are the same as described in for the Project with the crusher location remaining in the same area as it is currently located.

***Reclamation and Revegetation:***

Reclamation and revegetation activities for Alternative 3 are the same as those described for Alternative 2 Proposed Project except for the shorter 20-year timeframe and the smaller areas to be reclaimed.

**Comparison of Potential Impacts**

The comparison of potential impacts between Alternative 3 and the other alternatives is discussed in Sections 2.5.1 and 2.5.2. Alternative 3 would only allow for partial implementation of the Butterfield Quarry; therefore, less habitat would be disturbed. However, since Alternatives 2 and 4 would also result in the relinquishing of mining claims to permanent habitat conservation areas, this reduced area of disturbance does not make Alternative 3 a significantly superior alternative. Alternative 3 would also minimize the amount of valuable ore being made available to the LVPP which would have a negative impact.

**2.5.4 Alternative 4: Mixed Production with the White Knob Quarry to Meet Omya's Processing Plan Capacity****Summary**

This alternative is the same as Alternative 2, the Proposed Project, with respect to the mine design and operations (refer to Figure 2-2). A key objective of this alternative is to minimize potential impacts associated with air emissions.

Omya operates an existing processing plant in Lucerne Valley (the LVPP) that is currently fed by ore from the three existing Omya quarries, the Butterfield-Sentinel Quarries and the White Knob Quarry (that operates under a separate Mine and Reclamation Plan). The Project would allow for 680,000 tons of ore to be hauled to the LVPP from the Butterfield and Sentinel Quarries. Alternatively, ore may be hauled from the White Knob Quarry to the LVPP. The total annual amount of ore that can be processed at the plant is 680,000 tons regardless of which quarry the ore comes from.

Historically the long-term average of limestone ore provided to the LVPP has been approximately a 60%/40% mix between the Butterfield-Sentinel and White Knob quarries. However, in the short-term, ratios between the quarries may change dramatically based on the variability of ore quality from the quarries, product specifications, and changing market demand.

This alternative was determined by adjusting the ratio of quarry production until the potential air emissions (PM<sub>10</sub> emissions) were less than the significance threshold identified in the Air Quality Impact Analysis (Appendix E).

### **Mining Operations**

Other than the annual amount of ore produced, all aspects of mining operations, and the reclamation activities for Alternative 4 are the same as those described for the Project (Alternative 2).

### **Comparison of Potential Impacts**

The comparison of potential impacts between the Alternative 4 and the other alternatives is essentially the same as those discussed for Alternative 2, the Proposed Project, in Section 2.5.2. However, while the potential impacts for Alternative 4 are essentially the same, as discussed previously this alternative would limit Omya's operational flexibility and potentially prevent Omya from meeting the market demand for high quality limestone. This is because the quality of limestone varies between the ore deposits and often Omya is required to mix resources, or exclude resources from various deposits/quarries in order to obtain a final product that meets the necessary purity levels.

## **2.6 Design Criteria, Mitigation Measures, and Monitoring**

Design criteria include the laws, the standards (i.e., 36 CFR 219.11 (c); 219.13 through 219.27) and a reference to other applicable guidance that the Forest Service uses during project planning and implementation. Standards are mandatory requirements that come into play as site-specific activities are planned for implementation, and are designed to be consistent with achieving the objectives and desired conditions. Design criteria act as thresholds or constraints for management activities or practices to ensure the protection of resources. The specific design criteria used for the evaluation of the potential environmental impacts associated with the all the alternatives are provided in the Regulatory Framework Sections of Section 3.0.

The Project design features, including BMPs and other environmental protection measures, that are already proposed as part of the Project design are summarized in Table 2-4. After consideration of these protective measures during the resource evaluations, if it was determined that additional measures were necessary to reduce the potential risk to less than significant, Mitigation Measures and monitoring requirements were identified for specific potential impacts. The SBNF evaluated potential effects on biological resources in the SBNF Biological Report (2017) provided in Appendix F. The SBNF Biological Report identified specific resource design features / environmental protection measures which are discussed in Section 3.0. It should be noted that some of the design features / environmental protection measures identified by SBNF were already included as part of the proposed Project activities; therefore, many of the SBNF measures are identical to the Project design features. If the SBNF measures were not already considered part of the Project, these measures were identified as required impact Mitigation Measures in Section 3. All the environmental protection measures are summarized in Table 2-11.

The Forest Service is responsible for monitoring results and effects of the selected action (Project) and will ensure that the EIR/EIS and ROD direction including the proposed Project design features, BMPs and other environmental protection measures proposed as part of the project and the Mitigation Measures identified during the resource evaluation are applied and carried out as applicable. Compliance reviews and evaluations will be documented by the Forest Service during and upon project completion.

The County is responsible for monitoring SMARA requirements as they pertain to the Reclamation Plan and for enforcement of the mitigation measures identified in the MMRP. CEQA requires that the monitoring program must be designed to ensure compliance during project implementation. The MMRP, as required by CEQA, will be prepared and provided with the Final EIR/EIS.

**Table 2-11 Summary Mitigation Measures, SBNF Design Features / Environmental Protection Measures and Proposed Project Design Features**

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
<b>Aesthetics</b>	None Required	<b>SCEN-1:</b> Surface disturbances shall be limited to those areas identified in the Mine Reclamation Plan. Disturbances outside of these areas shall be prohibited.	<b>SCEN-1:</b> Surface disturbances shall be limited to those areas identified in the Mine Reclamation Plan. Disturbances outside of these areas shall be prohibited.
	None Required	<b>SCEN-2:</b> Backfill eastern half of the Butterfield Quarry and portions of the Sentinel Quarry, as feasible.	<b>SCEN-2:</b> Backfill eastern half of the Butterfield Quarry and portions of the Sentinel Quarry, as feasible.
	None Required	<b>SCEN-3:</b> Waste rock shall be deposited into waste rock stockpiles within the quarry footprint to reduce the area of disturbance and visual impact outside of the quarry and to reduce internal slopes and aid in revegetation	<b>SCEN-3:</b> Waste rock shall be deposited into waste rock stockpiles within the quarry footprint to reduce the area of disturbance and visual impact outside of the quarry and to reduce internal slopes and aid in revegetation
	None Required	<b>SCEN-4:</b> Placement of darker materials, as available, on outside of highly visible slopes.	<b>SCEN-4:</b> Placement of darker materials, as available, on outside of highly visible slopes.
	None Required	<b>SCEN-5:</b> Approved color staining methods should be used on highly visible slopes that are not susceptible to raveling to reduce color contrast.	<b>SCEN-5:</b> Approved color staining methods should be used on highly visible slopes that are not susceptible to raveling to reduce color contrast.
	None Required	<b>SCEN-6:</b> Locate replacement crusher or a new mobile crusher system out of viewshed.	<b>SCEN-6:</b> Locate replacement crusher or a new mobile crusher system out of viewshed.
	None Required	<b>SCEN-7:</b> Reclamation and revegetation shall be implemented per the approved Reclamation Plan on completed benches concurrent with mining. As areas become available, implement concurrent reclamation/revegetation of completed quarries and overburden stockpiles to	<b>SCEN-7:</b> Reclamation and revegetation shall be implemented per the approved Reclamation Plan on completed benches concurrent with mining. As areas become available, implement concurrent reclamation/revegetation of completed quarries and overburden stockpiles to reduce visual impacts

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
		reduce visual impacts through backfilling, re-contouring and slope reduction, growth media and habitat log placement.	through backfilling, re-contouring and slope reduction, growth media and habitat log placement.
	None Required	<b>SCEN-8:</b> MDAQMD dust controls shall be implemented to reduce visible dust plumes.	<b>SCEN-8:</b> MDAQMD dust controls shall be implemented to reduce visible dust plumes.
<b>Air Quality</b>	<p><b>Mitigation Measure AQ-1: Dust control of unpaved roads:</b> Unpaved roads shall be controlled by at least 80% using methods that are consistent with MDAQMD guidance.</p> <p><b>Mitigation Measure AQ-2: Dust Control by Grading:</b> Areas to be graded and where bulldozer operates shall be controlled by at least 85% using methods that are consistent with MDAQMD guidance</p>	<p><b>AIR-1:</b> Comply with all relevant MDAQMD regulations and permit conditions to minimize air emissions.</p> <p><b>AIR-2:</b> Ensure the baghouse for the stationary crusher is in good operating condition as required by the permit</p> <p><b>AIR-3:</b> Use water or chemical suppressants to control dust at the quarry, crusher site, overburden pads and haul/quarry roads</p> <p><b>AIR-4:</b> Ensure that diesel equipment and vehicles meet the required CARB diesel Regulations</p> <p><b>AIR-5:</b> Mining activities will be limited or stopped during significant wind events.</p>	<p><b>AIR-1:</b> Comply with all relevant MDAQMD regulations and permit conditions to minimize air emissions.</p> <p><b>AIR-2:</b> Ensure the baghouse for the stationary crusher is in good operating condition as required by the permit</p> <p><b>AIR-3:</b> Use water or chemical suppressants to control dust at the quarry, crusher site, overburden pads and haul/quarry roads</p> <p><b>AIR-4:</b> Ensure that diesel equipment and vehicles meet the required CARB diesel Regulations</p> <p><b>AIR-5:</b> Mining activities will be limited or stopped during significant wind events.</p>
<b>Biological Resources</b>	<b>Mitigation Measure BIO-1: Relinquish Mining Claims:</b> Omya shall relinquish through a quit-claim process, the identified acreage located within the unpatented mining claims as shown in Table 3.4-3. These areas have been verified by the SBNF to contain habitat	<b>CARB-1:</b> As specified under the CHMS, and within the Project Area, Omya or the Forest Service may at their discretion salvage carbonate endemic plant species (whole plants, cuttings, or seed), and propagules of associated species, to aid in carbonate habitat revegetation efforts on or off-site.	<p><b>CARB-1:</b> As specified under the CHMS, and within the Project Area, Omya or the Forest Service may at their discretion salvage carbonate endemic plant species (whole plants, cuttings, or seed), and propagules of associated species, to aid in carbonate habitat revegetation efforts on or off-site.</p> <p><b>CARB-2:</b> For Threatened-Endangered Plants: Omya would, upon withdrawal, quit-claim specified</p>

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
	<p>for the specified endangered or threatened species pursuant to the CHMS. Table 3.4-7 identifies the number of acres in the Project and mitigation parcels for each T/E plant species. Mitigation for affected T/E plants is a minimum of 3:1 based on conservation value (as described in the CHMS). As specified under the CHMS, and within the Project Area, Omya or the Forest Service may at their discretion salvage carbonate endemic plant species (whole plants, cuttings, or seed), and propagules of associated species, to aid in carbonate habitat revegetation efforts on or off-site. (SBNF Biological Report PDF CARB-1 and CARB 2)</p>	<p><b>CARB-2:</b> For Threatened-Endangered Plants: Omya would, upon withdrawal, quit-claim specified unpatented mining claims held within San Bernardino National Forest, and convey specified patented lands, which have been verified by the Forest Service to contain occupied endangered species habitat as mitigation for impacts of the expansion on Cushenbury oxytheca (<i>Acanthoscyphus parishii</i> var. <i>goodmaniana</i>) pursuant to the CHMS.</p>	<p>unpatented mining claims held within San Bernardino National Forest, and convey specified patented lands, which have been verified by the Forest Service to contain occupied endangered species habitat as mitigation for impacts of the expansion on Cushenbury oxytheca (<i>Acanthoscyphus parishii</i> var. <i>goodmaniana</i>) pursuant to the CHMS.</p>
	<p><b>Mitigation Measure BIO-2: Non-native Species – Inspections:</b> Omya shall visually monitor the occurrence of non-native invasive plants on-site. The goal is to prevent non-native invasive plants from becoming established and depositing seeds in areas to be re-</p>	<p><b>NNS-1:</b> Omya shall visually monitor the occurrence of non-native invasive plants on-site. The goal is to prevent non-native invasive plants from becoming established and depositing seeds in areas to be re-vegetated at a later date. If inspections reveal that weeds are becoming an issue or have established on-site, then removal would be initiated by Omya in coordination with the Forest Service botanist.</p>	

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
	<p>vegetated at a later date. If inspections reveal that weeds are becoming an issue or have established on-site, then removal would be initiated by Omya in coordination with the Forest Service botanist. Inspections shall be made in conjunction with Project's Revegetation Plan. (SBNF Biological Report PDF NNS-1)</p>	<p>Inspections shall be made in conjunction with revegetation monitoring.</p>	
	<p><b>Mitigation Measure BIO-3: Non-native Species – Equipment Cleaning:</b> To reduce the risk of introducing non-native invasive plants, insects, and pathogens from off-site, all heavy mining equipment (e.g., drill rigs, haul trucks and loaders) must be thoroughly washed of all soil and vegetation debris prior to being brought into the Project Area. (SBNF Biological Report PDF NNS-2)</p>	<p><b>NNS-2:</b> To reduce the risk of introducing non-native invasive plants, insects, and pathogens from off-site, all heavy mining equipment (i.e., drill rigs, haul trucks and loaders) must be thoroughly washed of all soil and vegetation debris prior to being brought into the project area.</p>	
	<p><b>Mitigation Measure BIO-4: Non-native Species – Control and Eradication:</b> Since the Project is expected to last 40 years and new non-native invasive plants and animals may become established in the region, an adaptive</p>	<p><b>NNS-3:</b> Since the project is expected to last 40 years and new non-native invasive plants and animals may become established in the region, an adaptive management approach is necessary. If any new non-native invasive plants, animals, or pathogens are identified as having a potential for establishment in the project area, the Forest Service, CDFW</p>	

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
	<p>management approach is necessary. If any new non-native invasive plants, animals, or pathogens are identified as having a potential for establishment in the Project Area, the Forest Service, CDFW and Omya will develop measures for detection, control, and eradication as necessary. Omya shall be responsible for funding detection, control, and eradication efforts. (SBNF Biological Report PDF NNS-3)</p>	<p>and Omya will develop measures for detection, control, and eradication as necessary. Omya shall be responsible for funding detection, control, and eradication efforts.</p>	
	<p><b>Mitigation Measure BIO-5: Personnel Training – Domestic and Feral Animals:</b> Omya personnel will be trained on and will report sightings of domestic sheep, goats, dogs, and cats on and near the facility to the Forest Service and CDFW within two hours of the observation. In the event of domestic or feral animals being found, Omya shall employ a trained trapper to catch and remove the animals following County regulations. CDFW may assist capture/removal efforts if</p>	<p><b>NNS-4:</b> Omya personnel will be trained on and will report sightings of domestic sheep, goats, dogs, and cats on and near the facility to the Forest Service and CDFW within two hours of the observation. In the event of domestic or feral animals being found, Omya will employ a trained trapper to catch and remove the animals following County regulations. CDFW may assist capture/removal efforts if available.</p>	

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
	available. (SBNF Biological Report PDF NNS-4)		
	<p><b>Mitigation Measure BIO-6: Wildlife and Plant Awareness:</b> Omya shall conduct wildlife/plant awareness programs for employees (including new employee orientation and annual refresher trainings). The program will address bighorn sheep, desert tortoise, raptors, other animals of the area, and rare plants. This will include the importance of avoiding harassment/disturbance, adherence to speed limits, adherence to defined project boundaries, reporting guidelines, etc. CDFW and USFS will provide assistance in developing the training program. (SBNF Biological Report GEN-2)</p>	<p><b>GEN-2: Employee Training:</b> Omya shall conduct wildlife/plant awareness programs for employees (including new employee orientation and annual refresher trainings). The program will address bighorn sheep, desert tortoise, raptors, other animals of the area, and rare plants. This will include the importance of avoiding harassment/disturbance, adherence to speed limits, adherence to defined project boundaries, reporting guidelines, etc. CDFW and USFS will provide assistance in developing the training program.</p>	<p><b>GEN-2: Employee Training:</b> Omya shall conduct wildlife/plant awareness programs for employees (including new employee orientation and annual refresher trainings). The program will address bighorn sheep, desert tortoise, raptors, other animals of the area, and rare plants. This will include the importance of avoiding harassment/disturbance, adherence to speed limits, adherence to defined project boundaries, reporting guidelines, etc. CDFW and USFS will provide assistance in developing the training program.</p>
	<p><b>Mitigation Measure BIO-7: Raptor Conservation Strategy (RCS):</b> A RCS shall be developed in coordination with the Forest Service, USFWS, and CDFW. Omya shall provide input to the development/finalization of the RCS and shall follow the guidelines put forth in the effort.</p>	<p><b>RAPTOR-1:</b> A Raptor Conservation Strategy (RCS) will be developed in coordination with the Forest Service, USFWS, and CDFW. Omya shall provide input to the development/finalization of the RCS and shall follow the guidelines put forth in the effort. The RCS will be tailored for activities associated with mining activities and effects. Upon approval of the Plan of Operations</p>	

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
	<p>The RCS will be tailored for activities associated with mining activities and effects. Upon approval of the Plan of Operations and the Reclamation Plan by the County and the Forest Service, Omya will participate in the implementation of the strategy by contributing to specified survey and monitoring efforts and by the following applicable operation guidelines.</p> <p>The RCS will cover the North Slope of the San Bernardino Mountains from the White Mountain to Terrace Springs, and will address golden eagles, California condor, peregrine falcon, and prairie falcon. The RCS may be updated to include other raptors in the future if concerns develop over their local population status.</p> <p>The RCS will be a dynamic document and will be updated as new data and scientific understanding of the aforementioned species become available. It will include monitoring and information gathering and measures to avoid, minimize, rectify, and</p>	<p>and the Reclamation Plan by the County and the Forest Service, Omya will participate in the implementation of the strategy by contributing to specified survey and monitoring efforts, and by following applicable operational guidelines.</p> <p>The RCS will cover the North Slope of the San Bernardino Mountains from White Mountain to Terrace Springs, and will address golden eagle, California condor, peregrine falcon, and prairie falcon. The RCS may be updated to include other raptors in the future if concerns develop over their local population status.</p> <p>The RCS will be a dynamic document and will be updated as new data and scientific understanding of the aforementioned species become available. It will include monitoring and information gathering, and measures to avoid, minimize, rectify, and reduce (or eliminate over time) effects to raptors nesting on the North Slope. The intent is to use systematic monitoring of raptor nesting chronology and observed behavior to develop site- and activity-specific measures to ensure successful nesting and provide for adaptive management opportunities.</p>	

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
	<p>reduce (or eliminate over time) effects to raptors nesting on the North Slope. The intent is to use systematic monitoring or raptor nesting chronology and observed behavior to develop site- and activity- specific measures to ensure successful nesting and provide for adaptive management opportunities. (SBNF Biological Report PDF RAPTOR-1)</p>		
	<p><b>Mitigation Measure BIO-8: Raptor Monitoring:</b> If an occupied raptor nest is located within 1.5 miles of an active mining area, the mining company shall provide a qualified biologist to monitor during blasting for disturbance as a result of mining activities. Monitoring results will be provided to the Forest Service biologist via email within 48 hours of a blast. The Forest Service will coordinate appropriate notification, as necessary, with USFWS and CDFW. (SBNF Biological Report PDF RAPTOR-1)</p>	<p><b>RAPTOR-1:</b> If an occupied raptor nest is located within 1.5-miles of the active mining area, the mining company shall provide a qualified biologist to monitor during blasting for disturbance as a result of the mining activities. Monitoring results will be provided to the Forest Service biologist via email within 48 hours of a blast. The Forest Service will coordinate appropriate notification, as necessary, with USFWS and CDFW.</p>	
	<p><b>Mitigation Measure BIO-9: Raptor Nesting Regulatory Coordination:</b> If an occupied</p>	<p><b>RAPTOR-2:</b> If an occupied nest for a Federally or State protected species is found within 1.5 miles of an active quarry</p>	

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
	<p>nest for a Federally (as of 2013, includes golden eagle and California condor) or State protected species is found within 1.5 miles of an active quarry operation, the SBNF shall conduct an evaluation to determine if an “incidental take” authorization should be requested from the USFWS, under the applicable law (Endangered Species Act or Federal Bald and Golden Eagle Protection Act.) (SBNF Biological Report PDF RAPTOR-2)</p>	<p>operation, the SBNF shall conduct an evaluation to determine the appropriate course of action under applicable State and Federal laws (e.g., “incidental take” authorization, Endangered Species Act Consultation, etc.)</p>	
	<p><b>Mitigation Measure BIO-10: Raptor Nesting Protection:</b> If monitoring detects that blasting or other mine activities are resulting in disturbance of nesting raptors that could lead to mortality or nest abandonment, the Forest Service, Omya, USFWS and CDFW, as appropriate, shall evaluate the feasibility of implementing measures to avoid or reduce the effects. The RCS will contain some potential methods for reducing or avoiding effects. (SBNF</p>	<p><b>RAPTOR-3:</b> If monitoring detects that blasting or other mine activities are resulting in disturbance of nesting raptors that could lead to mortality or nest abandonment, the Forest Service, Omya, and USFWS and CDFW, as appropriate, will evaluate the feasibility of implementing measures to avoid or reduce the effects. The RCS will contain some potential methods for reducing or avoiding effects.</p>	

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
	Biological Report PDF RAPTOR-3)		
	<p><b>Mitigation Measure BIO-11: Personnel Training-Desert Tortoise:</b> Omya shall work with the SBNF and CDFW and incorporate desert tortoise education and awareness into their training for employees, customers, and contractors. This shall include how to minimize impacts to desert tortoises and their habitats. Information about penalties shall also be included. These briefings shall include guidelines about driving in desert tortoise habitat, handling prohibitions, etc. Omya shall work with SBNF and CDFW to develop other protective measures if monitoring identifies a need. (SBNF Biological Report PDF DETO-1)</p>	<p><b>DETO-1:</b> Omya will work with the Forest Service and SDFW to incorporate desert tortoise education and awareness into their training for employees, customers, and contractors. This will include how to minimize impacts to desert tortoises and their habitats. Information about penalties will also be included. These briefings should include guidelines about driving in desert tortoise habitat, handling prohibitions, etc. The SBNF will work with Omya to develop other protective measures if monitoring identifies a need.</p>	
	<p><b>Mitigation Measure BIO-12: Desert Tortoise Reporting:</b> Any sightings of desert tortoises, including dead tortoises, must be reported to the Forest Service biologist. The report should include photos if possible, location, date, time,</p>	<p><b>DETO-2:</b> Any sightings of desert tortoises, including dead tortoises, must be reported to the Forest Service biologist. The report should include photos if possible, location, date, time, cause of death (if obvious), and any other pertinent information.</p>	

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
	<p>cause of death (if obvious), and any other pertinent information. (SBNF Biological Report PDF DETO-2)</p>		
	<p><b>Mitigation Measure BIO-13: Ground Clearing:</b> During the development of the quarry and associated facilities, all initial ground clearing (vegetation removal, grading, etc.) shall ideally occur outside the avian breeding season, and potential nesting habitat shall not be removed from February 1 through August 31, or appropriate dates based on on-site nesting phenology determined by a qualified biologist.</p> <p>For initial ground clearing (vegetation removal, grading, etc.) that is not feasible to be conducted outside the nesting season, surveys shall be conducted to locate active nests. Any active nest sites that are located shall be buffered and no work shall be conducted within those buffered areas until the nests are no longer active. The buffer distances would be determined by current species-</p>	<p><b>BIRD-1:</b> During the development of the quarry and associated facilities, all initial ground clearing (vegetation removal, grading, etc.) shall ideally occur outside the avian breeding season, and potential nesting habitat shall not be removed from February 1 through August 31, or appropriate dates based on on-site nesting phenology determined by a qualified biologist.</p> <p>For initial ground clearing (vegetation removal, grading, etc.) that is not feasible to be conducted outside the nesting season, surveys shall be conducted to locate active nests. Any active nest sites that are located shall be buffered and no work shall be conducted within those buffered areas until the nests are no longer active. The buffer distances would be determined by current species-specific standards.</p>	

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
	<p>specific standards. (SBNF Biological Report PDF BIRD-1)</p> <p><b>Mitigation Measure BIO-14: Nesting Surveys:</b> Nesting bird surveys for passerine birds, as outlined under MM BIO-13, guidelines area as follows: A qualified biologist shall be experienced and familiar with robust nest-locating techniques or comparable to those described by Martin and Guepel (1993).</p> <p>Surveys shall be conducted in accordance with the following guidelines:</p> <p>Surveys shall cover all potential nesting habitat to be disturbed and a 500-foot buffer surrounding areas to be disturbed.</p> <p>At least two pre-construction surveys, separated by a minimum 10 day interval, shall be completed prior to initial grading or grubbing activity; the later survey shall be completed no more than 10 days preceding initiation of initial grading or grubbing activity. Additional follow-up surveys shall be required if</p>	<p><b>BIRD-2:</b> Nesting bird surveys for passerine birds, as outlined under MM BIO-13, guidelines area as follows:</p> <p>A qualified biologist shall be experienced and familiar with robust nest-locating techniques or comparable to those described by Martin and Guepel (1993).</p> <p>Surveys shall be conducted in accordance with the following guidelines:</p> <p>Surveys shall cover all potential nesting habitat to be disturbed and a 500-foot buffer surrounding areas to be disturbed. At least two pre-construction surveys, separated by a minimum 10 day interval, shall be completed prior to initial grading or grubbing activity; the later survey shall be completed no more than 10 days preceding initiation of initial grading or grubbing activity. Additional follow-up surveys shall be required if periods of construction inactivity exceed one week in any given area, an interval during which birds may establish a nesting territory and initiate egg laying and incubation.</p>	

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
	<p>periods of construction inactivity exceed one week in any given area, an interval during which birds may establish a nesting territory and initiate egg laying and incubation. (SBNF Biological Report PDF BIRD-2)</p>		
	<p><b>Mitigation Measure BIO-15: Nesting Season – Crystal Creek Well:</b> To the greatest extent possible, maintenance activities at the Crystal Creek well and access road would be avoided during the nesting season for California spotted owl and other nesting birds (February 1 through August 15). Exceptions may be considered depending on planned activities and associated noise levels, after coordination with the Forest Service biologist or if protocol-level surveys determine the territory is vacant. If emergency repairs are required within the breeding season, the company shall notify the Forest Service within 24 hours. (SBNF Biological Report PDF CC-1)</p>	<p><b>CC-1:</b> To the greatest extent possible, maintenance activities at the Crystal Creek well and access road would be avoided during the nesting season for California spotted owl and other nesting birds (February 1 through August 15). Exceptions may be considered depending on planned activities and associated noise levels, after coordination with the Forest Service biologist or if protocol-level surveys determine the territory is vacant. If emergency repairs are required within the breeding season, the company shall notify the Forest Service within 24 hours.</p>	

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
	<p><b>Mitigation Measure BIO-16: Bighorn Sheep Foraging Habitat:</b> When trucks spray water on haul roads to control fugitive dust, some overspray occurs on road berms for a short distance beyond. Those watered areas sometimes support vegetation that bighorn sheep consume. Omya will not make an effort to eliminate the overspray. The Project’s Revegetation Plan shall focus on using native species that will help enhance bighorn sheep habitat. (SBNF Biological Report PDF BHS-1)</p>	<p><b>BHS-1:</b> When trucks spray water on haul roads to control fugitive dust, some overspray occurs on road berms for a short distance beyond. Those watered areas sometimes support vegetation that bighorn sheep consume. Omya will not make an effort to eliminate the overspray. The Project’s Revegetation Plan shall focus on using native species that will help enhance bighorn sheep habitat.</p>	
	<p><b>Mitigation Measure BIO-17: Bighorn Sheep Reporting of Mortality:</b> Omya shall immediately report any bighorn sheep mortalities, whatever the cause, to the CDFW and Forest Service as soon as possible after the observation. The bighorn sheep carcass shall be left in place until the CDFW or Forest Service biologist can examine it and determine the proper disposal method. In the event that mountain lion predation is occurring at levels that</p>	<p><b>BHS-2: Reporting of Mortality:</b> Omya shall immediately report any bighorn sheep mortalities, whatever the cause, to the CDFW and Forest Service as soon as possible after the observation. The bighorn sheep carcass shall be left in place until the CDFW or Forest Service biologist can examine it and determine the proper disposal method. In the event that mountain lion predation is occurring at levels that compromise the viability of the population, Omya shall cooperate fully by ensuring access to Omya properties to determine the predator involved or, in the event that an individual predator has been identified, for removal of the predator.</p>	

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
	<p>compromise the viability of the population, Omya shall cooperate fully by ensuring access to Omya properties to determine the predator involved or, in the event that an individual predator has been identified, for removal of the predator. (SBNF Biological Report PDF BHS-2)</p>		
	<p><b>Mitigation Measure BIO-18: Bighorn Sheep Monitoring/Adaptive Management:</b> Omya shall monitor bighorn sheep use in and near their operations and at water sources in and adjacent to their operations. Monitoring shall consist of maintenance of cameras stationed at water sources and recording of data from cameras in a database developed by CDFW, as well as collection of observations by Omya employees. An annual monitoring report shall be provided to the Forest Service and CDFW. (SBNF Biological Report PDF BHS-3)</p>	<p><b>BHS-3: Monitoring/Adaptive Management:</b> Omya shall monitor bighorn sheep use in and near their operations and at water sources in and adjacent to their operations. Monitoring shall consist of maintenance of cameras stationed at water sources and recording of data from cameras in a database developed by CDFW, as well as collection of observations by Omya employees. A North Slope Bighorn Sheep Conservation Strategy will be prepared by CDFW and Forest Service which may identify other monitoring methodology to be implemented over time. This monitoring of the North Slope herd is critical to determining if/when augmentation of the herd might be necessary. An annual monitoring report will be provided to the Forest Service and CDFW.</p>	
	<p><b>Mitigation Measure BIO-19: North Slope Bighorn Sheep Conservation Strategy:</b> A Draft</p>	<p><b>BHS-4: Conservation Strategy:</b> A Draft North Slope Bighorn Sheep Conservation Strategy will be developed by CDFW and the Forest</p>	

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
	<p>North Slope Bighorn Sheep Conservation Strategy will be developed by CDFW and the Forest Service which will include:</p> <p>Guidelines/thresholds for population status that would trigger augmentation of the herd;</p> <p>A strategy/guidelines for developing water sources to respond to drought years; Herd monitoring methodology and objectives.</p> <p>Omya will be a partner in the North Slope Bighorn Sheep Conservation Strategy and will help support the long-term management goals of maintaining a sustainable population of bighorn sheep on the North Slope. (SBNF Biological Report PDF BHS-4)</p>	<p>Service which will include guidelines/thresholds for population status that would trigger augmentation of the herd; a strategy/guidelines for developing water sources to respond to drought years; herd monitoring methodology and objectives; Omya will be a partner in the North Slope Bighorn Sheep Conservation Strategy and will help support the long-term management goals of maintaining a sustainable population of bighorn sheep on the North Slope.</p>	
	<p><b>Mitigation Measure BIO-20: Future Conservation and Management:</b> Within one year after approval, Omya shall begin contributing to a non-wasting endowment, designated as the North Slope Bighorn Sheep Conservation Fund (Fund). The amount of</p>	<p><b>BHS-5: Future Conservation and Management:</b> Within one year after approval, Omya shall begin contributing to a non-wasting endowment, designated as the North Slope Bighorn Sheep Conservation Fund (Fund). The amount of Omya’s contributions shall be determined by CDFW in coordination with Omya. The Fund shall be administered by the National Fish and</p>	

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
	<p>Omya’s contributions shall be determined by CDFW in coordination with Omya. The Fund shall be administered by the National Fish and Wildlife Foundation as a sub-account of the California Department of Fish and {Game} Wildlife Master Mitigation Account. This sub-account shall be managed as a long term endowment dedicated to activities that aid in conservation and monitoring of bighorn sheep both within the Cushenbury herd and on proximate habitats, occupied or unoccupied, including the Bighorn Mountains and San Gorgonio Wilderness where immigration and emigration may connect groups into a functional metapopulation. (SBNF Biological Report PDF BHS-5)</p>	<p>Wildlife Foundation as a sub-account of the California Department of Fish and [Game] Master Mitigation Account. This sub-account shall be managed as a long term endowment dedicated to activities that aid in conservation and monitoring of bighorn sheep both within the Cushenbury herd and on proximate habitats, occupied or unoccupied, including the Bighorn Mountains and San Gorgonio Wilderness where immigration and emigration may connect groups into a functional metapopulation.</p>	
	<p><b>Mitigation Measure BIO-21: Bighorn Sheep Employee Awareness Training:</b> Omya will consult with the CDFW to incorporate bighorn sheep education and awareness into their training for employees and contractors. Training will include</p>	<p><b>BHS-6: Employee Awareness Training:</b> Omya will consult with the CDFW to incorporate bighorn sheep education and awareness into their training for employees and contractors. Training will include how to minimize impacts to bighorn sheep and include guidelines for driving, operation of</p>	

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
	<p>how to minimize impacts to bighorn sheep and include guidelines for driving, operation of heavy equipment, general quarry operation, and blasting in bighorn sheep habitat. (SBNF Biological Report PDF BHS-6)</p>	<p>heavy equipment, general quarry operation, and blasting in bighorn sheep habitat.</p>	
	<p><b>Mitigation Measure BIO-22: Jurisdictional Water and Agency Consultation:</b> Prior to activities that could impact Waters of the United States or the State as identified in the Project JD, the ACOE, RWQCB-Lahontan Region and CDFW shall be consulted for concurrence with the findings of the JD and to determine if regulatory permits or approvals (i.e.: Streambed Alteration Agreement, coverage under the National Permit, Waste Discharge Request/Section 401) would be required and if considered necessary, the appropriate permits and/or approvals shall be obtained.</p>		
	<p>None Required</p>	<p><b>PLANT-1:</b> In coordination with the Forest Service, Omya will provide for the collection of seed and other propagules as needed in support of the revegetation plan.</p>	<p><b>PLANT-1:</b> In coordination with the Forest Service, Omya will provide for the collection of seed and other propagules as needed in support of the revegetation plan. Propagules shall be collected within the Project Area to the extent possible.</p>

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
	None Required	<p>Propagules shall be collected within the Project Area to the extent possible.</p> <p><b>PLANT-2:</b> In coordination with the Forest Service, Omya will provide for salvage of rare native plants within the Project Area to be propagated and/or transplanted to protected habitat reserve areas at the discretion of the Forest Service.</p>	<p><b>PLANT-2:</b> In coordination with the Forest Service, Omya will provide for salvage of rare native plants within the Project Area to be propagated and/or transplanted to protected habitat reserve areas at the discretion of the Forest Service.</p>
<b>Geology</b>	None Required	<p><b>GEO-1:</b> Control of surface drainage, erosion, and sedimentation of the proposed haul road and quarry operations would involve the following primary components currently being implemented for existing operations:</p> <ul style="list-style-type: none"> <li>a) Limiting surface disturbance to the minimum area required for active operations.</li> <li>b) Diverting runoff, where operationally feasible, such that runoff from undisturbed areas does not enter the area of active operations.</li> <li>c) Using ditches, sediment basins and localized control and maintenance measures to intercept and control runoff along the haul road.</li> <li>d) Stabilizing disturbed areas through regarding, revegetation and other restoration practices.</li> </ul>	<p><b>GEO-1:</b> Control of surface drainage, erosion, and sedimentation of the proposed haul road and quarry operations would involve the following primary components currently being implemented for existing operations:</p> <ul style="list-style-type: none"> <li>a) Limiting surface disturbance to the minimum area required for active operations.</li> <li>b) Diverting runoff, where operationally feasible, such that runoff from undisturbed areas does not enter the area of active operations.</li> <li>c) Using ditches, sediment basins and localized control and maintenance measures to intercept and control runoff along the haul road.</li> <li>d) Stabilizing disturbed areas through regarding, revegetation and other restoration practices. Direct runoff into the quarries, sediment catchment basins, sumps and culverts.</li> </ul>

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
		Direct runoff into the quarries, sediment catchment basins, sumps and culverts.	
	None Required	<b>GEO-2:</b> Dispose of sediment from runoff control basins to pre-approved sites rather than side cast and to the greatest extent possible, side-casting into the Crystal Creek drainage will be avoided.	<b>GEO-2:</b> Dispose of sediment from runoff control basins to pre-approved sites rather than side cast and to the greatest extent possible, side-casting into the Crystal Creek drainage will be avoided.
	None Required	<b>GEO-3:</b> Control runoff, drainage, off-site transport and erosion at fill and overburden pads by:  a) Constructing berms near the crest of the pads.  b) Placing rip rap, catchment basins and/or energy dissipaters along the toe of the fill and in the drainage below the fill slope.	<b>GEO-3:</b> Control runoff, drainage, off-site transport and erosion at fill and overburden pads by:  a) Constructing berms near the crest of the pads.  b) Placing rip rap, catchment basins and/or energy dissipaters along the toe of the fill and in the drainage below the fill slope.
	None Required	<b>GEO-4:</b> Inspect slope conditions in quarries after a significant seismic event. Quarry operations will be stopped until a qualified geotechnical engineer inspects slopes for unsafe or unstable condition.	<b>GEO-4:</b> Inspect slope conditions in quarries after a significant seismic event. Quarry operations will be stopped until a qualified geotechnical engineer inspects slopes for unsafe or unstable condition.
	None Required	<b>GEO-5:</b> Routinely inspect quarries for unsafe and unstable conditions.	<b>GEO-5:</b> Routinely inspect quarries for unsafe and unstable conditions.
	None Required	<b>GEO-6:</b> Implement quarry design and procedures recommendations identified in approved slope stability investigations and per SMARA requirements.	<b>GEO-6:</b> Implement quarry design and procedures recommendations identified in approved slope stability investigations and per SMARA requirements.
	None Required	<b>GEO-7:</b> Implement BMPs in accordance with the most current Industrial General	<b>GEO-7:</b> Implement BMPs in accordance with the most current Industrial General Stormwater Permit and per the Omya's SWPP Plant.

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
		Stormwater Permit and per the Omya’s SWPP Plant.	
	None Required	<b>GEO-8:</b> Minimize ground disturbance to the minimum that is required to construct and operate the quarry.	<b>GEO-8:</b> Minimize ground disturbance to the minimum that is required to construct and operate the quarry.
<b>Hydrology and Water Quality</b>	None Required	<b>SW-1:</b> Comply with the SWPPP BMP	<b>SW-1:</b> Comply with the SWPPP BMP
	None Required	<b>GW-1:</b> Ensure that water production will remain within Omya’s designated FPA.	<b>GW-1:</b> Ensure that water production will remain within Omya’s designated FPA.
	None Required	<b>GW-2:</b> Comply with all water quality and hazardous materials management regulatory requirements and identified BMP/design features.	<b>GW-2:</b> Comply with all water quality and hazardous materials management regulatory requirements and identified BMP/design features.
	None Required	<b>GW-3:</b> Comply with SMARA and reclamation activities identified in the approved Reclamation Plan.	<b>GW-3:</b> Comply with SMARA and reclamation activities identified in the approved Reclamation Plan.
<b>Hazards and Hazardous Materials</b>	None Required	<b>HW-1:</b> Comply with the Hazardous Materials Business Plan, SWPP Plan (SWPPP), SPCC Plan and BMPs as required by these plans and hazardous materials and waste regulatory requirements.	<b>HW-1:</b> Comply with the Hazardous Materials Business Plan, SWPP Plan (SWPPP), SPCC Plan and BMPs as required by these plans and hazardous materials and waste regulatory requirements.
	None Required	<b>HW-2:</b> Ensure that the use, transport, management, storage and disposal of fuels (i.e., diesel and gasoline) and other hazardous materials used for mining operations (i.e., motor oil, transmission fluids, hydraulic fluids, lubricating greases, brake fluids and/or antifreeze) are in accordance with Federal, State and local hazardous materials and waste management regulations.	<b>HW-2:</b> Ensure that the use, transport, management, storage and disposal of fuels (i.e., diesel and gasoline) and other hazardous materials used for mining operations (i.e., motor oil, transmission fluids, hydraulic fluids, lubricating greases, brake fluids and/or antifreeze) are in accordance with Federal, State and local hazardous materials and waste management regulations.

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
	None Required	<b>HW-3:</b> Inspect and maintain the fuel above ground storage tank to ensure that the secondary containment (i.e., double wall tank) and spill prevention controls are operating as required.	<b>HW-3:</b> Inspect and maintain the fuel above ground storage tank to ensure that the secondary containment (i.e., double wall tank) and spill prevention controls are operating as required.
	None Required	<b>HW-4:</b> Maintain an updated Hazardous Materials Business Plan and hazardous materials inventory per CUPA requirements.	<b>HW-4:</b> Maintain an updated Hazardous Materials Business Plan and hazardous materials inventory per CUPA requirements.
	None Required	<b>HW-5:</b> Minimize blasting events to the extent possible (approximately once per week per quarry) and only during daylight hours.	<b>HW-5:</b> Minimize blasting events to the extent possible (approximately once per week per quarry) and only during daylight hours.
	None Required	<b>HW-6:</b> The transportation, storage and handling of explosives will be conducted in accordance with regulatory requirements and only with licensed, trained and qualified professionals.	<b>HW-6:</b> The transportation, storage and handling of explosives will be conducted in accordance with regulatory requirements and only with licensed, trained and qualified professionals.
	None Required	<b>HW-7:</b> Maintain all emergency response and spill equipment in proper operating condition and have available at areas where hazardous materials and waste are managed, transported and/or stored.	<b>HW-7:</b> Maintain all emergency response and spill equipment in proper operating condition and have available at areas where hazardous materials and waste are managed, transported and/or stored.
	None Required	<b>HW-8:</b> Ensure all personnel are appropriately trained in hazardous materials and waste management, including spill prevention and response procedures.	<b>HW-8:</b> Ensure all personnel are appropriately trained in hazardous materials and waste management, including spill prevention and response procedures.
<b>Reclamation</b>	None Required	<b>REC-1:</b> Comply with all aspects of the Reclamation Plan and SMARA requirements.	<b>REC-1:</b> Comply with all aspects of the Reclamation Plan and SMARA requirements.
	None Required	<b>REC-2:</b> Reclamation of the quarries shall include the creation of angled pathways and	<b>REC-2:</b> Reclamation of the quarries shall include the creation of angled pathways and interlacing

Environmental Resource / Effects	Mitigation Measure	SBNF Design Feature and Environmental Protection Measure	Project Design Feature
		interlacing reclaimed benches in order to facilitate the movement of bighorn sheep and other wildlife through the quarries. These benches will be created as the mining sequence is completed and prior to restoration.	reclaimed benches in order to facilitate the movement of bighorn sheep and other wildlife through the quarries. These benches will be created as the mining sequence is completed and prior to restoration.
<b>Training</b>	None Required	<b>TR-1:</b> Develop an Employee Training Awareness Plan that address training requirements, as necessary to comply with relevant regulations and approval conditions and mitigations identified in the Final EIR/EIS.	<b>TR-1:</b> Develop an Employee Training Awareness Plan that address training requirements, as necessary to comply with relevant regulations and approval conditions and mitigations identified in the Final EIR/EIS.

## 2.7 Alternatives Considered but Eliminated from Detailed Study

Federal agencies are required by NEPA to rigorously explore and objectively evaluate reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Likewise, CEQA Guidelines require that an EIR identify alternatives that were considered and rejected as infeasible, and briefly explain the reasons for rejection. The alternatives considered and rejected for this EIS/EIR were:

- Alternative Quarry Design;
- Alternate Overburden Design;
- Full Restoration; and
- Alternative Locations.

Each of these is described in the following sections, including the rationale for rejecting the alternative. Reasons for elimination included failure to meet basic project objectives, infeasibility, or inability to avoid significant environmental impacts (CEQA 15126.6(c)).

### 2.7.1 Alternative Quarry Design

The Butterfield-Sentinel Plan of Operations and Reclamation Plan quarries were developed based on ongoing mining conditions, geologic mapping, core drilling, and assay data. This information was used by Omya mine engineers to develop an efficient, economical, and environmentally sound mine and reclamation plan. The two quarries have been mined for over 50 years and the ore resource is well documented. The excavation plan must be able to remove as logistically feasible, a volume of ore to meet up to 40 years of demand taking into consideration the amount of overburden to remove and stockpile. The Proposed Action utilized the existing old quarry (B5 Quarry), infill areas defined as the Central Area, and both quarries to deposit overburden to reduce the further expansion of new overburden stockpiles and to reduce impacts to carbonate habitat and visual resources. The following are environmental and logistical restrictions that limit variable mine designs.

Butterfield Quarry – The Butterfield limestone deposit extends well beyond the proposed quarry expansion limits. Mining to the north beyond the proposed quarry limits would daylight the quarry along the north range front creating substantial visual impact to Lucerne Valley. This design was not further assessed due to potential visual impacts.

Extending the southern quarry limit further to the south would impact the CHMS area and known occurrences of listed plants. This design was not further assessed in order to avoid the CHMS area.

Sentinel Quarry – Expanding to the west is unfeasible and uneconomical due to substantial overburden. The quarry expansion is also restricted on the east by privately held lands. This design was therefore not further.

### 2.7.2 Alternative Overburden Design

Omya's overburden stockpile design objectives are to minimize new disturbance and impacts to carbonate soil habitat and limit visual impacts by expanding existing overburden sites and backfilling the quarries as much as feasible. Therefore, the Project utilizes the existing B5 Quarry area, infill areas defined as the Central Area, and both quarries to deposit overburden which reduces further expansion of new overburden stockpiles and reduces habitat and visual impacts.

Relocate B5 Overburden Pad Expansion to West – The objective of an alternative overburden design is to reduce the potential visual impact from FS Road 3N16 to the south. To accomplish this, the height of the pile could be decreased and the footprint increased to the west to handle the volume of overburden. This alternative would directly impact populations of Cushenbury oxytheca within the CHMS area and was rejected from further assessment. Expansion of the overburden footprint to the east does not provide the desired overburden capacity due to topography and would impact additional known carbonate plant habitat and was also rejected from further analysis.

Increase Overburden on East Half of Butterfield Quarry – Another design assessed by Omya was the additional backfilling of the Butterfield Quarry where backfilling is proposed to fill the quarry to near original contours. In order to substantially reduce the amount of overburden in the B5 Overburden Pad, the deposition of additional material onto the Butterfield Quarry would create a pyramid-shaped mound substantially above the natural grade. This mound would modify the natural profile of the ridgeline. Due to the increased impact to visual resources, this design was eliminated from further evaluation.

Deposit Overburden in Inactive Cloudy and Claudia Quarries to South – The Plan of Operations for the Sentinel Quarry Expansion approved by the Forest Service in 2002 and the County in 2003, included a discussion on alternative overburden stockpiles. One alternative assessed was the possible backfilling of the inactive limestone quarries approximately 2.3 and 2.6 miles south along dirt haul roads. The evaluation determined that the utilization of these two quarries was not feasible for the following reasons:

- Lack of capacity – The combined capacity of the two quarries is approximately 1.6 million tons; far less than the approximate 9 million additional tons planned for in the B5 Overburden Pad expansion by the Proposed Action;
- Increased distance would require over three times the mileage as compared to the B5 Overburden Pad thereby increasing engine and dust emissions; requiring purchase of an additional haul truck; and increasing operating costs and road maintenance costs;
- Possible erosion impacts to Holcomb Creek;
- Interaction of mine trucks with public on FS Road 3N16; and
- Destruction of existing reclamation efforts on the two sites and further delay in reclamation of the quarries and access roads until backfilling completed.

Due to the above logistical, environmental, and economic issues, this alternative was eliminated from further consideration.

### **2.7.3 Full Restoration Alternative**

A Full Restoration Alternative was considered that would include filling in the two quarries with rock to re-create the pre-project condition. This type of alternative would not be feasible with this type of mining. For example, mines for other commodities, such as gold or copper, have piles and pits that can be more readily restored as compared to limestone mining, which would need to import waste rock to fill the mine. At the Butterfield - Sentinel Quarries, the ratio of ore to waste rock is approximately 46 to 54%. The Project is planning on backfilling into the two quarries approximately 19 million tons or 60% of the overburden. To further fill the quarries, material from the B5 Overburden Pad would need to be transported back into the quarries. The double handling of this waste material would produce excessive air emissions from mobile equipment and road dust, would not be economically feasible, and would not substantially reduce any visual impacts. The quarries would still be less than 50% filled. Therefore, this alternative was not further evaluated.

### **2.7.4 Alternative Location**

As stated in CEQA Guidelines (Section 15126.6[f][2][A]), an environmental document shall determine "...whether any of the significant effects of the project would be avoided or substantially lessened by putting the project in another location. Only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR."

Looking specifically at mining projects, however, the CEQA Guidelines recognize the unique nature of mineral resource extraction activities. In relevant part, CEQA Guidelines section 15126.6(f)(2)(B) provides that: "For example, in some cases there may be no feasible alternative locations for a mining project which must be in close proximity to natural resources at a given location."

The Project is located where geologic mapping, core drilling, and assay data prove that existing limestone deposits are significant mineral resources. The CDMG has classified the area as an MRZ-2, indicating it is recognized as a valuable proven mineral resource. In addition, the sites are an existing approved mine operation and have existing infrastructure in the form of roads to Omya's LVPP, power lines, crushing plant facility, and overburden stockpiles. If another limestone resource was located, its development would likely produce greater environmental impacts. An alternative location would likely be further distances requiring new access roads and additional air emissions from truck travel; and new impact to an undisturbed area which would likely affect biological and scenic resources to a greater level than the Project. Because impacts associated with an alternative location (if a location can be found with limestone reserves) would not be reduced compared to the Project, this alternative was not selected for further evaluation.

## 2.8 Comparison of the Environmental Impacts between the Alternatives

The potential impacts associated with each of the alternatives on the environmental issues identified during Project scoping are summarized in Table 2-12. Detailed discussions of these impacts are provided in Section 3.0.

With any Proposed Action (Project) alternative, the SIO level in the Butterfield-Sentinel Quarry Project Area would be reduced by more than one level, from High to Low during the first 10 years of implementation. Therefore, due to this deviation from the LMP Aesthetic Management Standard – S10, a Project-specific forest plan amendment to the SIO is being considered for all action alternatives. The proposed SIO for those areas affected in the Butterfield-Sentinel Quarry Project Area would be Low for all Proposed Action alternatives (see Figure 3.1.2 – Existing SIOs).

**Table 2-12 Summary of Potential Environmental Impacts**

<b>Alternative 1 – No Action</b>	<b>Alternative 2 – Proposed Project</b>	<b>Alternative 3 – Partial Implementation Butterfield Expansion Only</b>	<b>Alternative 4 – Mixed Production</b>
<b>Aesthetics</b>			
There would be less disturbance than in the other alternatives but there would still be disturbances to the landscape character from plans that are currently approved.	There would be disturbance to the landscape character and scenic view but the potential effects would not be considered significant.	There would be disturbance to the landscape character and scenic view but the potential effects would not be considered significant.	There would be disturbance to the landscape character and scenic view but the potential effects would not be considered significant.
<b>Air Quality and GHG</b>			
Air emissions associated with the currently approved mining operations would continue.	There would be slight increases in air emissions but with mitigations to PM emissions, there would not be any significant impacts.	There would be slight increases in air emissions but with mitigations to PM emissions, there would not be any significant impacts.	There would be slight increases in air emissions but with mitigations to PM emissions, there would not be any significant impacts.
<b>Biological Resources</b>			
No additional habitat would be disturbed. Existing approved mining operations would continue which results in potential noise and nuisance impacts. CHMS habitat would not be expanded.	Habitat would be disturbed but acreage would be relinquished to CHMS. Noise and nuisance impacts would not be significantly different from current operations. A raptor and bighorn sheep conservation strategy	Habitat would be disturbed but acreage would be relinquished to CHMS. Noise and nuisance impacts would not be significantly different from current operations. A raptor and bighorn sheep conservation strategy would be entered into with	Habitat would be disturbed but acreage would be relinquished to CHMS. Noise and nuisance impacts would not be significantly different from current operations. A raptor and bighorn sheep conservation

Alternative 1 – No Action	Alternative 2 – Proposed Project	Alternative 3 – Partial Implementation Butterfield Expansion Only	Alternative 4 – Mixed Production
	would be entered into with the resource agencies and other local mining operators.	the resource agencies and other local mining operators.	strategy would be entered into with the resource agencies and other local mining operators.
<b>Geology and Soils</b>			
Mining operations would continue in compliance with SMARA, SWPPP and other BMPs to ensure safety and minimize impacts associated with erosion.	Mining operations would continue in compliance with SMARA, SWPPP and other BMPs to ensure safety and minimize impacts associated with erosion.	Mining operations would continue in compliance with SMARA, SWPPP and other BMPs to ensure safety and minimize impacts associated with erosion.	Mining operations would continue in compliance with SMARA, SWPPP and other BMPs to ensure safety and minimize impacts associated with erosion.
<b>Hydrology and Water Quality</b>			
Mining operations would continue in compliance with SMARA, SWPPP and other BMPs to minimize impacts to surface water and groundwater. There would not be additional impacts to drainages.	Mining operations would continue in compliance with SMARA, SWPPP and other BMPs to minimize impacts to surface water and groundwater. Groundwater use would increase slightly. Several drainages may be further impacted but under consultation and approval from the appropriate regulatory agency.	Mining operations would continue in compliance with SMARA, SWPPP and other BMPs to minimize impacts to surface water and groundwater. Groundwater use would increase slightly.	Mining operations would continue in compliance with SMARA, SWPPP and other BMPs to minimize impacts to surface water and groundwater. Groundwater use would increase slightly. Several drainages may be further impacted but under consultation and approval from the appropriate regulatory agency.

**2.9 Preferred (NEPA) and Environmentally Superior (CEQA) Alternative**

NEPA requires that the Lead Agency identify the preferred alternative (40 CFR 1502.14). CEQA Guidelines Section 15126.6(e)(2) requires that the Lead Agency identify the environmentally superior alternative. The No Project Alternative is considered by the County as the CEQA environmentally superior alternative; however, CEQA requires that an EIR further identify an alternative other than the No Project Alternative as the environmental superior alternative. The County identified the CEQA environmental superior alternative to be the Project (Alternative 2) because the other alternatives would not meet key Project objectives and/or result in potentially greater impacts when compared to the Project. The NEPA preferred alternative will be identified by the Forest Service following the public comment period.

### **3.1 Aesthetics**

This Section discusses the affected environment and evaluates the environmental consequences of the Project on aesthetics and visual resources surrounding the Omya quarries and Project Area. The analysis identifies the significance of those impacts and mitigation measures where appropriate to satisfy NEPA and CEQA requirements. The Scenery Report for Butterfield and Sentinel Quarries (Lilburn Corporation, 2014) was used in this analysis and is provided in Appendix J. The Scenery Report inventories and analyzes scenery as a manageable resource using the United States Forest Service Scenery Management System (SMS).

#### **3.1.1 Affected Environment**

##### **3.1.1.1 Regional Setting**

The Project Site lies within the northern boundaries of the SBNF. It is approximately 7.5 miles south of the community of Lucerne Valley and 5 miles north of Big Bear Lake. The existing and proposed Butterfield and Sentinel Quarry areas occur within the larger Omya California mining operation, which is located within the much larger Lucerne Valley Limestone Mining District. Mining has been active in the region since the 1950s. The regional mining district is over 8 miles long and includes several large limestone mining operations in addition to those owned by Omya. These mining operations are present along the range front and form a dominant part of the existing landscape and viewshed.

The Project would not be visible from any developed/populated areas surrounding Big Bear Lake, including Fawnskin, the City of Big Bear Lake and Big Bear City, due to the intervening ridges located north of the lake and the relatively lower elevation of the lake itself. The Project is also not visible from the Lucerne Valley because of its location on the south side of the range crest.

Although no developed recreation sites are located within the immediate Project Area, both primitive and semi-primitive types of recreation experiences can be found here. These activities include such things as hiking, camping, OHV activities, back country exploring, mountain biking, and equestrian sports. More developed recreational activities are found in the regional vicinity of the Project, including winter and summer sports around the Big Bear Lake area. Because scenery and recreation are closely linked resources, recreation is considered part of the regional setting as a reference to the landscape's non-scenery specific aesthetic attributes.

As described in Section 3.1.3.1, the Project Site is located primarily in an area that the Forest Service refers to as the Desert Rim Place with small portions of the site also in the Big Bear Backcountry Place (see Figure 3.1.1). The Desert Rim Place is a high desert, remote, rugged landscape formed by complex geologic faulting. This is the location where the north slope of the San Bernardino Mountains meets up with the Mojave Desert. Portions of the Bighorn Mountain Wilderness and the North Baldwin Lake, Holcomb Valley and Arrastre Creek Special Interest Areas are located here.

### 3.1 Aesthetics

The Desert Rim Place landscape is arid, but contains many intermittent streams and important spring locations. Shaded canyons and ridges of the Desert Rim Place are forested with Jeffrey pine, white fir and incense cedar. As the landscape drops in elevation toward the desert, pinyon-juniper woodlands cover the slopes and valleys and intermix with Joshua tree woodlands and desert scrub. The 1999 Willow Fire burned conifer forest and pinyon-juniper woodland in the western portion of the area.

The Big Bear Back Country Place offers a wide variety of dispersed recreational opportunities including hiking, auto touring, rock climbing, cycling, hunting, wildlife viewing and the Pacific Crest Trail (PCT). Numerous developed campgrounds are located in this Place.

The LMP Scenic Integrity Objectives (SIOs) map identifies the regional setting in which the Project is located as “high”. However, as discussed in Section 3.1.3.1, the existing and historic landscape character of the region appears to be inconsistent with a SIO ranking of High.

#### 3.1.1.2 Local Setting

The existing landscape character (see Section 3.1.3.1) of the local setting around the Project consists of mountain slopes, ridges, and canyons with vegetation characterized as pinyon-juniper-mountain mahogany-rabbit brush woodland. Characteristic species include pinyon and juniper trees, mountain mahogany, antelope brush, and shrubby canyon live oak. Vegetation tends to be denser on north slopes and gullies, and more open on south slopes and along ridges. However, the entire area including the western half of the Project Site was burned in wildfires in 2007 and vegetation descriptions refer to habitat prior to the fires.

The Project is located near the community of Lucerne Valley; however it is not visible from Lucerne Valley or from any major public highways or secondary paved routes because it is located over the range crest and between the mountain ridges. The Crystal Creek Haul Road, constructed in 1958, is plainly visible from Lucerne Valley but the Project does not include any changes to the existing road (other than extending its use for Project access).

Nearby land uses include open space, the SBNF, and semi-urban and rural land with residential, commercial, industrial and mining development. In the immediate vicinity of the Project Site there are three other quarry operations owned by Omya. These are the White Knob, Cloudy and Claudia quarries. White Knob is an active mining operation, and Cloudy and Claudia are closed quarries undergoing revegetation and reclamation. To the east and southeast of the Project are two large mining operations not owned by Omya. These are Mitsubishi Cement and Specialty Minerals.

The Forest Service Road 3N16 runs along the south end of the Sentinel Quarry B5 overburden pad. FS Road 3N16 is a popular and well-traveled backcountry road. It is one of the main access routes to and from Holcomb Valley and connects Holcomb Valley with Big Pine Flat, both of which are heavily used by multiple groups.

The Project Site is approximately 3.75 miles from the Pacific Crest Trail and is visible from the trail. The Pacific Crest Trail was designated a National Scenic Trail in 1968, and is a popular backpacking, hiking and equestrian trail. SR-18, approximately 5 miles away from the Project Site at its closest point, is a County-designated scenic route. A “scenic route” is a roadway that has scenic vistas and other scenic and aesthetic qualities that over time have been found to add beauty to the County. The Project is not visible from SR-18.

### **3.1.2 Regulatory Framework**

#### **3.1.2.1 Federal**

##### **Federal Land Policy and Management Act (FLPMA)**

Section 102(a)(8) of FLPMA places an emphasis on the protection of the quality of scenic resources on public land. To meet its responsibility to maintain the scenic value of public lands, the USFS has developed SIOs. The SIOs are implemented through the San Bernardino National Forest LMP, as discussed below.

##### **Forest Service Manual (FSM) Chapter 2380 Landscape Management**

FSM 2380 provides direction for visual resources inventory, evaluation, management and when applicable, restoration of scenic quality as a fully integrated part of the ecosystems of national forest lands. Specifically, the FSM 2380.15 addresses minerals management by referencing 36 CFR 228 and requires that mineral operations be harmonized with scenic values. A series of Forest Service handbooks provide technical guidance in managing landscape aesthetics and scenery.

##### **National Forest Service Handbook 701 Landscape Aesthetics: A Handbook for Scenery Management 1995**

This handbook provides guidance for defining landscape units based on landscape character types, scenic integrity and scenic attractiveness. It also provides guidance for identifying sensitive view (views that are of concern to the public) and for mapping landscape visibility.

The handbook describes the Scenery Management System (SMS). The SMS presents a systematic approach for determining the relative value and importance of scenery, to assist in the establishment of overall resource goals and objectives, monitor the scenic resource and ensure high-quality scenery for future generations. It directs that the assessment of potential impacts to scenic resources be based on the public’s concern for scenic quality or scenic values within a landscape and on potential project related changes to the existing landscape. The guidelines direct scenic analysis to be conducted from the perspective of public travel ways and public use areas both within and outside forest boundaries.

The forest-wide scenery inventory included in the San Bernardino National Forest LMP was developed as a coarse-scale overview, with the understanding that it would be refined and expanded via project-level

### 3.1 Aesthetics

scenery analysis. Through work on the project-scale, sufficient detail is added to the scenery inventory to provide the level of information necessary to achieve stewardship excellence through the project's development and implementation.

The SMS identifies SIOs. Prior the development of the SMS in 1995, the Forest Service used the Visual Management System (VMS) which used Visual Quality Objectives (VQOs).

SIOs are assigned to distinct areas of the Forest. This was done through an interdisciplinary process during the development of the Forest Plan. SIOs guide the amount, degree, intensity and distribution (both spatially and temporally) of management activities needed to achieve the Landscape Character Goals. They represent the minimally acceptable SIO levels to be achieved or exceeded, whenever possible. The threshold of effects is exceeded when disturbances to the landscape character do not meet the visual intensity and dominance criteria of the SIO. Landscape character is further discussed in Section 3.1.3.1. The SIOs are divided into the five levels described in Table 3.1-1.

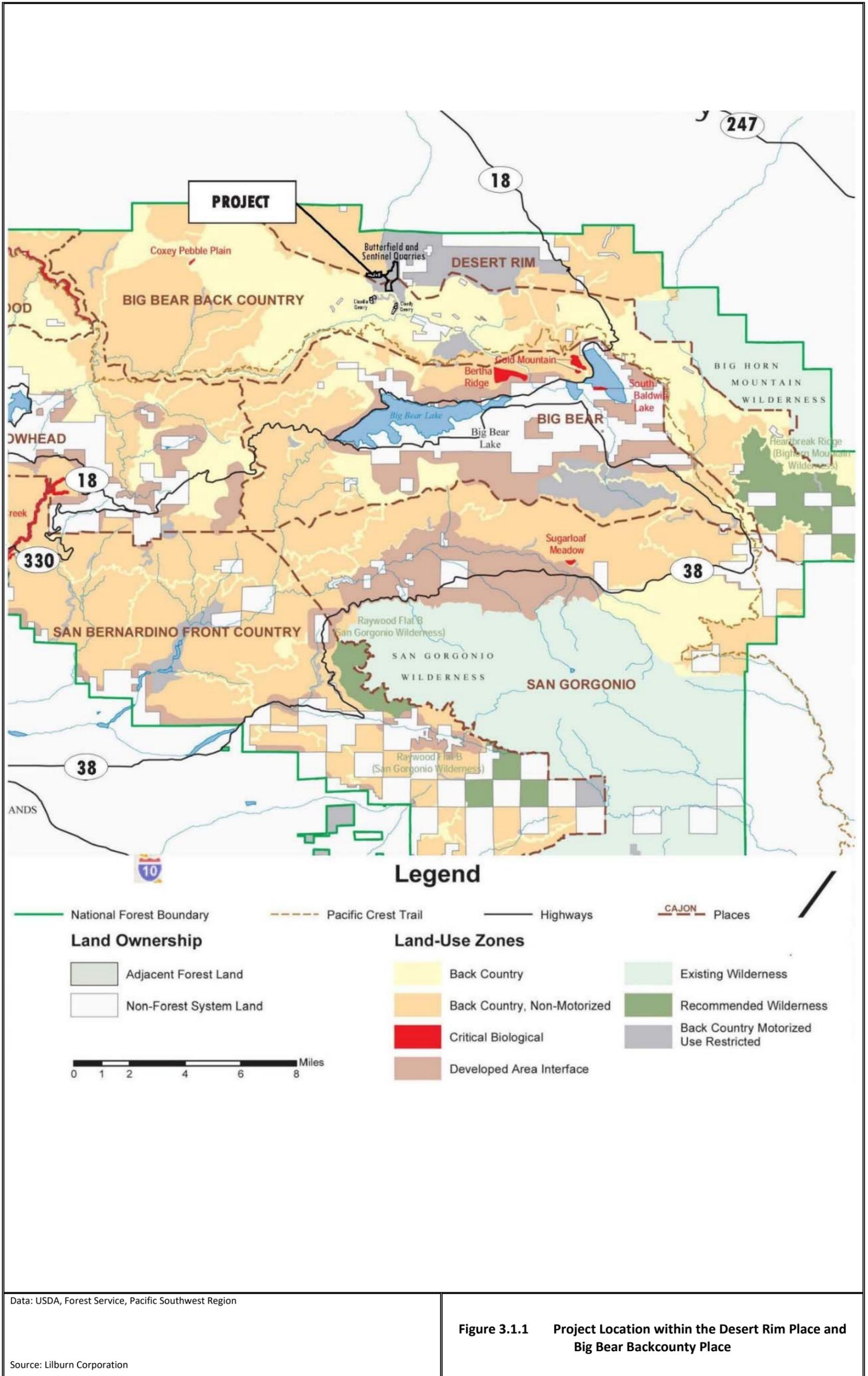
**Table 3.1-1 Scenery Management System Scenic Integrity Objectives**

SIO Levels	SIO Description
Very High	The landscape character is expressed in its most natural and unaltered state.
High	The landscape character appears unaltered. Disturbances to the landscape character may be present but are not evident to casual observers.
Moderate	The landscape character appears slightly altered. Disturbances are evident but not dominant to the landscape character.
Low	The landscape character appears moderately altered. Disturbances begin to dominate the landscape character.
Very Low	The landscape character appears heavily altered. Disturbances are dominant over the landscape character.

### USDA Land Management Plan Part 3 Southern California National Forest Vision – Aesthetic Management Standards

The LMP for SBNF established forest-wide and forest-specific standards. The standard for aesthetic management states:

- *S9: Design management activities to meet the SIOs shown on the Scenic Integrity Objectives Map.*
- *S10: Scenic Integrity Objectives will be met with the following exceptions: Minor adjustments, not to exceed a drop of one SIO level, are allowable with the Forest Supervisor's approval. Temporary drops of more than one SIO level may be made during and immediately following project implementation providing they do not exceed three years in duration.*



Data: USDA, Forest Service, Pacific Southwest Region

Source: Lilburn Corporation

**Figure 3.1.1 Project Location within the Desert Rim Place and Big Bear Backcountry Place**

THIS PAGE IS INTENTIONALLY BLANK

### 3.1.2.2 State

#### State Scenic Highway Program

Scenic corridor protection programs include policies intended to preserve the scenic quality of the highway corridor. These policies include:

- Protect from encroachment of inappropriate land uses.
- Mitigate uses that detract from scenic values by proper siting, landscaping or screening.
- Prohibit billboards and regulate on-site signs so that they do not detract from scenic views.
- Make development more compatible with the environment by requiring building siting, height, colors and materials that are harmonious with the surroundings.
- Regulate grading to prevent erosion and cause minimal alteration of existing contours and to preserve important vegetation features along the highway.
- Protect the hillsides by allowing only low-density development on steep slopes and along ridge lines.
- Prevent the need for noise barriers by requiring a minimum setback for residential development adjacent to a scenic highway.

### 3.1.2.3 Local

#### San Bernardino General Plan and Development Code

Protection of scenic and visual resources in the County is acknowledged under the following land use standards within the San Bernardino County General Plan:

- Land Use Element (Section II): The County will have a compatible and harmonious arrangement of land uses by providing a type and mix of functionally well-integrated land uses that are fiscally viable and meet general social and economic needs of the residents. The design and siting of new development will meet locational and development standards to ensure compatibility of the new development with adjacent land uses and community character.
- Open Space Element (Section IV): No development of any kind, including resource extraction, shall be approved that would destroy or seriously diminish the visual features of existing sand dunes. Hillside development must be compatible with natural features and the ability to develop the site in a manner that preserves the integrity and character of the hillside environment, including but not limited to, consideration of terrain, landform, access needs, fire and erosion hazards, watershed and flood factors, tree preservation, and scenic amenities and quality.
- Conservation Element (Section V): Future land development practices must be compatible with the existing topography and scenic vistas and protect the natural vegetation. Ridgeline development that would substantially detract from the scenic quality of major ridgeline viewsheds must be minimized.

---

### 3.1 Aesthetics

#### **Dark Sky Ordinance (No 3900)**

The Dark Sky Ordinance was established to preserve dark night skies in rural areas. The ordinance creates standards to limit glare and excessive outdoor lighting and is applicable to all structures and free-standing outdoor fixtures within residential, commercial and industrial land use districts in the desert and mountain regions.

#### **3.1.3 Environmental Consequences/Impacts and Mitigation Measures**

##### **3.1.3.1 Methodology**

Information used to evaluate the potential impacts and effects that the Project would have on aesthetics and scenic resources includes:

- Scenery Report for Butterfield Sentinel Quarries (January 2014);
- Field reconnaissance observed in 2011, 2012 and 2013;
- San Bernardino National Forest's GIS database;
- Visual simulations using GIS, site photos, Google Earth and Adobe Photoshop;
- SMS protocols; and
- Comments received during the public scoping period.

A copy of the Scoping Report which includes all comment letters is provided in Appendix B.

The SMS, as described in Section 3.1.2, is used for this analysis. The SMS directs that the assessment of potential impacts to scenic resources be based on the public's concern for scenic quality or scenic values within a landscape and on potential project related changes to the existing landscape. Public concern is gauged using Forest Service concern levels, which are used to rank or measure the importance of the landscapes as seen from specific viewing locations. The Scenery Report (Appendix J) includes the SMS viewpoint inventory and analysis of five (5) selected viewpoints.

The key concepts of the SMS used in this analysis are summarized below.

#### **Scenic Integrity Objectives**

As described in Section 3.1.2.1, scenic integrity refers to the alteration of the landscape created by human activities. Integrity is stated in degrees of change from the existing landscape character. The Project should to be executed in a manner consistent with the LMP by preserving the scenic integrity of the Project Area through blending and visually integrating the Butterfield-Sentinel Quarry into the larger landscape.

For the purposes of this evaluation, the Project Area is formally considered as having a designated SIO level of High. However, as previously discussed in Section 3.1.2, the SBNF scenery inventory was

developed as a coarse-scale overview with the understanding that it would be refined via project-level scenery analysis. Therefore, this Project specific evaluation recognizes that the existing scenery impacts from historical and ongoing mining activities in the Project Area makes the landscape character inconsistent with the coarse-scale overview SIO designation of High. According to Anita Bueno of the SBNF, the existing Project Area currently has baseline conditions that are more consistent with scenic integrity levels ranging from Low to High and a plan amendment should be made by the Forest Service to address this inconsistency. The evaluation also takes into account the Forest Service LMP standard S 10 that allows minor adjustments to the SIO not to exceed a drop of one level with the Forest Supervisor's approval and temporary drops of more than one SIO level maybe be made during and immediately following project implementation provided they do not exceed for a duration of more than three years (see Section 3.1.2.1)

### **Forest and Place**

The SBNF has been divided into a series of geographical units called "Places." Each Place has its own landscape character. Landscape character is the overall visual and cultural impression of landscape attributes. It is the physical appearance and cultural context of a landscape that gives it an identity and "sense of place." The Project is located on the boundary straddling the Desert Rim Place and the Big Bear Backcountry Place. These Places are described in Section 3.1.1.1.

### **Scenic Landscape Character**

The scenic landscape character is derived from the naturally established landscape, and includes the entire scene being viewed in the landscape setting. The landscape character identified the "ideal" or optimal set of valued scenery attributes by describing the landscape's inherent positive scenic identity or physical appearance. Valued attributes include important information about aesthetic value in conjunction with recreational, spiritual, social, economic, and/or community values and attachments. The existing scenic landscape character provides a framework for making the modification predictions and designing mitigation measures for project implementation.

### **Desired Landscape Character and Conditions**

The LMP, Part 2 (2005) outlines the desired condition and valued landscape attributes for each Place within the SBNF. The desired Landscape Characters for the Project Area are as follows:

*Desert Rim Place – is maintained as a modified to natural appearing landscape that functions as a sanctuary for a large number of federally listed native plants and a highly valued area for limestone production. The valued landscape attributes to be preserved over time are the Jeffrey pine, white fir and incense cedar in the shaded aspects of ridges and canyons; intermittent streams and springs with riparian features and white carbonate outcrops. Carbonate habitats are protected from mining impacts in perpetuity within carbonate habitat reserves dedicated and managed as described in the Carbonate Habitat Management Strategy. The Carbonate Habitat Reserve is managed to allow public uses that are compatible with the conservation of the listed*

### 3.1 Aesthetics

*carbonate plants. Within the Carbonate Habitat Management Area, carbonate plants are likely to persist indefinitely by managing and maintaining geomorphic and ecological processes of the landscape in large, well-placed blocks of habitat. Destruction or modification of critical habitat is avoided. Listed species are recovered and delisted. Future listing is not needed. Areas disturbed through past activity are restored.*

*The Big Bear Back Country Place is maintained as a historic and natural-appearing landscape that functions as a recreation setting for backcountry rustic road-touring recreation experiences... The valued landscape attributes to be preserved over time are the stands of Joshua Trees and Pinyon juniper, the large montane meadow system and the open high-desert undeveloped character... Carbonate habitats are protected from mining impacts in perpetuity within carbonate habitat reserves and managed as prescribed in the CHMS (LMP Part 2, pgs 56-57).*

#### **Existing Landscape Character**

As discussed in Section 3.1.1.2, the existing landscape character of the Project Area consists of steep mountain slopes, ridges, and canyons with pinyon-juniper vegetation. Characteristic species include pinyon and juniper trees, mountain mahogany, antelope brush, and shrubby canyon live oak. Vegetation patterns tend to be denser on north slopes and gullies, and more open on south slopes. Vegetation is also more sparse and scrubby toward ridgelines and on calcium carbonate soils, including areas within the Project Area. However, the entire area, including the western half of the Project Site was burned in wildfires in 2007 and vegetation descriptions refer to habitat prior to the fires.

Once disturbed, the naturally-occurring calcium carbonate soils are a very bright white color that contrasts strongly with the darker vegetation and surrounding undisturbed soils. This contrast is reduced in the winter due to periodic snow cover.

The existing views of the Project Area are currently affected by two active Omya mines, the Butterfield Quarry and the Sentinel Quarry, which are directly adjacent to and to the east and north of the Project, as well as the other mining operations described in Section 3.1.4 Cumulative Effects

The existing quarries are visible as light-colored areas within the generally darker forested landscape. Mining activity, particularly the straight lines created by benching and road construction, has also given the existing landscape character an unnatural appearance in form, line and texture. Reclamation of the sites over time will reduce existing impacts as revegetation and weatherization of the rocks take place.

Two inactive mines, Claudia and Cloudy, located to the south of the active mine sites are currently undergoing various stages of reclamation (see Figure 1-2). The Cloudy and Claudia Quarries and the Cloudy Haul Road have been reclaimed and the Forest Service has confirmed that the Cloudy Quarry has been successfully reclaimed (Forest Service correspondence with Omya March 19, 2012). Revegetation monitoring and remediation as needed will continue for the Claudia Quarry and Cloudy haul road and the Claudia haul road will be reclaimed after the Claudia Quarry is successfully reclaimed. No mining will occur on these two sites and no changes to the approved reclamation plans are proposed.

Because the existing landscape character has already been affected by past and current mining activities, the Project would not introduce a new use or create a substantial new alteration to the existing (baseline) landscape character of the area.

### **Viewsheds and Viewpoints**

Viewsheds are visible portions of the landscape as seen from viewpoints. Five viewpoints were identified, documented and included as part of the scenic inventory (see Section 3.1.3.3). These key viewpoints were selected because they represent views from the identified travel ways and use areas with High (Level 1) to Moderate (Level 2) concern levels within the SBNF lands. Each key viewpoint was evaluated based on levels of existing screening by topography, vegetation, and/or development blocking the direct view of the Project Area. Viewshed visibility was determined by the edge conditions of viewpoint locations. Edge conditions are described as screened, partially screened or open conditions. A screened edge condition would block views of the Project Area. Partial screening occurs where there are dispersed patterns of vegetation and development. Open edge conditions lack any screening toward the Project Area.

Table 3.1-3 in Section 3.1.3.3 provides a summary of the five viewpoints and Figure 3.1.3 shows the locations of each viewpoint.

### **Public's Visual Expectations**

Visual expectations directly influence the relative importance and sensitivity of what is seen and perceived in the landscape. The visual importance given to the landscape is influenced by multiple factors, including distance, duration, existing conditions, and the viewer's intention. The importance of the scenic resource is weighed against other land resources and activities using scenic classes, described below.

### **Figure Scenic Classes**

Scenic Classes are used to compare the value of scenery to the value of other resources. They are determined and mapped by combining the measure of scenic attractiveness with the concern levels and distance zones of landscape visibility.

Scenic attractiveness measures the scenic importance of a landscape. Higher scenic attractiveness occurs in landscapes with a greater degree of naturalness, diversity of features and uniqueness. The relative scenic value of a landscape is classified as: Class A - distinctive; Class B - typical; and Class C - indistinctive. The scenic attractiveness of the Project Area is considered Class B by the SBNF, except for views from Viewpoint 2, Castle Rocks, are considered Class A due to the unique rock formations and the views of Big Bear Lake.

Landscape visibility is determined using three elements: (1) travel ways and use areas, (2) concern levels and (3) distance zones. Travel ways are linear concentrations of public-viewing, including roads and trails. Use areas are locations that receive concentrated public-viewing use. They include vista points, trailheads

### 3.1 Aesthetics

and other recreation sites. Most landscape viewing occurs from travel ways and use areas. Visibility levels for the SBNF were established in the 2005 LMP scenery analysis process and verified by field observation in 2011 – 2012.

Concern levels are a measure of the degree of public importance placed on landscapes as viewed from travel ways and use areas. Concern level is a function of both the number of visitors as well as their intent. Three concern levels are used:

- Level 1 (High) is the most important. Users have a high level of concern for scenery. It is associated with major highways, areas of concentration such as recreational facilities, special designations such as scenic byways or national recreation/historic trails and cultural sites. Views from the Pacific Crest Trail, Holcomb Valley, Castle Rocks and Snow Summit are considered Concern Level 1.
- Level 2 (Moderate) areas are of lesser importance such as state highways, county roads, secondary trails, scenic overlooks, summer home tracts etc. Views from FS Road 3N16 are considered a Concern Level 2.
- Level 3 (Low) refers to low use areas and low volume roads, trails, waterways or recreation facilities. Concern Level 3 views are not included in this analysis.

Distance zones are measured from key viewpoints. As distance between the viewer and the landscape increases, the level of visible landscape detail decreases. Distance zones are divided into three general categories: Foreground (300 feet to 0.5 miles), Middle ground (0.5 to 4 miles), and Background (4 miles to the horizon).

Individual forms are dominant within foreground distances. Texture is largely made up of large branches and visible portions of trunks. People can distinguish small details such as individual shrubs, clumps of wildflowers, and medium-sized animals and birds. This is the case for Viewpoint 5 (Forest Road 3N16) described in Section 3.1.3.3.

At middle ground distances, people can distinguish individual tree forms, small openings in the forest, and small rock outcrops. Form, texture, and color remain dominant, and pattern is important. Texture is made up of repetitive tree forms. A middle ground landscape having steep topography is often the most critical of all distance zones for scenery management, because the viewer is able to see disturbances in context with the overall landscape. This is the case for Viewpoints 1 (PCT) and 4 (Western Holcomb Valley) described in Section 3.1.3.3.

In background views, people can distinguish groves or stands of trees, large openings in the forest, and large rock outcrops. Texture disappears and colors flatten, but large patterns of vegetation or rock are still distinguishable, and landform ridgelines and horizon lines are the dominant visual characteristics. As a result, the landscape is simplified, and disturbances are less noticeable. This is the case for Viewpoints 2 (Castle Rocks) and 3 (Snow Summit Ski Resort) described in Section 3.1.3.3.

There are no developed use areas within the foreground distance (less than 0.5 miles) to the Project Site. Viewpoints 1 and 4 represent travel ways at middle ground distances of 0.5 to 4 miles. Viewpoints 2 and 3 represent use areas with potential background views of the Project (4 miles to horizon). Viewpoint 5 represents a travel way within foreground distances of the Project Area.

### Temporal and Spatial Dimensions

Analysis of visual resources potentially affected by the Project includes both temporal and spatial dimensions. The temporal dimensions are defined by the proposed duration and phases of the mining operation and reclamation. The Project would provide an additional 40 years of operations for the Butterfield Quarry and an additional 20 years for the Sentinel Quarry. The reclamation phase would be very long-term depending upon when the vegetation would approach maturity. Due to the extended timeframe of the Project and the alternatives, the temporal scope of this evaluation was divided into short term (0-20 years) effects and long term (20+ years) effects.

The spatial analysis area is defined as all areas in which visual resources would potentially be affected by the Project and would potentially be visible to the public. The Project would add an additional 94.9 acres to the existing Omya mining operations. Some portions of this area may be seen in the distance or “background” from superior viewing positions approximately 5 – 15 miles away.

### Contrast Analysis

Contrast analysis is another method by which potential project related changes to the landscape are assessed. Contrast analysis can be summarized as the degree to which a project or activity affects scenic quality depends on the visual contrasts created or imposed by a project on the existing valued landscape. These imposed contrasts can be measured by comparing the project’s features with the major features in the existing landscape. Landscape features used to compare the existing landscape with the potentially modified landscape area landscape are forms, colors, textures and lines. In general, the project related landscape changes that repeat the existing features of the landscape or changes that are well integrated with the existing landscape features are considered to be in harmony with their surroundings.

### Project Design Features

As described in Section 2.3.17, the Project has incorporated design features and environmental protection measures that minimize the potential for significant impacts. Table 3.1-2 provides a summary of the key design features considered in the scenery assessment:

**Table 3.1-2 Summary of Scenery Project Design Features**

Scenery	
SCEN-1.	Surface disturbances shall be limited to those areas identified in the Mine Reclamation Plan. Disturbances outside of these areas shall be prohibited.

## 3.1 Aesthetics

Scenery	
SCEN-2.	Backfill eastern half of the Butterfield Quarry and portions of the Sentinel Quarry, as feasible.
SCEN-3.	Waste rock shall be deposited into waste rock stockpiles within the quarry footprint to reduce the area of disturbance and visual impact outside of the quarry and to reduce internal slopes and aid in revegetation.
SCEN-4.	Placement of darker materials, as available, on outside of highly visible slopes.
SCEN-5.	Approved color staining methods should be used on highly visible slopes that are not susceptible to raveling to reduce color contrast.
SCEN-6.	Locate replacement crusher or a new mobile crusher system out of viewshed.
SCEN-7.	Reclamation and revegetation shall be implemented per the approved Reclamation Plan on completed benches concurrent with mining. As areas become available, implement concurrent reclamation/revegetation of completed quarries and overburden stockpiles to reduce visual impacts through backfilling, re-contouring and slope reduction, growth media and habitat log placement, revegetation with native plant species, and colorization as applicable.
SCEN-8.	MDAQMD dust controls shall be implemented to reduce visible dust plumes.

### 3.1.3.2 Significance Criteria

The significance thresholds for evaluating potential visual impacts associated with the Project were developed from CEQA Guidelines Environmental Checklist, Appendix G, the Forest Service SMS and the County General Plan.

Per the CEQA Checklist Appendix G, the Project would have a significant visual impact if it would:

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

The Forest Service identifies impacts to scenic resources depending on:

1. The ability of the Project to meet the SIOs.
2. The ability of the Project to meet the Forest Service Scenic Values requirements which state “*Operator shall, to the extent possible, harmonize operations with scenic values through such measures as the design and location of operating facilities, including roads and other means of access, vegetative screening of operations, and construction of structures and improvements which blend with the landscape.*” (36 CFR 228.8.8(d))

3. The ability of the Project to meet reclamation requirements for scenic resources during implementation and also during final reclamation including reshaping and revegetation of disturbed areas, where reasonably possible (36 CFR 228.8(g)(4)).

The County of San Bernardino's General Plan requires that a project be compatible with the existing topography and scenic vistas and that the natural vegetation is protected. These requirements are addressed by the significance threshold described above.

### 3.1.3.3 Impacts and Mitigation Measures

#### Impact Analysis

Table 3.1-3 below is a summary of the five viewpoints evaluated for potential visual resource impacts from the Project and alternatives. These key viewpoints were selected because they are representative views from the identified travel ways and use areas from within SBNF lands. A viewpoint was not selected in the Lucerne Valley because the Project Site is not visible from Lucerne Valley as discussed in Section 3.1.1.2 – Local Setting. Figure 3.1.3 provides the overall viewshed that was used in this analysis and the locations of the five viewpoints. Appendix A of the Scenery Report (which is located in Appendix J of the Draft EIR/EIS) includes the SMS viewpoint inventory and analysis summary of five selected viewpoints.

**Table 3.1-3 Viewpoint Locations**

View point	Travel Ways and Use Areas	Type	Distance Zone	Visibility	Concern Level
1	Pacific Crest Trail (0.25 miles east of FS Road 2N09 (Polique Canyon Road))	Travel Way	Middleground (3.75 miles southeast of site)	Open to screened by ridges and trees	1 High
2	Castle Rocks (0.5 miles south of SR 18 and 0.75 miles south of Big Bear Lake)	Use Area	Background (7 miles south of site)	Open to partially screened by trees	1 High
3	Snow Summit Ski Resort at top of Chair 1 near View Haus (1.5 miles south of SR 18 and 2 miles south of Big Bear Lake)	Use Area	Background (8.25 miles southeast of site)	Open to partially screened by ridges and trees	1 High
4	Delamar Mountain Road (FS Road 3N12) 0.5 miles south of FS Road 3N16	Travel Way	Middleground (2 miles south of site)	Screened by ridges and trees	1 High
5	FS Road 3N16 (approximately 550 feet south of proposed B5 Pad while traveling north or west)	Travel Way	Foreground (300 to 1,200 feet south of proposed B5 Pad)	Partially screened by ridges and trees	2 Moderate

Potential change in scenic integrity was assessed and impacts to scenic resources were analyzed from the key viewpoints. Table 3.1-4 identifies the potential for change in the Scenic Integrity of the existing

### 3.1 Aesthetics

landscape character as they relate to the Project and three alternatives. As discussed, the Project Area was formally designated as having a SIO of High; however, according to the SBNF (Anita Bueno), the existing/baseline conditions are more consistent with a SIO ranging from Low to High, as shown on Table 3.1-4. To address this inconsistency, there is a need for a site-specific amendment to the LMP. Therefore, the Project also includes a Project-specific LMP amendment to modify the SIOs in the Project Area. The environmental effects of the proposed amendment on the pertinent resources include those effects on aesthetics as a part of § 219.10 – Multiple use Planning Regulation Section, Part (a) – Integrated Resource Management for Multiple Use, and Subpart (1) – Aesthetic Values. The following section of the analysis will set the context for the proposed amendment to the LMP as it relates to the substantive requirements of 36 CFR § 219.8 – Sustainability through § 219.11 – Timber Requirements Based on National Forest Management Act (NFMA).

**Need for Change:** This Project-specific evaluation recognizes that the existing scenery impacts from historical and ongoing mining activities in the Project Area makes the landscape character inconsistent with the coarse-scale overview SIO designation of High. The existing Project Area currently has baseline conditions that are more consistent with SIO levels ranging from Low to High, and a plan amendment is being considered to address this inconsistency.

Therefore, the Project proposes a site-specific forest plan amendment to change the SIO designation from High to Low for those areas affected in the Butterfield-Sentinel Quarry Project Area (see Figure 3.1.2). The scope of this amendment is narrow in terms of the existing SIO levels since they are currently inaccurate, and below the existing designated and desired SIO. Therefore, the proposed change is not significant for all Proposed Action alternatives.

**Proposed Amendment:** Change the SIO designation from High to Low for those areas in the Butterfield-Sentinel Quarry Project Area. This analysis includes substantive requirements that are related to the amendment, the rationale as to how and why they are related, and the predicted effects of the amendment on those substantive requirements.

Under § 219.8 – Sustainability, related to Social and Economical Sustainability:

1) Social, cultural, and economic conditions:

As described in Section 3.1 – Aesthetics, Table 3.1-4 provides a summary the existing SIO levels currently identified in the Forest Service LMP, and the potential change to these existing levels as a result of the Project. Upon complete implementation of the Project (mining operations and reclamation), SIO levels would either remain at existing levels or, such as in the case of Viewpoint 1, would improve from the existing level of Low to Moderate (a beneficial impact). Whether the Project is implemented or not would not change the fact that the areas do not currently meet the LMP identified SIO level of High. The Project would be in conformance to and consistent with the Forest Service existing SIOs and will therefore have a less than significant impact.

The Project-specific amendment would not adversely impact the plan area's overall contribution to social, cultural, and economic conditions related to scenic resources. The change in scenic integrity would not affect those activities (or their outputs and values) that contribute to the economy and that do not depend on scenic quality, such as mineral development, oil and gas development, gathering of special forest products, or timber harvest. The amendment as it relates to the Project's purpose and need and Proposed Action supports this requirement.

2) Sustainable Recreation:

The Project-specific amendment would not adversely impact the plan area's overall contribution to sustainable recreation. There are no anticipated effects on recreational use (hunting, fishing, and hiking) as a result of reduced scenic integrity. Effects to the values perceived by users would be localized from specific viewpoints in the study area. Given the extent of the impacts, current year-round recreational opportunities would continue to be sustainable forest-wide, and the amendment would not prevent scenic resources from complimenting the recreation settings and experiences.

3) Multiple uses that contribute to local, regional, and national economies in a sustainable manner:

The Project-specific amendment would not adversely impact the plan area's overall contribution to the multiple uses. The effects on scenic integrity would not affect multiple uses such as range, timber, watershed, and wildlife and fish. Recreational use might decrease slightly if users sought out more natural settings, but given the small area affected relative to the area mapped with a Low to High SIO, forest-wide, the scenic resources would continue to compliment the recreation settings and experiences across broad areas of the forest.

4) Opportunities to connect people with nature:

The Project-specific amendment would not adversely impact the plan area's overall contribution to the opportunities to connect people with nature. Although the change in scenic integrity could diminish the connection between people and nature on a localized scale given the small area affected relative to the area mapped with a Low to High SIO, overall forest-wide, the role that the forest plays in connecting people to nature would not be affected. Scenic resources would continue to compliment the recreation settings and experiences across broad areas of the forest.

Under § 219.10 – Multiple Use, related to integrated resource management for multiple use:

1) Aesthetic values, air quality, cultural and heritage resources, ecosystem services, fish and wildlife species, forage, geologic features, grazing and rangelands, habitat and habitat connectivity, recreation settings and opportunities, riparian areas, scenery, soil, surface and subsurface water quality, timber, trails, vegetation, viewsheds, wilderness, and other relevant resources and uses:

As described through the analysis and in Table 3.1-4, existing SIO levels and the potential change to these existing levels as a result of the Project are summarized. Upon complete implementation

## 3.1 Aesthetics

of the Project (mining operations and reclamation), SIO levels would either remain at existing levels or, in the case of Viewpoint 1, would improve from the existing level of Low to Moderate (a beneficial impact). Whether the Project is implemented or not would not change the fact that the areas do not currently meet the LMP identified SIO level of High. The Project would be in conformance to and consistent with the Forest Service existing SIOs and will therefore have a less than significant impact.

The Project-specific amendment would not adversely impact the plan area's overall contribution to social, cultural, and economic conditions related to scenic resources. The change in scenic integrity would not affect those activities (or their outputs and values) that contribute to the economy and that do not depend on scenic quality, such as mineral development, oil and gas development, gathering of special forest products, or timber harvest.

## 2) Renewable and nonrenewable energy and mineral resources:

The Project purpose and need and Proposed Action supports this requirement.

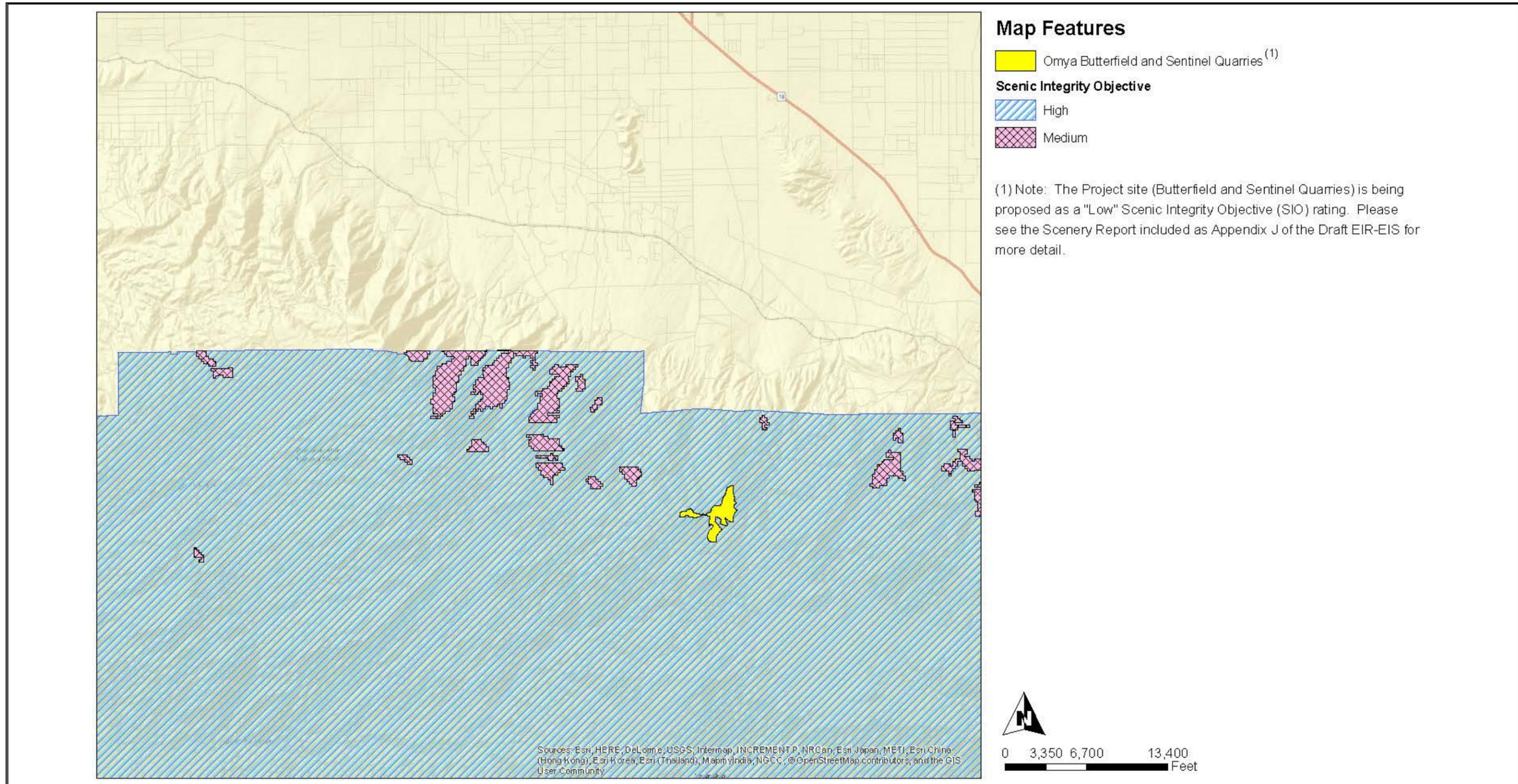
In summary, this amendment would not affect the relationship of the LMP to any of the listed requirements or to any other requirement of the planning regulations. This analysis documents that the amendment conforms with the substantive requirements of the planning regulations including § 219.8 – Sustainability, § 219.9 – Diversity of Plant and Animal Communities, § 219.10 – Multiple Use, and § 219.11 – Timber Requirements Based on NFMA.

**Table 3.1-4 Potential for Change in Scenic Integrity Level**

View-point	Visibility	Scenic Integrity Level	Existing Scenic Integrity Level	Projected Scenic Integrity Level				
				Alt. 1: No Action & Alt. 3: Butterfield Quarry Expansion Only		Alt. 2: Proposed Action & Alt. 4: Mixed Production		
				0 – 20 Years	20 - 40+ Years with Reclamation	0 – 20 Years	20 - 40 Years	40+ Years with Reclamation
1	Mg	H	L	L	M	L	L	M
2	Bg	H	H	H	H	H	H	H
3	Bg	H	M	M	M	M	M	M
4	Mg	H	H	H	H	H	H	H
5	Fg	H	M	M	M	M	L	M

Bg – Background; Mg – Middleground; Fg – Foreground

H – High; M – Medium; L – Low



Note: The existing Scenic Integrity Objective (SIO) for the Project site, shown outlined in yellow above, is currently designated High. However, as discussed above, the Project specific evaluation recognizes that the existing scenery impacts from historical and ongoing mining activities in the Project Area makes the landscape character inconsistent with the coarse-scale overview SIO designation of High. Therefore, the Project proposes a site-specific LMP amendment to change the SIO designation from High to Low for those areas affected in the Butterfield-Sentinel Quarry Project Area, as shown in the figure above.

Source: Sespe Consulting, Inc.

**Figure 3.1.2 Existing Scenic Integrity Objectives (SIOs)**

THIS PAGE IS INTENTIONALLY BLANK



THIS PAGE IS INTENTIONALLY BLANK

The simulations provided in Figure 3.1.4 through Figure 3.1.8 include the existing conditions photographs and simulations of the Project at the end of the active mining with approximately 20 years of reclamation and revegetation.

When compared against the existing natural landscape character, the overburden/waste rock stockpiles and the quarry benching associated with the Project would result in additional contrast in color. The color difference from the newly exposed limestone rock slopes and overburden and the existing darker undisturbed soils is the main contrasting element from background and middle ground views, varying over time in intensity due to reclamation, atmospheric conditions, natural weathering, shadowing, clouds, and snowfall. The quarry benching would also create an element that deviates from the form, line, and texture of the natural appearing landscape. With concurrent reclamation and revegetation, and natural weathering, the lighter color of newly cut slopes would darken over time, as depicted in the simulations, reducing the color contrast and visibility of the cut slopes.

The overburden and waste rock would be used as backfill within the quarries, as discussed in the Reclamation Plan. The Project does not plan to develop any additional waste rock stockpiles besides expansion of the B5 Pad. This would limit impacted areas to the quarry and minimize potential impacts to scenery from additional overburden and waste rock stockpiles.

Haul trucks and mining equipment generally have higher contrast in form, line, texture, and color because of the increased reflectivity, brighter colors, and angled features compared to the natural landscape. Mining equipment may be seen along the upper north bench at the Butterfield Quarry, along the connecting haul road, on the B5 Pad and within portions of the Sentinel.

The potential changes to scenic integrity from each key viewpoint are summarized below. The Viewpoint Inventory and Analysis Summary worksheets are included in Scenery Report (Appendix J).

#### ***Viewpoint 1 - Pacific Crest Trail***

The Project Site is located approximately 3.75 miles to the northwest as viewed from the Pacific Crest Trail just east of Poligue Canyon Road (FS Road 2N09). This is considered a middle ground landscape. Middle ground views of steep slopes are often the most critical of all distance zones for scenery management because the viewer is able to see disturbances in context with the overall landscape. Because of this combined with the Pacific Crest Trail being a Federal National Scenic Trail, hikers using the Pacific Crest Trail have high expectations of scenery.

The viewshed from the trail is occasionally obscured by rock outcrops and vegetation; however, open views of the Project Area are present as one hikes along the trail. Because the views of the Project Area occur while hiking at slow speeds (~3 mph) they are of long duration, as opposed to views while traveling in a vehicle on a road or highway. Existing views of the landscape appear moderately altered by recent fire and by current and past mining activity; therefore, the existing scenic integrity for the area does not meet the SBNF SIO of High. Because these disturbances to the natural landscape character tend to

### 3.1 Aesthetics

dominate the view, the Forest Service considers the existing scenic integrity as viewed from the Pacific Crest Trail to be consistent with a level of Low.

Figure 3.1.4 shows a panorama view of the existing conditions of the site. It is dominated by pine forests in the foreground to the distant ridges. Holcomb Valley is observed as a grassy clearing on the right or east side of the photograph and the 2007 burn area is evident on the ridges on the left or west side of the photograph. The existing Sentinel and Butterfield Quarries are seen in the center of the viewshed on the distant ridgeline as light colored disturbances within the darker forest creating distinct contrasts in color, line and form.

Figure 3.1.4 also provides a simulation of the Project at build-out with 20 years of reclamation. This shows the expansion of the Butterfield Quarry to the west, expansion of the B5 Pad to the south of the site, and the expansion south of the Sentinel Quarry. The proposed Butterfield Quarry is seen as a rather narrow line depicting the visible northern quarry wall. The remainder of the quarry would not be visible due to the high southern quarry rim and an intervening ridge.

The B5 Pad and its connection to the east and north with the expanded Sentinel Quarry create an elongated disturbance area particularly on the southeast of the ridgeline. Impacts to scenery would incrementally increase as the Project is implemented. The Project design features and required concurrent and final reclamation include the roughening of quarry walls, depositing of darker rock on the lighter overburden stockpiles, colorization on rock slopes where raveling is not expected, and revegetation. These activities as well as natural darkening of the rock due to weathering have been included in the simulation. Therefore, the color and line contrasts of the site would continue to decrease with time.

The past and approved mining operations have already created disturbances to the landscape character from this viewpoint. The Project, while adding to the disturbances along the ridgeline, would not substantially decrease the scenic integrity level from existing conditions, staying Low throughout active mining phase of Project implementation. However, the scenic integrity would improve to Moderate following reclamation. The Project would not change the fact that the area currently does not meet the identified SIO of High.



Existing Conditions: view from 3.5 miles looking northwest across Holcomb Valley from the Pacific Crest Trail (PCT) toward the existing Project Site.  
 Project Buildout with Reclamation: view looking northwest from PCT at Project buildout with approximately 20 years of concurrent and final reclamation in place.

Source: Lilburn

**Figure 3.1.4 Viewpoint 1 – Project from the Pacific Crest Trail**

THIS PAGE IS INTENTIONALLY BLANK

***Viewpoint 2 – Castle Rocks***

This viewpoint is a popular forest trail and rock climbing area on the west end of Big Bear Lake. It is known for its beautiful views of Big Bear Lake and its distinct rock formations. The Project Site is located approximately 7 miles north on the distant ridgeline, making it part of a background landscape.

Figure 3.1.5 shows the existing conditions of the site through a foreground and middle ground of pine trees and rock formations. The dominant views from Castle Rocks are of Big Bear Lake. Given the distance to the Project, disturbances from the past and existing mining are seen as a slight color contrast in a very small portion in the distant background of the overall scene. These disturbances do not alter the existing overall High scenic integrity of this viewshed.

Figure 3.1.5 also provides a simulation at Project build-out with 20 years of reclamation. It shows the expansion of the quarry to the west and the additional B5 Pad. The exposed upper slope areas and the adjacent overburden areas would darken slightly from reclamation and weathering. This would decrease the contrast of the site. The Sentinel Quarry area would be blocked from view due to the intervening ridges. The proposed Butterfield Quarry expansion would be seen as a narrow line depicting the visible northern quarry wall. Due to the distance to the site, no specific features such as quarry walls or equipment would be visible, only a slightly larger area of disturbance and an increase in the existing color contrast. In background views such as this one, the landscape is simplified and disturbances are less noticeable. The remainder of the quarry would not be visible due to the high southern quarry rim and the fact that most of the quarry is behind and below the south rim. Snow cover in winter would further reduce the high color contrast. Disturbances to the landscape character would exist but would not be immediately evident to casual observers. The scenic integrity from this viewpoint during implementation of the mining phases and following reclamation would remain High as the slight increase in contrast on the distant ridge would not adversely affect the overall scenic integrity. This would meet the designated SIO of High.

***Viewpoint 3 – Top of Snow Summit Ski Resort***

This viewpoint is at the top of the Snow Summit ski area near Chairlift 1. The chairlift is used for skiing during winter and sight-seeing, mountain biking, and hiking during the summer. The Project Site is located approximately eight miles northwest on the distant ridgeline making it part of a background landscape. It can be seen through a foreground and middle ground of pine forests; however, the dominant views from the chairlift are of Big Bear Lake, portions of the surrounding developed areas of the City of Big Bear Lake, and intervening forested ridges on the north side of the lake. The existing scenic integrity for the area does not meet the SBNF SIO of High. Due to slight but not dominant disturbances evident from the past and existing mines, the area is considered to have an existing SIO of Moderate.

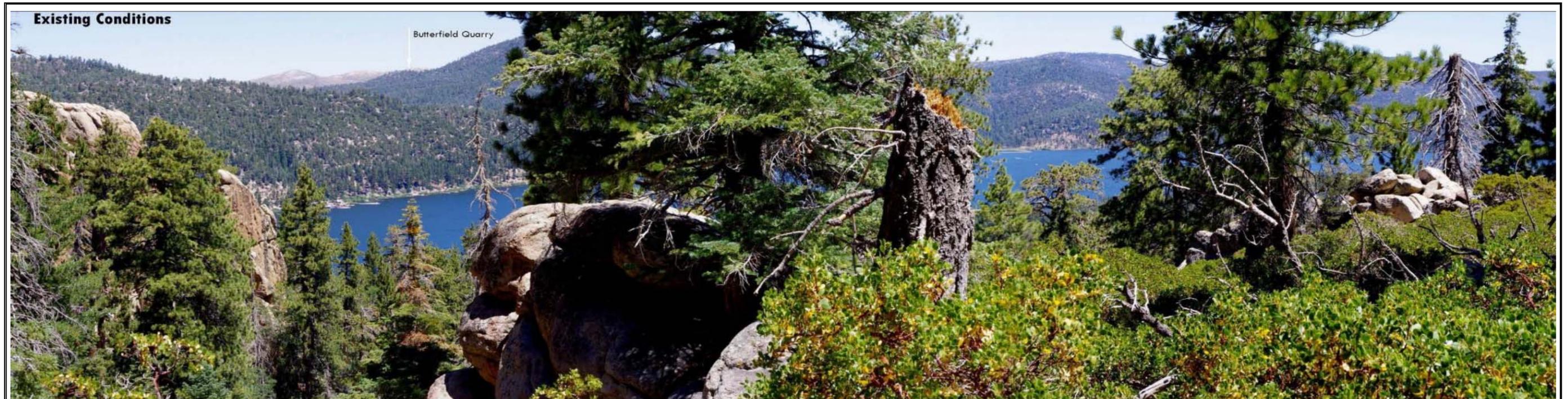
Figure 3.1.6 shows the existing conditions. It is a panorama view dominated by dense pine forests in the foreground and background and Big Bear Lake in the middle ground. Note that views slightly to the east of this photograph show the commercial development along Big Bear Lake Boulevard in the eastern part

### 3.1 Aesthetics

of the City. The existing Sentinel and Butterfield quarries are seen in the center of the viewshed on the distant ridgeline as light colored disturbances within the darker forest creating a distinct color contrast. Foreground views of the chairlift add to disturbances by introducing unnatural lines and forms.

Figure 3.1.6 also provides a simulation of the Project at build-out with 20 years of reclamation. It shows the expansion of the Butterfield Quarry to the west, the B5 Pad to the south, and the expansion of the Sentinel Quarry. The proposed Butterfield Quarry is seen as a rather narrow line depicting the visible northern quarry wall. As discussed above, the remainder of this quarry would not be visible due to the high southern quarry rim and the fact that most of the quarry is screened by the south rim. The B5 Pad, while prominent from Viewpoint 1, is substantially hidden from view by an intervening ridge. The Sentinel Quarry is aligned somewhat perpendicular from this viewpoint and is seen as an elongated disturbance expanding to its southwest.

In background views, people can distinguish large openings in the forest and high contrast elements in the landscape, although the overall landscape is simplified and disturbances become less noticeable. Large patterns of vegetation, rock, and in this case, calcium carbonate soils, are still evident, but texture disappears, contrast decreases and colors flatten. The landscape would continue to appear slightly altered by disturbances that would be evident to the casual observer, although the color contrast would be less noticeable in winter with occasional snow cover. These disturbances would not be dominant to the landscape character due to the background viewing distance. Although the amount of disturbance would incrementally increase during the mining phases of the Project implementation, the scenic integrity of this viewpoint at Project build-out would remain Moderate. The Project would not change the fact that the area currently does not meet the identified SIO of High.



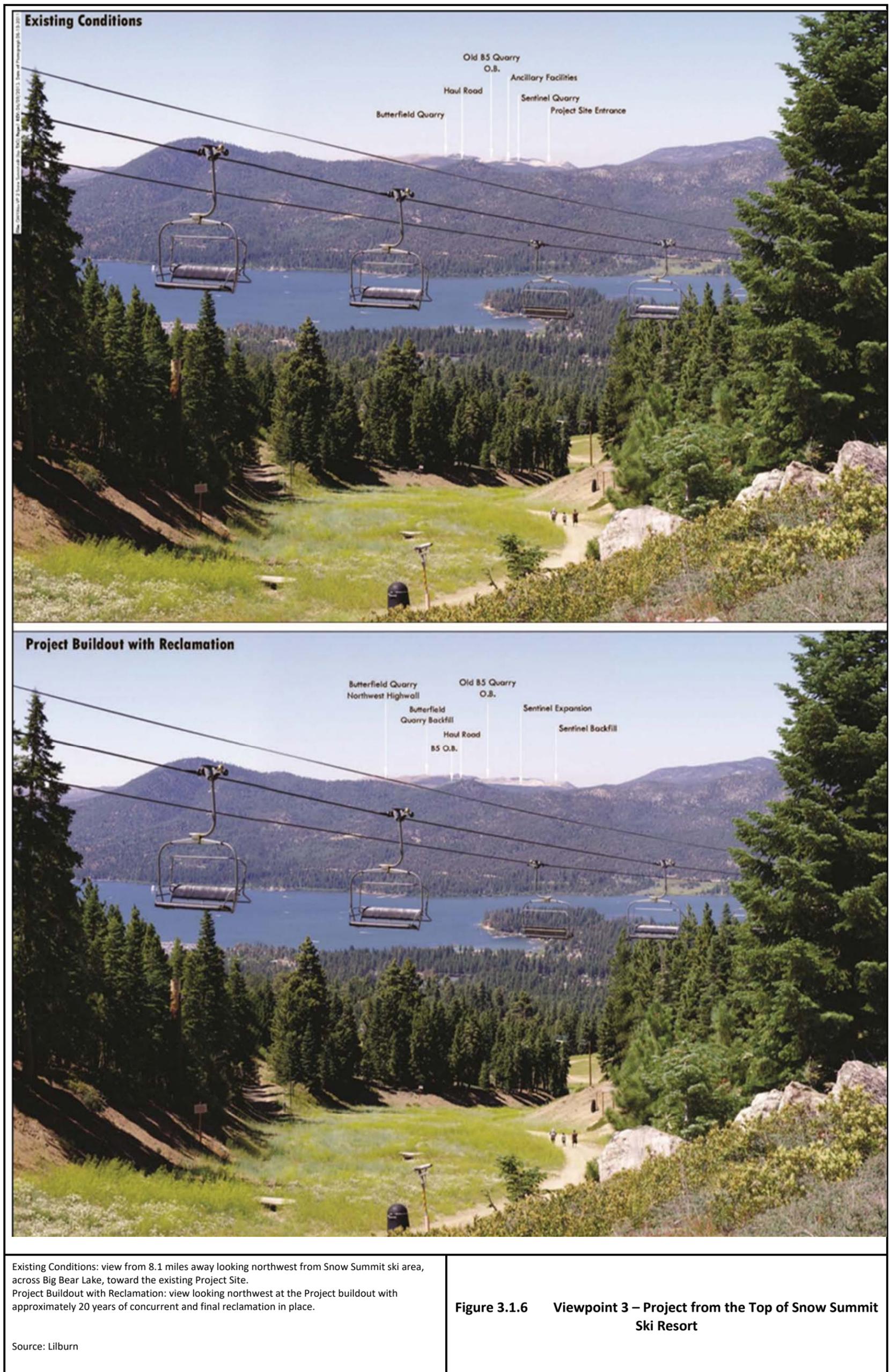
Existing Conditions: view from 6.8 miles looking north from Castle Rocks toward the existing Project Site.  
 Project Buildout with Reclamation: view looking from Castle Rocks toward the Project buildout with approximately 20 years of concurrent and final reclamation in place.

NOTE: All other Project facilities are hidden by the ridgeline to the east.

Source: Lilburn

**Figure 3.1.5 Viewpoint 2 –Project from Castle Rocks**

THIS PAGE IS INTENTIONALLY BLANK



**Figure 3.1.6 Viewpoint 3 – Project from the Top of Snow Summit Ski Resort**

THIS PAGE IS INTENTIONALLY BLANK

***Viewpoint 4 - Western Holcomb Valley on FS Road 3N12 just south of FS Road 3N16***

The Project Area is located approximately 2 miles northwest from this viewpoint in western Holcomb Valley on Delamar Mountain Road (FS Road 3N12) just south of Pine Flat Road (FS Road 3N16). The existing quarries and the Project would not be visible due to the intervening ridges and pine forest, therefore no simulations were prepared. The public accessed area of Holcomb Valley including FS Road 3N16, the Holcomb Valley Campground, and most historical areas further east, would not be able to see the existing and proposed mine expansion due to their location along the north side of the valley which is screened by ridges and forest areas. The existing scenic integrity for the area is High and would remain High, meeting the designated SIO, as the site would not be visible from publicly used areas within the Holcomb Valley.

***Viewpoint 5 – Forest Service Road 3N16***

FS Road 3N16 is a popular access route from Holcomb Valley to Big Pines Flat for recreation and other multiple user groups. The road currently passes approximately 1,500 feet south of the existing B5 Pad development and approximately 1,000 feet from the approved B5 Pad limit. Please refer to Figure 1-2 to see the location of the road in relation to the B5 Pad. Viewpoint 5 was located approximately 250 feet to the south on the road looking directly north at the proposed pad expansion. Note that the black dashed line on Figure 1-2 is the currently approved limit of the B5 Pad. The Project would develop the B5 Pad to within 300 feet of the road.

Figure 3.1.8 shows the existing conditions of the two-lane gravel road within a pine forest. The existing B5 Pad or other quarry areas are not currently visible to the north. East of the Project Site while traveling north and west on the road, views are generally of pine covered ridges that limit views past foreground distances. West of the Project Site while traveling east and south on the road, the area is completely scarred from past fires. The intervening ridges block most views of the existing and proposed mine area.

The existing scenic integrity level for the area is Moderate due to slight but not dominant alteration evident from the existing Claudia-Cloudy Quarries, the past fire impacts, and the road development itself.

Figure 3.1.8 also provides a simulation of the Project at build-out with 20 years of reclamation. It shows the expansion of the B5 Pad to the south within approximately 550 feet of the toe of the B5 Pad or 300 feet from the road where it turns east to west. Views of the Project would occur sequentially while driving at moderate speeds along the gravel road.

The nature of sequential viewing from a moving vehicle is that views are generally of short duration and occur upon approach to the site from either direction. At the closest point of the road to the B5 Pad, one's focus would generally not be directly at the B5 Pad area, but on views ahead or on the road itself. Views of the Project would be foreground views focused on the southern face of the B5 Pad due to the viewpoint's lower elevation and close proximity. The other portions of the Project would not be visible from this site due to screening by intervening ridges and vegetation. Note that the simulation of the B5

---

### 3.1 Aesthetics

Pad slope through over 550 feet of trees, ridges, and shadows was prepared in a conservative manner in order to allow the simulated view to show the slope. Actual vegetation could potentially be more dense than what is shown in the simulation, further reducing the view of the B5 Pad.

Individual forms are dominant within foreground distances. Texture is largely made up of large branches and visible portions of trunks. People can distinguish small details such as individual shrubs, clumps of wildflowers, and medium-sized animals and birds. Ridges and trees would partially screen the rocky, light-colored slope of the B5 Pad, but it would be intermittently visible through the trees and breaks in the forest and over the top of shorter tree areas. The amount of disturbance to the landscape character would increase during the mining phases of the Project, reducing the scenic integrity to Low. This would be slightly alleviated by the type of viewing, namely, sequential, short-duration views while travelling at moderate speeds.

Reclamation of the overburden slopes would reduce color contrast over time, but the form and rocky texture would remain visible through the trees. The landscape would continue to appear slightly altered by disturbances that would be evident to the casual observer. However, with reclamation, these disturbances would diminish and would not be dominant to the landscape character due to the nature of sequential viewing along a road and the speed at which the viewer is moving. Following reclamation, the scenic integrity of this viewpoint would return to the existing level of Moderate. The Project would not change the fact that the area currently does not meet the identified SIO of High.



Existing Conditions: view from western Holcomb Valley looking north from 2 miles south of the Existing Project Site. Existing Project Site and Project buildout not visible due to intervening ridges and vegetation.

Source: Lilburn

**Figure 3.1.7 Viewpoint 4 – Project from Western Holcomb Valley: Existing and Future**

THIS PAGE IS INTENTIONALLY BLANK



Existing Conditions: view looking northwest from Forest Service Road 3N16 toward the existing Project Site from approximately 1 mile northwest of Holcomb Valley.

Project Buildout with Reclamation: view looking northwest from Forest Service Road 3N16 at the Project buildout with approximately 20 years of concurrent and final reclamation in place. B5 Pad (overburden) is visible in the background.

Source: Lilburn

**Figure 3.1.8 Viewpoint 5 – Project from Forest Service Road 3N16**

THIS PAGE IS INTENTIONALLY BLANK

## Indirect Effects

Indirect effects are from on-site activities other than the direct alteration of the landform and contrast. For mines, the most common indirect effect is visible dust plumes. Implementation of the MDAQMD rules and regulations would minimize the creation of visible dust from the mining operation. The distance from most viewing areas would further reduce the likelihood of visual impacts from dust. Dust control measures would include water spraying of haul roads, active mining areas, waste rock stockpiles and the use of dust suppressants (e.g., magnesium chloride). In addition, other requirements to comply with applicable MDAQMD Rules would be implemented. Therefore, the Project would have negligible effects to scenic resources from dust creation.

### 3.1.3.4 Impacts and Mitigation Measures

#### Impact Analysis

The impact analysis for each of the following impact statements below has been based on the results of the Scenery Report, discussions with the Forest Service, the methodology described in Section 3.1.3.1 and the impact analysis discussed in Section 3.1.3.3.

#### Project Impacts

**Impact A-1: The Proposed Project may have a substantial adverse effect on a scenic vista. (CEQA Guidelines Threshold Criteria (a); Forest Service Criteria 2).**

Because the scenic vistas and/or views that could be affected by the Project are primarily from within the SBNF (the Project would not be visible from Lucerne Valley, Big Bear or any major populated area, or highways, including the scenic route Highway SR-18), the scenic resource analysis used the Forest Service SMS to evaluate potential impacts. The potential impacts on scenic views are addressed by the SMS criteria evaluated in Impact Statements A-5 and A-6 below.

The Project would be visible from four of the five SBNF viewpoints evaluated in the scenic resources analysis. As discussed in Impact Statements A-5 and A-6, the Project would be in conformance to and consistent with the Forest Service SIOs and scenic values. Therefore, the potential impacts on scenic vistas and/or views associated with the Project would be less than significant.

**Potential Impact:** Less than Significant

**Mitigation Measures:** None required

---

### 3.1 Aesthetics

**Impact A-2: The Proposed Project could substantially change scenic resources, including but not limited to trees, rock outcroppings and historic buildings. (CEQA Guidelines Threshold Criteria (b); Forest Service Criteria 2)**

There are no historic buildings at or near the Project Site. Inherent to mining operations, the Project would result in the removal of some native vegetation (i.e. trees, habitat) and rock during proposed expansions to the existing quarries. These areas would be reclaimed and revegetated in accordance to the approved Reclamation Plan. The Project design features and additional mitigation measure that have been identified as necessary to further reduce the potential impacts on vegetation and habitats to less than significant levels are discussed in Section 3.5 Biological Resources.

Because the scenic resources that could be affected by the Project are primarily within the SBNF (the Project would not be visible from Lucerne Valley, Big Bear or any major populated area, or highways, including the scenic route Highway SR-18), the scenic resource analysis used the Forest Service SMS to evaluate potential impacts. The potential impacts on scenic resources are addressed by the SMS criteria evaluated in Impact Statements A-5 and A-6 below.

The Project would be visible from four of the five SBNF viewpoints evaluated in the scenic resources analysis. As discussed in Impact Statements A-5 and A-6, the Project would be in conformance to, and consistent with, the Forest Service SIOs and scenic values. Therefore, the potential impacts on scenic views associated with the Project would be less than significant.

**Potential Impact:** Less than Significant

**Mitigation Measures:** None required

**Impact A-3: Substantially degrade the existing visual character or quality of the site and its surroundings. (CEQA Guidelines Threshold Criteria (c); Forest Service Criteria 1, 2 and 3)**

Because the Project Area is located primarily within the SBNF (the Project would not be visible from Lucerne Valley, Big Bear or any major populated area, or highways, including the scenic route Highway SR-18), the scenic resource analysis used the Forest Service SMS to evaluate potential impacts. The potential impacts to the existing visual character and quality of the surrounding area are addressed by the SMS criteria evaluated in Impact Statements A-5 and A-6 below.

As discussed in Impact Statements A-5 and A-6, the Project would be in conformance to and consistent with the Forest Service SIOs and scenic values. Therefore, the potential impacts on scenic views associated with the Project would be less than significant.

**Potential Impact:** Less than Significant

**Mitigation Measures:** None required

**Impact A-4: Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area. (CEQA Guidelines Threshold Criteria (d); Forest Service Criteria 2)**

There are no new light sources being proposed. Therefore, the Project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

**Potential Impact:** Less than Significant

**Mitigation Measures:** None required

**Impact A-5: The Proposed Project may not be in conformance to and consistent with the Forest Service Scenic Integrity Objectives. (Forest Service Criteria 1)**

As discussed in Section 3.1.3.1, the Forest Service SMS Scenic Integrity Objectives identified in the LMP for the Project's regional setting has the SIO level as "High". However, the SBNF scenery inventory was developed as a coarse-scale overview with the understanding that it would be refined during project-level scenery analysis. Therefore, this Project specific analysis recognizes that the baseline of existing environmental conditions in the Project Area is inconsistent with the coarse-level overview ranking of a SIO level of High. The potential Project impacts have therefore been compared to the SIO levels that the SBNF consider more appropriate for the existing baseline conditions (Table 3.1-1). The existing levels used for this evaluation, which were discussed and agreed upon with the SBNF for use in this Draft EIR/EIS, are provided in Table 3.1-4. In the meantime, the Forest Service will proceed with the process to amend the SBNF LMP such that the SIQ more appropriately reflects the current conditions.

The Project would be visible from four of the five representative viewpoints evaluated from within the SBNF. Existing SIO levels in the Project Area range from Low to High. Table 3.1-4 provides a summary of existing SIO levels and the potential change to these existing levels as a result of the Project. Upon complete implementation of the Project (mining operations and reclamation), SIO levels would either remain at existing levels or in the case of Viewpoint 1, would improve from the existing level of Low to Moderate (a beneficial impact). Whether the Project is implemented or not would not change the fact that the areas do not currently meet the LMP identified SIO level of High. The Project would be in conformance to and consistent with the Forest Service existing scenic integrity levels and will therefore have a less than significant impact.

**Potential Impact:** Less than Significant

**Mitigation Measures:** None required

**Impact A-6: The Proposed Project may not be in conformance to and consistent with the Forest Service Scenic Values. (Forest Service Criteria 2)**

As discussed in Impact Statement A-5, the Project would not result in a significant adverse change to the baseline of existing scenic viewpoints or viewsheds. The Project would be in conformance to and consistent with the Forest Service Scenic Values and will therefore have a less than significant impact.

---

### 3.1 Aesthetics

**Potential Impact:** Less than Significant

**Mitigation Measures:** None required

**Impact A-7: The Proposed Project may not meet the Forest Service reclamation requirements for scenic resources. (*Forest Service Criteria 3*)**

The Proposed Action (Project) also includes a Project-specific forest plan amendment to reduce the Scenic Integrity Objectives (SIOs) in the Project Area. The current Land Management Plan (LMP) SIOs map identifies the regional setting in which the Project is located as High. However, as discussed in Section 3.1.3.3, the existing and historic landscape character of the region appears to be inconsistent with a SIO ranking of High. Therefore, the Project proposes a site-specific forest plan amendment to change the SIO designation from High to Low for those areas affected in the Butterfield-Sentinel Quarry Project Area (see Figure 3.1.2). The scope of this amendment is narrow in terms of the existing scenic integrity levels since they are currently inaccurate and below the existing designated and desired SIO. The proposed change is not significant for all Proposed Action alternatives. Please see Section 3.1.3.3 for additional detail.

For these reasons, the Project would implement the approved Reclamation Plan which addresses the Forest Service reclamation requirements for scenic resources. Therefore, the Project will have a less than significant impact.

**Potential Impact:** Less than Significant

**Mitigation Measures:** None required

#### 3.1.4 Cumulative Effects

The cumulative impacts analysis for scenic resources includes analysis within the Desert Rim and Big Bear Back Country Places as well as other active or proposed mine operations adjacent to the Project Area. The area of cumulative impacts was bounded in this manner to correspond with the overarching sense of place and valued landscape character descriptions identified in the LMP. Cumulative impacts include past, existing, and reasonably foreseeable future actions (projects). Table 3.1-5 provides a summary of the actions (projects) included in the cumulative analysis for aesthetics. The projects identified in Table 3.1-5 are slightly different from the past, present and future project list provided in Section 3.0). This is because the aesthetics analysis is primarily focused on impacts from other mining operations.

**Table 3.1-5 Existing and Foreseeable Actions and Effects on Cumulative Scenic Integrity - Related to All Alternatives**

<b>Mining Company</b>	<b>Project Location</b>	<b>Description</b>	<b>Status</b>	<b>Cumulative Effects on Scenic Integrity</b>
Specialty Minerals, Inc.	Adjacent to east and 4 miles ENE of Project - West of Marble Canyon on north-facing slopes	Limestone quarries, stockpiles, haul roads, and processing plant.	Adjacent site active; 4 miles ENE Active	Unchanged
Omya California	Claudia and Cloudy Quarries - 1 to 1.5 miles south of Project	Quarries and haul Roads	Closed	Contrasts would decrease with time due to revegetation and weathering
Omya California	North of Ridgeline – Process plant 3.5 miles north of project. White Knob Quarry, 4 miles northwest of Project. Quarry and haul roads on north-facing slopes.	Limestone processing plant, quarry, stockpiles, and haul roads.	Active	Unchanged
Cushenbury Sand and Gravel Quarry	6 miles northeast of the Project Site, west of the junction of SR18 and Camp Rock Rd at lower elevation on alluvial fan in Lucerne Valley.	Sand and gravel mine and processing plant	Active	Unchanged
Crystal Hills Sand and Gravel, Inc.	South of Meridian Rd adjacent to rail line, 3.5 miles NNE of the Project Site at lower elevation on alluvial fan in Lucerne Valley.	Sand and Gravel Mine	Inactive	Unchanged
Hi-Grade Materials	6 miles north of the Project, along Meridian Rd at Azurite Rd at lower elevation on alluvial fan in Lucerne Valley.	Sand and gravel mine and processing plant	Active	Unchanged

## 3.1 Aesthetics

Mining Company	Project Location	Description	Status	Cumulative Effects on Scenic Integrity
Mitsubishi Cement Corporation	5.5 miles northeast and generally at lower elevation than the Project except for proposed South Quarry. Quarries and access roads on north-facing slopes.	Existing East Pit, developing West Pit, proposed South Quarry, cement plant and haul roads	Active and Pending Expansion	Increase

Note that Mitsubishi's proposed South Quarry (5.5 miles east of the Project) is within the SBNF and if approved, it would add to scenery disturbances within the Desert Rim Place. The other limestone quarries are on private land or BLM unpatented claims on the north-facing slopes visible from Lucerne Valley only. The sand and gravel mines are located on the alluvial fans north of the north-facing slopes outside of SBNF lands in Lucerne Valley and are generally much less visible due to their lower elevations.

Most of the mining operations along the north face of the San Bernardino Mountains are active and permitted for many decades into the future. Concurrent reclamation upon completion of benches or phases of mining in the form of revegetation, covering of exposed areas with darker material, erosion control, and rock staining is typically required of most mining operations. Final reclamation would not commence until a specific operation or phase is completed.

The Project would not substantially change the scenic integrity of the area as discussed under each viewpoint above. The Project would not make a cumulatively considerable contribution to the existing scenic resources and the Project's cumulative impact would be less than significant.

Potential changes to the area's landscape character from implementation of the Project are demonstrated together with other existing and approved mining activities in Figure 3.1.4 through Figure 3.1.8. When considered with the other existing and proposed mining activities in the region, the cumulative impacts to scenic integrity would not substantially change and the area's scenic integrity would remain at or better than current baseline levels. Therefore, the overall cumulative impacts are considered to be less than significant. The Project would not make a cumulatively considerable contribution to aesthetics and the Project's cumulative impact is considered to be less than significant.

### 3.1.5 Alternatives

#### Alternative 1 - No Project Alternative

If the No Action Alternative is selected and the Project does not take place, there would be no additional direct, indirect or cumulative effects to scenery resources other than those already identified under the approved plans. Under the currently approved plans, mining activities south of the northern ridgeline

would increase over the next 20 years and be visible from SBNF lands. Due to the distances from high use areas and ongoing reclamation, the existing scenic integrity would remain the same and the overall scenic integrity from SBNF lands would still be considered Low during the 20 years of active mining operations as viewed from the Pacific Crest Trail (Viewpoint 1) and become Moderate following reclamation; Moderate from Viewpoint 3; and High from Viewpoint 2. The Project Site would not be visible from Viewpoints 4 and 5.

Figure 3.1.9 shows the viewshed as seen from the Pacific Crest Trail (Viewpoint 1) of the existing active quarry operations. Figure 3.1.9 also provides a simulation depicting the currently approved mine plan (No Action Alternative) after approximately 20 years of reclamation. The most visible feature is the approved expansion of the B5 Pad.

The existing baseline conditions and scenic integrity from the evaluated viewpoints are not expected to incrementally change with implementation of the No Action Alternative. This Alternative would not change the fact that the existing Project Area does not meet the SBNF designated SIO level of High. In addition, under the No Project Alternative, the Project goals identified in Section 1.5 would not be accomplished.

### **Alternative 3 - Partial Implementation; Butterfield Quarry Expansion Only**

Alternative 3 would allow existing operations to continue as well as implementing the proposed expansion of the Butterfield Quarry. The Sentinel Quarry would only be allowed to continue mining operations under its current approval. There would be no additional extension of the B5 Pad beyond what is currently approved. In this alternative, the Butterfield Quarry would have a shorter duration of 20 years instead of 40 years as proposed in the Project. This alternative would also have a smaller footprint than the Project by approximately 50 acres.

Figure 3.1.10 shows the existing conditions from Viewpoint 1. It depicts views as seen from the Pacific Crest Trail. It shows the viewshed of the existing active Sentinel Quarry, the overburden activities in the old Butterfield 5 Quarry, the B5 Pad and a portion of the Cloudy Quarry. The active Butterfield Quarry is located behind an intervening ridge to the west and is generally not visible.

Figure 3.1.10 also provides a simulation of Alternative 3 at build-out with reclamation. It depicts the approved operations and the expansion of the Butterfield Quarry that would occur under Alternative 3 after approximately 20 years of reclamation.

The Project Site under this Alternative would not be visible from Viewpoints 4 or 5, and would have similar disturbances as the No Project Alternative as seen from Viewpoints 2 and 3. The most visible changes would occur from Viewpoint 1 where the color contrast caused by disturbed soil and the line and form contrasts from the unnatural straight lines of the partial extension of the B5 Pad would be visible. The B5 Pad would extend south from the site by approximately an additional 500 feet from the existing edge. However, the shortened timeframe of this Alternative dictates that final reclamation would begin earlier,

### 3.1 Aesthetics

and disturbances would be reclaimed twenty years sooner than under the Proposed Action. Following reclamation, the disturbances as seen from Viewpoint 1 would continue to be evident to the casual observer, but would not dominate the landscape character, and scenic integrity would increase from Low to Moderate.

Alternative 3 would have minimal additional direct or indirect effects to scenery resources within the SBNF besides those effects previously approved by the Forest Service. Scenic integrity would continue at current levels ranging from Low to High during implementation after reclamation from Moderate to High. This Alternative would not change the fact that the existing area does not meet the SBNF designated SIO level of High.

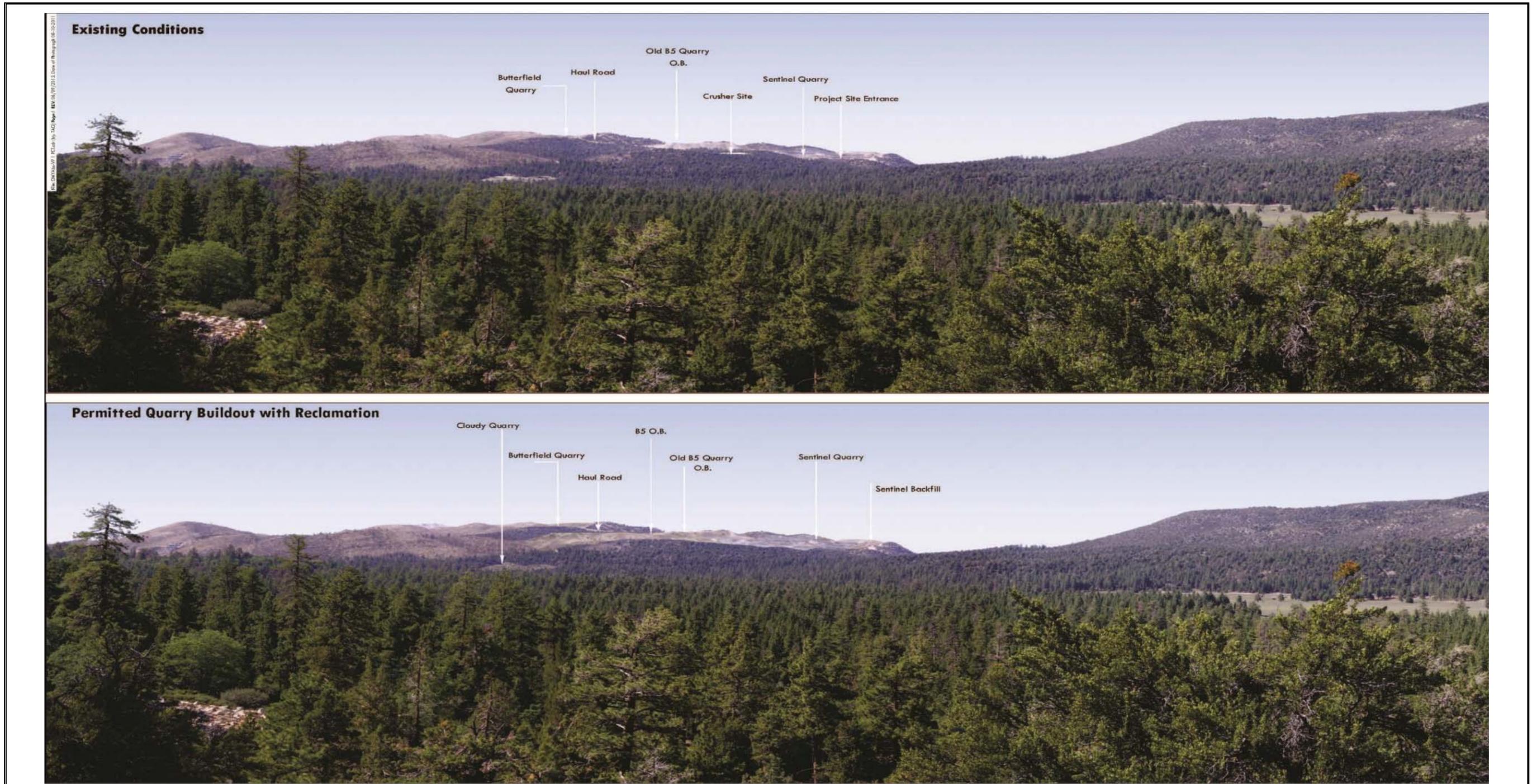
There would be an incremental increase in cumulative effects to the future landscape character of the Desert Rim and Big Bear Back Country Places for Alternative 3, although due to the shortened timeframe of this alternative, the cumulative effects would be less than those under the Project. The existing and approved future mining by Omya including the Butterfield Quarry expansion would continue for an additional twenty years. When considered with the existing on-site mining activities and the distance to sensitive viewpoints, the cumulative effect on scenic integrity would not substantially change from the area's existing levels of scenic integrity. The SIO levels would remain ranging from Low to High.

The existing baseline conditions and scenic integrity is not expected to incrementally change with implementation of this Alternative. However, under the Alternative 3, the Project goals identified in Section 1.5 would not be accomplished.

#### **Alternative 4 - Mixed Production with the White Knob Quarry to Meet Lucerne Valley Processing Plant Capacity**

Historically the limestone ore provided to the Lucerne Valley Processing Plant has been approximately a 60%/40% mix between the Butterfield/Sentinel Quarries and the White Knob Quarry. This alternative would assume that instead of the Butterfield and Sentinel quarries providing 100% (680,000 tons per year) of the ore to the processing plant, a range of more realistic production mixes between the quarries would be evaluated.

Alternative 4 would be mined with the same overall excavation plan and project design features as the Project. Therefore, the potential effects to scenery as a result of implementing this Alternative would be the same as those analyzed under Alternative 2 (the Project).

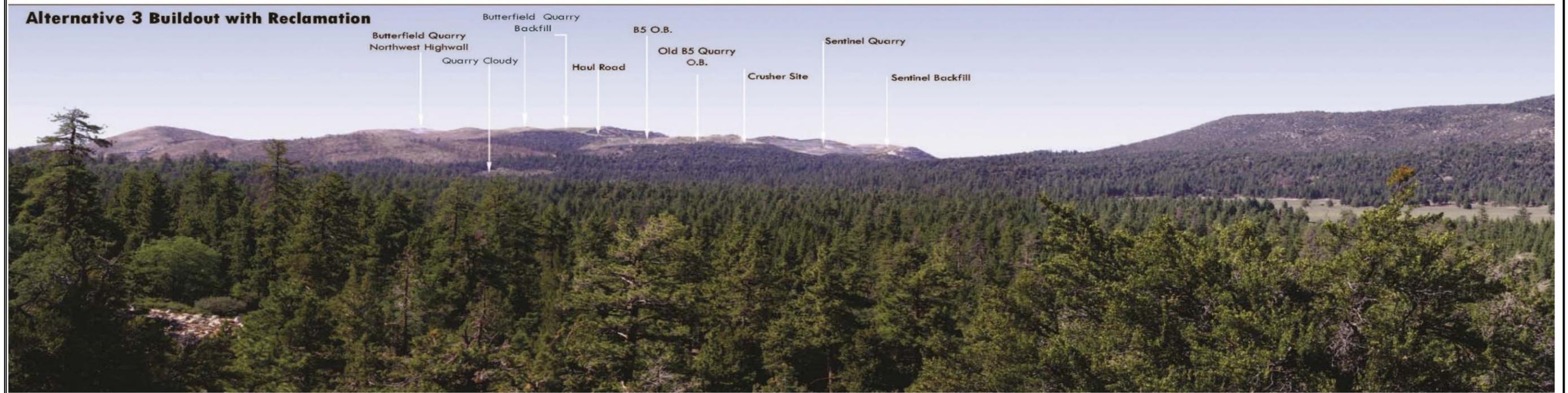
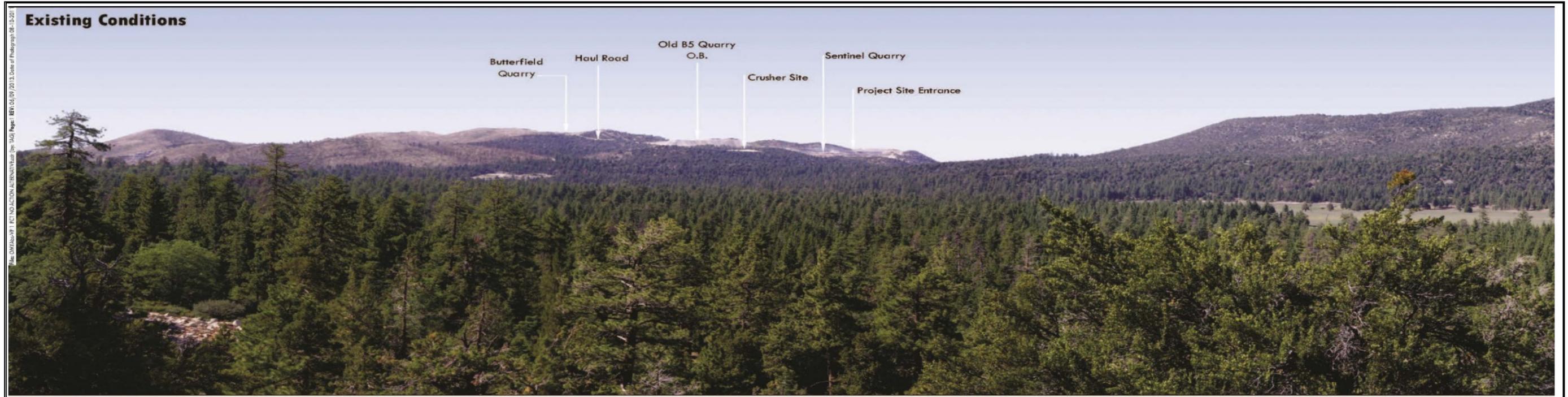


Existing Conditions: view from 3.5 miles looking northwest across Holcomb Valley from the Pacific Crest Trail (PCT) toward the existing Project Site.  
 Existing Quarry Buildout with Reclamation: view looking northwest from PCT at the existing Quarry buildout with reclamation in place.

**Figure 3.1.9 Alternative 1 – No Project (from Viewpoint 1)**

Source: Lilburn

THIS PAGE IS INTENTIONALLY BLANK



Existing Conditions: view from 3.5 miles looking northwest across Holcomb Valley from the Pacific Crest Trail (PCT) toward the existing Project Site.  
 Alternative 3 - Buildout with Reclamation: view looking northwest from PCT at the Existing Quarry buildout with reclamation in place.

Source: Libburn

**Figure 3.1.10 Alternative 3 – Partial Implementation (from Viewpoint 1)**

THIS PAGE IS INTENTIONALLY BLANK

## 3.2 Agriculture & Forestry

The Initial Study and scoping process did not identify any potentially significant impacts to agriculture or forestry resources; therefore, this section only provides a brief discussion on the affected environment and impacts associated with these resources.

### 3.2.1 Affected Environment

#### Agricultural Resources

Neither the topography nor the soils at the Project Site are suitable for agriculture. The California Resources Agency defines Prime Farmland, Unique Farmland or Farmland of Statewide Importance for the San Bernardino County as farmlands which include dryland grains of wheat, barley, oats and dryland pasture. The Project Site does not have any of these characteristics. The Project Site is also not designated as agricultural land use or Williamson Act land.

#### Forestry

The Project is located on the steep northern slopes of the San Bernardino Mountains on approximately 214 acres entirely within public land administered by the USFS. The Project would result in the conversion of approximately 94.9 acres of forest land to non-forest use. However, active mining is a permitted special use in the SBNF and the land is included in the SBNF Land Management Plan and in the CHMS. The SBNF contains 800,000 acres of public land. The combined proposed and currently active mining area constitutes an extremely small fraction of the total public land in the SBNF.

The active mining area is closed to public entry. However, after the mining activities are over and reclamation is completed, the area will be open to recreational uses. Post mining recreational uses of the Project Area may include hiking, back country backpacking, mineral collecting and legal hunting for game animals.

The Project Area south of the existing Sentinel Quarry can be characterized as a pinyon-juniper-mountain mahogany-rabbit brush woodland. The dominant tree species are single leaf pinyon (*Pinus monophylla*), western juniper (*Juniperus occidentalis*), and curl leaf mountain mahogany (*Cercocarpus ledifolius*). Igneous derived (non-carbonate) soils are especially prevalent adjacent to the B5 Pad and white fir (*Abies concolor*) and Jeffrey pine (*Pinus jeffreyi*) are present. Almost the entire area was harvested for timber at some time in the last century, resulting in the overstory canopy cover being generally less than 50%. There is no riparian vegetation onsite.

The Butterfield Quarry area is characterized as a pinyon-juniper-mountain mahogany woodland with thin carbonate soils over the carbonate bedrock. In this area, serviceberry (*Amelanchier utahensis*) and Great basin sagebrush (*Artemisia tridentate*) are common associates. As with the Sentinel Quarry area, almost the entire area was harvested for timber at some time in the last century, resulting in the

### 3.2 Agriculture and Forestry Resources

overstory canopy cover being generally less than 50%. Virtually the entire proposed expansion area was burned in recent fires (Willow Fire and Butler Fire in 2007), and descriptions refer to vegetation and habitat prior to the fires.

The majority of the land in the Project Area is valued in the production of high quality limestone mineral deposits used in the production of various products including pharmaceuticals and cement. These carbonate deposits are also valuable habitat supporting four species of threatened and endangered plants found nowhere else in the world. One of these species, cushberry puncturcebract (formerly known as cushberry oxytheca), has been identified at the Project Site. Carbonate habitats are protected from mining impacts in perpetuity within the carbonate habitat reserves dedicated and managed as described in the CHMS.

#### 3.2.2 Regulatory Framework

Because the Project Site is not located in an area that could feasibly be used for agriculture, regulations relevant to agricultural activities are not discussed. The following provides a discussion of the regulations associated with forestry resources.

##### 3.2.2.1 Federal

###### **General Mining Law of May 10, 1872 (Mining Act)**

The Mining Act conferred a statutory right for claimant to enter upon public lands open to location, stake mining claims in pursuit of locatable minerals, and conduct mining activities in compliance with Federal and State statutes and regulations.

###### **1897 Organic Administration Act**

The 1897 Organic Administration Act grants the Secretary of Agriculture the authority to regulate the occupancy and use of the National Forest System lands. It provides the public with continuing rights to conduct mining activities under general mining laws and in compliance with rules and regulations applicable to National Forest lands. It also recognizes the rights of miners to access National Forest System lands for prospecting, locating and developing mineral resources.

###### **Multiple-Use Mining Act of 1955**

The Multiple-Use Mining Act of 1955 confirms the ability to conduct mining activities on public lands, locate necessary facilities and conduct reasonable and incidental uses to mining on public lands, including National Forest System lands.

**Multiple-Use Sustained-Yield Act of 1960**

The Multiple-Use Sustained-Yield Act of 1960 requires that the National Forest System lands be administered in a manner that includes consideration of relative values of various resources as part of management decisions. Furthermore, it specifies that nothing in the Act be construed to affect the use of mineral resources on National Forest Service lands.

**1970 Mining and Minerals Policy Act**

The 1970 Mining and Minerals Policy Act established the Federal Government's policy for mineral development "to foster and encourage private enterprise in the development of economically sound and stable industries and in the orderly development of domestic resources to help assure satisfaction of industrial, security and environmental needs."

**Forest Service Regulations for Mining (36 CFR 228)**

The Forest Service Regulations for Mining (36 CFR 228s provide direction on the administration of locatable mineral operations on National Forest Service Lands. The regulations direct the Forest Service to prepare the appropriate level of NEPA analysis and documentation when proposed operations may significantly affect surface resources. These regulations do not allow the Forest Service to deny entry or preempt the miner's statutory rights granted under the 1872 Mining Law. The regulation state that an operator is entitled to access in connection with the operation and that access must be approved in writing before use can begin. The regulations also require the Forest Service to develop mitigation measures to minimize adverse impacts on National Forest resources and include requirement for reclamation. 36 CFR 228.8 states that, "operations shall be conducted so as, where feasible, to minimize adverse impacts on National Forest System surface resources".

**Forest Service Manual (FSM) 2800**

The FSM discusses specific responsibilities and considerations for dealing with a Mine Plan of Operations. It states that the Forest Service should minimize or prevent adverse impacts related or incidental to mining by imposing reasonable conditions that do not materially interfere with operations.

**National Forest Management Act (NFMA) of 1976**

The NFMA is the primary statute governing the administration of National Forests and was an amendment to the Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974, which called for the management of renewable resources on National Forest lands. NFMA changed forest planning by obliging the Forest Service to use a systematic and interdisciplinary approach to resource management. It also provided for public involvement in preparing and revising forest plans. It expanded upon the LRMPs outlined in the RPA, and started by requiring the Forest Service to do an inventory of all its lands, followed by a zoning process to see what uses land was best suited for - dubbed the "suitability

### 3.2 Agriculture and Forestry Resources

determination." These plans required alternative land management options to be presented, each of which have potential resource outputs (timber, range, mining, recreation) as well as socio-economic effects on local communities.

#### **San Bernardino National Forest Land Management Plan**

The NFMA requires that land and resource management plans be developed for National Forest System lands which describe the strategic direction at the broad program-level for managing the forest resources. The SBNF Forest Plan is part of the LMP Part 1 Southern California National Forest Vision. The Forest Plans were prepared according to the requirements of the NFMA, NEPA, and other laws and regulations.

The LMP for Southern California was revised in 2006. The purpose of the revised Forest Plan is to articulate the long-term vision and strategic management direction for each southern California national forest and to facilitate the development of management activities that will contribute towards the realization of the national forests' desired conditional. The Forest Plan defines the parameters (limits) for management, but offers the flexibility to adapt decisions to accommodate rapidly changing resource conditions. The Forest Plan makes six fundamental requirements:

1. The establishment of forest-wide multiple-use goals and objectives.
2. Determine the suitability and capability of national forest land for resource production.
3. The identification of, and recommendation to, Congress for areas as wilderness and wild and scenic rivers.
4. The establishment of forest-wide and forest-specific standards.
5. The identification of management area prescriptions.
6. The establishment of monitoring and evaluation requirements for plan implementation.

The Forest Plans are completely strategic. They do not make project level decisions nor do they compel managers to implement specific actions or activities. They do contain design criteria and resource specific standards as well as a listing of relevant statutes, regulations, Executive Orders and Memorandums and other management direction applicable to the Forest Service. Together, these provide overarching management direction for the Southern California revised Land Management Plans.

The revised Forest Plan describes monitoring and evaluation as essential for the success of an adaptive approach to national forest management. Accordingly, SBNF has drafted a Land Management Monitoring Guide. Specific environmental indicators or reference values from the Forest Plan are found in the LMP Monitoring Guide. These include Goal Code 4.1a: Administer mineral and energy resources Development while protecting ecosystem health; and Goal Code SBNF Carbonate Habitat, as well as other monitoring criteria and evaluation tools that are relevant to the Project.

### 3.2.2.2 State

#### Surface Mining and Reclamation Act

In 1975 SMARA was enacted to address the need for a continuing supply of mineral resources and to prevent or minimize the negative impacts of surface mining to public health, property and the environment. SMARA provides a comprehensive surface mining and reclamation policy with the regulation of surface mining operations to assure that adverse environmental impacts are minimized and mined lands are reclaimed to a usable condition. SMARA also encourages the production, conservation, and protection of the State's mineral resources. Public Resources Code Section 2207 provides annual reporting requirements for all mines in the State, under which the State Mining and Geology Board is also granted authority and obligations. SMARA requires that a Plan of Operations and a Reclamation Plan be submitted and approved by the lead agency.

### 3.2.2.3 Local

#### Carbonate Habitat Management Strategy

An intensive collaborative effort led to the development of the CHMS in 2003. The strategy is designed to provide long-term protection for the carbonate endemic plants and also provide for continued mining. Carbonate habitats are protected from mining impacts in perpetuity within the carbonate habitat reserves dedicated and managed as described in the CHMS.

### 3.2.3 Environmental Consequences/Impacts and Mitigation Measures

The evaluation conducted during the preparation of the Initial Study considered the following significance criteria from the CEQA Guidelines Appendix G in order to identify whether or not the Project would present a significant risk to forestry resources:

- a) *Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use?*
- b) *Conflict with existing zoning for agricultural use or a Williamson Act contract?*
- c) *Conflict with existing zoning for, or cause rezoning of, forest land, timberland or timberland zoned Timberland Production?*
- d) *Result in the loss of forest land or conversion of forest land to non-forest use?*
- e) *Involve other changes in the existing environment, which due to their location or nature, could result in conversion of forest land to non-forest use?*

The evaluation concluded that the Project would either have no impact or a less than significant impact associated with the above criteria; therefore, in accordance with CEQA guidelines, further detailed evaluation is not provided in this Draft EIR/EIS. Substantiation for this conclusion is provided in the Initial Study (Appendix B) and is summarized below.

---

### 3.2 Agriculture and Forestry Resources

The Project would not result in the conversion of any farmland. The Project would result in the conversion of forest land to non-forest use; however, mining is a legitimate use National Forest System land. Mining laws and regulations state that all valuable mineral deposits in public domain lands are open to exploration and development. Omya has a statutory right to extract locatable minerals.

The Project must be operated in compliance with numerous laws and regulations, including but not limited to those discussed above in Section 3.2.2. In accordance with the Federal and State requirements and in consultation with both the Forest Service and County, Omya has submitted an Amended Plan of Operations and Reclamation Plan that identifies the mining activities and environmental protection measures that will be implemented. In addition, the mining land use has been included in the SBNF Land Management Plan and in the CHMS. In accordance with the CHMS and in consultation with the Forest Service, Omya will relinquish unpatented claim to the SBNF approximately 375 acres of unpatented claims held within the SBNF which are known to be habitat for carbonate plants.

### **3.3 Air Quality and Greenhouse Gases**

This section describes the existing air quality conditions, applicable regulations and air quality analysis that was performed to determine the short-term, long-term direct, indirect and cumulative air quality impacts associated with the Project. Information in this section is derived from the Air Quality and Greenhouse Gas Impact Assessment report (AQIA) (Sespe Consulting, Inc., 2015). A copy of the AQIA is provided in Appendix E. The CEQA and Federal Conformity Guidelines (MDAQMD, 2011) is the primary guidance document used in assessing Project impacts on air quality. The Federal Land Managers' Air Quality Related Values Work Group (FLAG) Phase I Report – Revised 2010 was considered in assessing potential for impacts on nearby Class I and Class II Wilderness Areas.

The Omya Lucerne Valley mining and reclamation operations consist of Butterfield, Sentinel, White Knob, Cloudy and Claudia Quarries. This air quality analysis is only for the proposed expansions of the Butterfield and Sentinel Quarries. White Knob is an operating quarry that completed a separate CEQA evaluation for proposed expansions. Omya received approval for the White Knob expansions in August 2015. Cloudy and Claudia Quarries are inactive and have either been or are currently being reclaimed. In addition, there is the LVPP that processes the ore produced from the Butterfield, Sentinel and White Knob quarries.

The combined production from all the operating quarries (Butterfield, Sentinel, and White Knob) is limited by the maximum production rate of the LVPP. The Project would allow up to the maximum LVPP production rate of 680,000 tons per year of finished ore to be extracted exclusively from the Butterfield and Sentinel quarries. This would result in no material being quarried at White Knob which is an indirect effect of the Project that necessitates calculation of White Knob emissions in the air quality baseline. Moreover, the available vehicular activity data does not distinguish which units operate in each quarry. Thus, the emissions from vehicles are calculated for the fleet and apportioned to quarries based on throughput amount and to units operating on roads by vehicle miles traveled (VMT).

#### **3.3.1 Affected Environment**

##### **3.3.1.1 Regional Setting**

The Project Area is in San Bernardino County and the Mojave Desert Air Basin (MDAB). The ambient concentrations of air pollutant emissions are determined by the amount of emissions released by pollutant sources and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability and the presence of sunlight. Therefore, the existing air quality conditions in the Project Area and regional setting are determined by such natural factors as topography and meteorology, in addition to the amount of emissions released by existing air pollutant sources.

## 3.3 Air Quality &amp; Greenhouse Gases

**Meteorology and Topography**

The MDAQMD Guidelines (2011) state:

*The Mojave Desert Air Basin (MDAB) is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains which dot the vast terrain rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds in the MDAB are out of the west and southwest. These prevailing winds are due to the proximity of the MDAB to coastal and central regions and the blocking nature of the Sierra Nevada mountains to the north; air masses pushed onshore in southern California by differential heating are channeled through the MDAB. The MDAB is separated from the southern California coastal and central California valley regions by mountains (highest elevation approximately 10,000 feet), whose passes form the main channels for these air masses. The Antelope Valley is bordered in the northwest by the Tehachapi Mountains, separated from the Sierra Nevadas in the north by the Tehachapi Pass (3,800 ft elevation). The Antelope Valley is bordered in the south by the San Gabriel Mountains, bisected by Soledad Canyon (3,300 ft). The Mojave Desert is bordered in the southwest by the San Bernardino Mountains, separated from the San Gabriels by the Cajon Pass (4,200 ft). A lesser channel lies between the San Bernardino Mountains and the Little San Bernardino Mountains (the Morongo Valley). (MDAQMD, 2011).*

*During the summer the MDAB is generally influenced by a Pacific Subtropical High cell that sits off the coast, inhibiting cloud formation and encouraging daytime solar heating. The MDAB is rarely influenced by cold air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse by the time they reach the desert. Most desert moisture arrives from infrequent warm, moist and unstable air masses from the south. The MDAB averages between three and seven inches of precipitation per year (from 16 to 30 days with at least 0.01 inches of precipitation). The MDAB is classified as a dry-hot desert climate (BWh), with portions classified as dry-very hot desert (BWwh), to indicate at least three months have maximum average temperatures over 100.4° F. (MDAQMD, 2011).*

**Ambient Air Quality**

The AQIA contains the airborne pollutant concentration data and number of days exceeding each Ambient Air Quality Standard (AAQS) monitored by MDAQMD.

The closest air monitoring station to the Project is located at the Lucerne Valley Middle School and measures only PM<sub>10</sub>. PM<sub>10</sub> has standards with 24-hour (State and Federal) and annual (state) averaging periods. Maximum concentrations at this station were less than both State and Federal 24-hour standards in four of the last five years with 2013 exceeding both standards due to an exceptional event (e.g., forest fire). 24-hour concentrations were in the range of 30 to 50 µg/m<sup>3</sup> with exception of 2013

which is reported to be  $143 \mu\text{g}/\text{m}^3$ . Annual average concentrations for the last five years were in the range of 14 to  $17 \mu\text{g}/\text{m}^3$ . There was insufficient data available to determine the number of days exceeding the 24-hour standard in three (State) and four (Federal) of the last five years but maximum 24-hour concentrations and the number of measurements made indicate that there were few, if any, days exceeding the  $\text{PM}_{10}$  standards.

The Hesperia-Olive Street monitoring station is the closest location where ozone is monitored. Ozone has standards with 1-hour (State) and 8-hour (State and Federal) averaging periods. Maximum concentrations at this station exceeded the state 1-hour and both 8-hour standards in each of the last five years with 1-hour concentrations ranging from 0.100 to 0.132 ppm and 8-hour concentrations ranging from 0.085 to 0.114 ppm. Ozone concentrations exceeded the state 1-hour standard between 1 and 24 days per year. The State 8-hour standard was exceeded between 35 and 101 days per year and the Federal 8-hour standard was exceeded between 12 and 67 days per year.

The Victorville monitoring station collects a full suite of pollutants and is the closest station to monitor for CO,  $\text{NO}_2$  and  $\text{SO}_2$ . CO has 1-hour and 8-hour standards (State and Federal) while  $\text{NO}_2$  has 1-hour and annual average standards (State and Federal) and  $\text{SO}_2$  has 1-hour, 24-hour (State and Federal), and annual average. There was insufficient data to determine the maximum 1-hour carbon monoxide concentration at any monitoring station in the County. 8-hour carbon monoxide concentrations ranged from 1.51 ppm to 5.17 ppm with insufficient data in 2013 and 2014 to determine the maximum 8-hour concentration. Maximum 1-hour  $\text{NO}_2$  concentrations ranged from 0.050 to 0.065 ppm and annual average  $\text{NO}_2$  concentrations ranged from 0.013 to 0.015 ppm. Neither CO nor  $\text{NO}_2$  exceeded a standard on any day in the last five years which is consistent with the fact that the entire state is in attainment for the two pollutants.

The South Coast Air Quality Management District (SCAQMD) operates a  $\text{PM}_{2.5}$  monitoring station in the City of Big Bear Lake.  $\text{PM}_{2.5}$  has State and Federal 24-hour and annual average standards. Maximum 24-hour concentrations for  $\text{PM}_{2.5}$  ranged from 24.2 to  $36.4 \mu\text{g}/\text{m}^3$  and annual average concentrations ranged from 8.4 to  $9.7 \mu\text{g}/\text{m}^3$ . Three of the five most recent years had insufficient data to produce an annual average value. Resources available reported estimates for the number of days exceeding the 2006  $\text{PM}_{2.5}$  24-hour standard which was updated in 2012. Three of the last five years had insufficient data to determine the number days exceeding the 2006 standard and the two years where data was sufficient to have an estimate were no days in 2011 and 6 days in 2013. The maximum 24-hour concentrations were slightly above the  $35 \mu\text{g}/\text{m}^3$  standard (federal) while the annual average concentration was approximately one-quarter of the maximum day concentration which indicates that most days did not exceed the standard. Annual average concentrations were consistently less than the standards (Federal and State) for years that had data.

### **Ambient Health Risk**

The MDAQMD does not publish health risk estimates for areas within its jurisdiction. The Project is near the boundary of Mojave Desert and South Coast Air Basins. Thus, the SCAQMD Multiple Air Toxics

### 3.3 Air Quality & Greenhouse Gases

Exposure Study (MATES) IV risk maps modeled using the most recent OEHHA new methodology (3/2015), show total cancer risk of approximately 152 excess cancer cases per one million people exposed in the Big Bear Lake area is considered representative of conditions in the area of the Project.

It should be noted that the SCAQMD's MATES Program consists of multiple years of data collection (1986 to present) summarized in most recent report (MATES IV, May 2015). MATES risk estimates are based on ambient air quality monitoring data from several monitoring stations in the South Coast Air Basin. The MATES studies include fixed monitoring sites (where data is collected over multiple years) and microscale or temporary sites where monitoring occurred for a limited time period (six to ten weeks). The nearest fixed air monitoring site to the Project vicinity is the Inland Valley San Bernardino station located at 14360 Arrow Highway in Fontana, CA which is over sixty (60) miles southwest of the Project. The MATES IV study acknowledges "*several uncertainties in estimating air toxics risks. These include uncertainties of the cancer potency of the substances, in estimating of population exposure, and in estimating the level of diesel particulate*" (MATES-IV, May 2015). The ambient health risk identified in Figure 3 of the AQIA (located in Appendix E of this document) includes projection of risk levels from locations that were monitored to those that were not. The AQIA overlooks these details and considers the risk map published by SCAQMD at face value such that it represents existing conditions at the project site.

Diesel particulate matter (DPM) is identified as a TAC and currently accounts for roughly 68% of the cancer risk from air pollution in urban areas where on-road sources dominate the inventory. Diesel engines are a ubiquitous source and thus it is not surprising that stationary source TAC effects "are generally much lower than region-wide risk levels, region-wide risks tend to overwhelm any potential local 'hot spots.'" (SCAQMD Mates II Study, Section 7.3).

#### **Greenhouse Gas Emissions**

The effect of greenhouse gas (GHG) emission regulations are potentially far reaching. On December 7, 2009, US EPA Administrator Lisa Jackson signed a final action, under Section 202(a) of the Clean Air Act, finding that six key well-mixed greenhouse gases constitute a threat to public health and welfare, and that the combined emissions from motor vehicles cause and contribute to the climate change problem. The "endangerment finding" allows the US EPA to begin regulating the six GHGs that are identified.

Key effects that US EPA claims support the determination that GHGs endanger public health include:

**Temperature.** *There is evidence that the number of extremely hot days is already increasing. Severe heat waves are projected to intensify, which can increase heat-related mortality and sickness. Fewer deaths from exposure to extreme cold is a possible benefit of moderate temperature increases. Recent evidence suggests, however, that the net impact on mortality is more likely to be a danger because heat is already the leading cause of weather-related deaths in the United States.*

**Air Quality.** *Climate change is expected to worsen regional ground-level ozone pollution. Exposure to ground-level ozone has been linked to respiratory health problems ranging from decreased lung function and aggravated asthma to increased emergency department visits, hospital admissions, and even premature death. The impact on particulate matter remains less certain.*

**Climate-Sensitive Diseases and Aeroallergens.** • *Potential ranges of certain diseases affected by temperature and precipitation changes, including tick-borne diseases and food and water-borne pathogens, are expected to increase. • Climate change could impact the production, distribution, dispersion and allergenicity of aeroallergens and the growth and distribution of weeds, grasses, and trees that produce them. These changes in aeroallergens and subsequent human exposures could affect the prevalence and severity of allergy symptoms.*

**Vulnerable Populations and Environmental Justice.** • *Certain parts of the population may be especially vulnerable to climate impacts, including the poor, the elderly, those already in poor health, the disabled, those living alone, and/or indigenous populations dependent on one or a few resources. • Environmental justice issues are clearly raised through examples such as warmer temperatures in urban areas having a more direct impact on those without air-conditioning.*

**Extreme Events.** *Storm impacts are likely to be more severe, especially along the Gulf and Atlantic coasts. Heavy rainfall events are expected to increase, increasing the risk of flooding, greater runoff and erosion, and thus the potential for adverse water quality effects. These projected trends can increase the number of people at risk from suffering disease and injury due to floods, storms, droughts and fires.” (US EPA, last update: 2015)*

### **Class I and Class II Wilderness Areas**

Class I Wilderness areas, as designated in the Clean Air Act (42 USC 7472), are protected from impacts on visibility, ozone phytotoxicity, and deposition of nitrates and sulfates which can acidify water bodies. Class I Wilderness Areas include:

- International parks;
- National wilderness areas which exceed 5,000 acres in size;
- National memorial parks which exceed 5,000 acres in size; and
- National parks which exceed 6,000 acres in size.

Good visibility is essential to the enjoyment of national parks and scenic areas. Across the United States, regional haze has decreased the visual range in these pristine areas from 140 miles to 35-90 miles in the West, and from 90 miles to 15-25 miles in the East. This haze is composed of small particles that absorb and scatter light, affecting the clarity and color of what humans see in a vista. The pollutants that create haze (also called haze species) are measurable as sulfates, nitrates, organic carbon, elemental carbon,

### 3.3 Air Quality & Greenhouse Gases

fine soil, sea salt, and coarse mass. Anthropogenic sources of haze include industry, motor vehicles, agricultural and forestry burning, and dust from soils disturbed by human activities. Pollutants from these sources, in concentrations much lower than those which affect public health, can impair visibility anywhere. Natural forest fires, biological emissions, sea salt and other natural events also contribute to haze species concentrations. Visibility-reducing particles can be transported long distances from where they are generated, thereby producing regional haze. When they are transported to and occur in national parks and wilderness areas, the reduced visibility impairs the quality and the value of the wilderness experience.

The Project is within 100 kilometers of the following Class I Wilderness Areas:

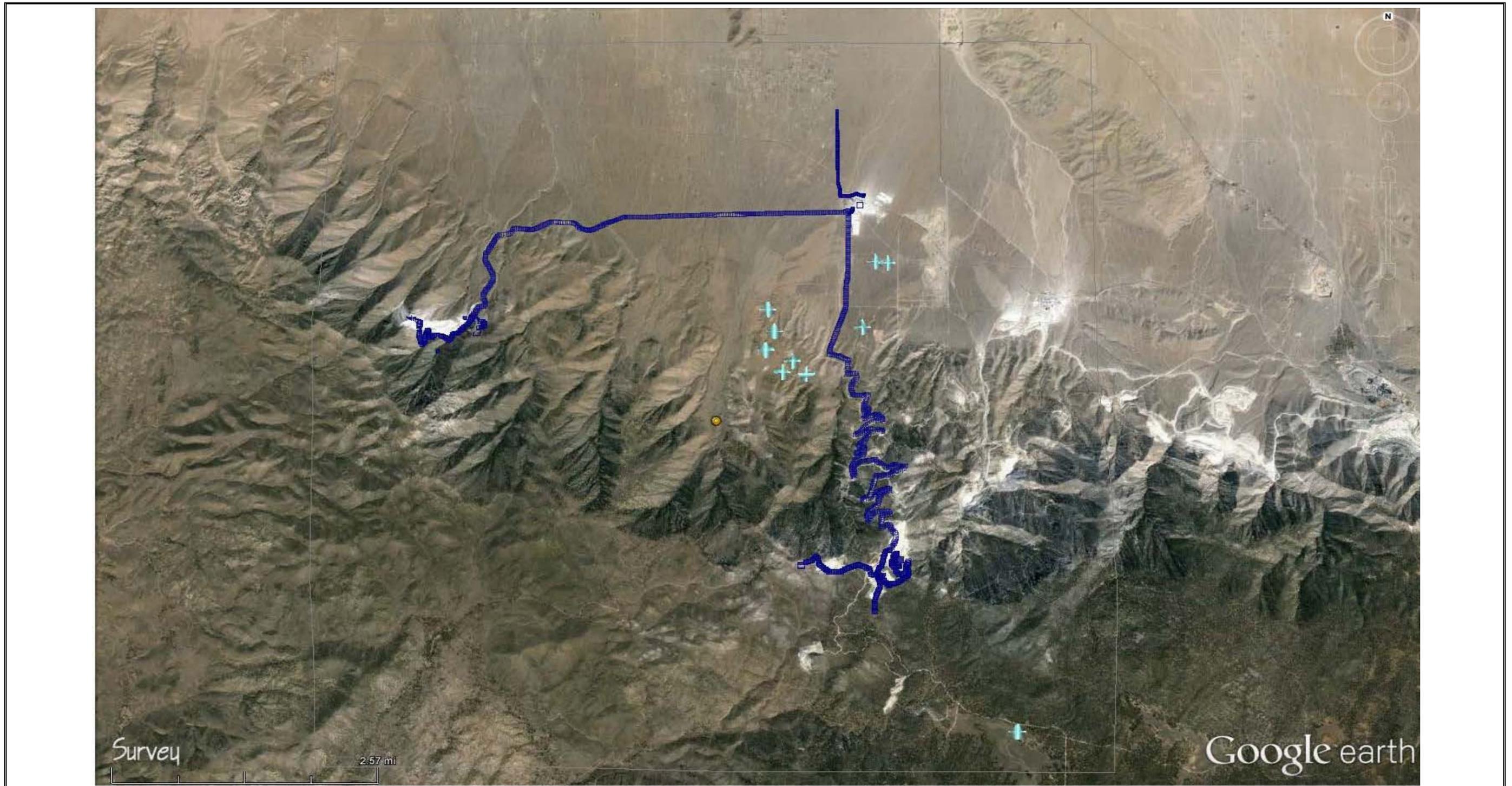
- San Geronio 18 km
- San Jacinto 51 km
- Joshua Tree National Park 53 km
- Cucamonga 57 km
- San Gabriel 83 km

Conditions in the San Geronio Wilderness Area would be of primary concern for this Project because it is closest and other areas would experience less severe impacts. The environmental setting for each Class I Wilderness Area within California is found in the California Regional Haze Plan. The San Geronio Wilderness Area description from the California Regional Haze Plan is provided in the AQIA (Appendix E).

#### **3.3.1.2 Local Setting**

The Project is bounded on the south, west, and north by mountainous undeveloped Forest Lands and to the east by patented open space with an active limestone mine called Furnace Canyon Quarry (0.75 to 1 mile to the northeast). Other than mining, which has historically been active in the area, land use in the rugged mountainous area has been limited to occasional use by hikers and hunters. Off highway vehicle use and fuel wood cutting have increased as more access roads were built.

Figure 3.3.1 illustrates the location of receptors near the Project Site. Table 3.3-1 provides a list of the receptors by ID number.



Discrete Receptors are shown as blue crosses.  
The yellow circle is the location of the MM5 meteorological data.

**Figure 3.3.1 Location of Receptors Near Project Site**

THIS PAGE IS INTENTIONALLY BLANK

**Table 3.3-1 Nearby Receptors**

ID	UTM, Easting (meters)	UTM, Northing (meters)	Type – Location
1	507564	3796038	Boy Scout Ranch – mountains 1.85 miles southeast of B5 Pad
2	504448	3801743	Buddhist Temple – foothills 1.7 miles south of LVPP
3	505532	3803636	Residence – valley 0.5 mile south of LVPP
4	505725	3803616	Residence – valley 0.5 mile south of LVPP
5	505322	3802524	Residence – valley 1.2 miles south of LVPP
6	504060	3801770	Residence – foothills 1.8 miles south-southwest of LVPP
7	504222	3801955	Residence – foothills 1.7 miles south-southwest of LVPP
8	503804	3802143	Residence – foothills 1.7 miles south-southwest of LVPP
9	503942	3802456	Residence – foothills 1.5 miles southwest of LVPP
10	503842	3802821	Residence – foothills 1.3 miles southwest of LVPP

### 3.3.2 Regulatory Framework

Regulations that affect air quality consist primarily of those promulgated under Federal and State clean air acts as discussed below. Other regulations that affect air quality include those related to Federal conformity, impacts on Class I and Class II Wilderness Areas, impacts on health risk, and greenhouse gases.

The Federal Clean Air Act (CAA) and the California CAA each contain comprehensive frameworks for air quality planning and regulation. Title 40 of the Code of Federal Regulations and Title 17 of the California Code of Regulations contain requirements that have been promulgated under authority granted to US EPA and California Air Resource Board (CARB) by the Acts. Because numerous aspects of air quality regulations are addressed by both Federal and State agencies, to avoid redundancy, summaries of the key regulations may be found in either the Federal or State subsections below.

#### 3.3.2.1 Federal

##### Ambient Air Quality Standards (AAQS)

The Federal CAA forms the basis for the national air pollution control effort. The EPA is responsible for implementing most aspects of the CAA, including setting the National Ambient Air Quality Standards (NAAQS) for criteria air pollutants. The California Air Resources Board (CARB) is responsible for implementing the California Ambient Air Quality Standards (CAAQS) as required in the Federal CAA. CAAQS are generally more restrictive than the NAAQS.

Criteria air pollutants include sulfur oxides (SO<sub>x</sub>), nitrogen oxides (NO<sub>x</sub>), particulate matter (PM), carbon monoxide (CO), lead (Pb), and ground-level ozone (O<sub>3</sub>). AAQS are developed by US EPA and CARB for

### 3.3 Air Quality & Greenhouse Gases

each of the criteria pollutants. Primary AAQS are designed to protect human health, with an adequate margin of safety, including sensitive populations such as children, the elderly, and individuals suffering from respiratory disease. Secondary AAQS are designed to protect public welfare from any known or anticipated adverse effects of a pollutant (e.g. building facade degradation, reduced visibility, and damage to crops and domestic animals).

AAQS and related monitoring programs are among the many methods established by air quality regulations (40 CFR 50-51) to protect air quality. Geographic areas called “attainment areas” are classified by US EPA and CARB based on whether the ambient air in the area meets the AAQs. An “attainment area” is an area in which pollutant concentrations are less than or equal to the AAQS while “non-attainment areas” have pollution levels above the AAQS. State and Federal AAQS are shown in Table 3.3-2.

In order to make progress towards attainment with the AAQS, each State and air district containing Federal non-attainment areas is required to develop a written plan for improving air quality in those areas. These plans are called State Implementation Plans (SIP) and Attainment Plans. California’s SIP contains mobile source and consumer product emission control strategies proposed by CARB and a compilation of stationary and area source strategies that have been developed by local air districts under CARB supervision. Through these plans, the State and local air districts outline efforts that they will take to reduce air pollutant concentrations to levels below the standards. Existing law requires district plans to assess the cost-effectiveness of available and proposed emission control measures. Proposed emission control measures in the plans are typically developed into air district rules. Federal and State attainment status designations assigned by US EPA and CARB for the Project Area are summarized in Table 3.3-3.

The MDAQMD assists CARB in preparing the State Implementation Plan by preparing Attainment Plans that demonstrate how the AAQS will be achieved. The Attainment Plans describe the rules that will be developed and other means by which the MDAQMD will manage the emissions within the jurisdiction. MDAQMD Attainment Plans are listed in Table 3.3-4.

Table 3.3-2 Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards <sup>1</sup>		National Standards <sup>2</sup>		
		Concentration <sup>3</sup>	Method <sup>4</sup>	Primary <sup>3,5</sup>	Secondary <sup>3,6</sup>	Method <sup>7</sup>
Ozone (O <sub>3</sub> ) <sup>8</sup>	1 Hour	0.09 ppm (180 µg/m <sup>3</sup> )	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m <sup>3</sup> )		0.070 ppm (137 µg/m <sup>3</sup> )		
Respirable Particulate Matter (PM <sub>10</sub> ) <sup>9</sup>	24 Hour	50 µg/m <sup>3</sup>	Gravimetric or Beta Attenuation	150 µg/m <sup>3</sup>	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	AAM	20 µg/m <sup>3</sup>		—		
Fine Particulate Matter (PM <sub>2.5</sub> ) <sup>9</sup>	24 Hour	—	—	35 µg/m <sup>3</sup>	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	AAM	12 µg/m <sup>3</sup>	Gravimetric or Beta Attenuation	12 µg/m <sup>3</sup>		
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m <sup>3</sup> )	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m <sup>3</sup> )	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m <sup>3</sup> )		9 ppm (10 mg/m <sup>3</sup> )	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m <sup>3</sup> )		—	—	
Nitrogen Dioxide (NO <sub>2</sub> ) <sup>10</sup>	1 Hour	0.18 ppm (339 µg/m <sup>3</sup> )	Gas Phase Chemiluminescence	100 ppb (188 µg/m <sup>3</sup> )	—	Gas Phase Chemiluminescence
	AAM	0.030 ppm (57 µg/m <sup>3</sup> )		0.053 ppm (100 µg/m <sup>3</sup> )	Same as Primary Standard	
Sulfur Dioxide (SO <sub>2</sub> ) <sup>11</sup>	1 Hour	0.25 ppm (655 µg/m <sup>3</sup> )	Ultraviolet Fluorescence	75 ppb (196 µg/m <sup>3</sup> )	—	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m <sup>3</sup> )	
	24 Hour	0.04 ppm (105 µg/m <sup>3</sup> )		0.14 ppm (for certain areas) <sup>10</sup>	—	
	AAM	—		0.030 ppm (for certain areas) <sup>10</sup>	—	
Lead <sup>12,13</sup>	30 Day Average	1.5 µg/m <sup>3</sup>	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m <sup>3</sup> (for certain areas) <sup>10</sup>	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m <sup>3</sup>		
Visibility Reducing Particles <sup>14</sup>	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m <sup>3</sup>	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m <sup>3</sup> )	Ultraviolet Fluorescence			
Vinyl Chloride <sup>12</sup>	24 Hour	0.01 ppm (26 µg/m <sup>3</sup> )	Gas Chromatography			

Source: CARB, 5/4/2016 with updated annual PM<sub>2.5</sub> NAAQS. <sup>1</sup> <https://www.arb.ca.gov/research/aaqs/aaqs2.pdf>

AAM = Annual Arithmetic Mean.

### 3.3 Air Quality & Greenhouse Gases

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM<sub>10</sub>, PM<sub>2.5</sub>, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM<sub>10</sub>, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m<sup>3</sup> is equal to or less than one. For PM<sub>2.5</sub>, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
9. On December 14, 2012, the national annual PM<sub>2.5</sub> primary standard was lowered from 15 µg/m<sup>3</sup> to 12.0 µg/m<sup>3</sup>. The existing national 24-hour PM<sub>2.5</sub> standards (primary and secondary) were retained at 35 µg/m<sup>3</sup>, as was the annual secondary standard of 15 µg/m<sup>3</sup>. The existing 24-hour PM<sub>10</sub> standards (primary and secondary) of 150 µg/m<sup>3</sup> also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
11. On June 2, 2010, a new 1-hour SO<sub>2</sub> standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO<sub>2</sub> national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.  
  
Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
12. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m<sup>3</sup> as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively

**Table 3.3-3 MDAQMD Attainment Status**

Standard	MDAQMD Attainment Status
One-hour Ozone (Federal, standard has been revoked).	Non-attainment; classified Severe-17 (portion of MDAQMD outside of Southeast Desert Modified Air Quality Management Area is unclassified/attainment)
Eight-hour Ozone (Federal 75 ppb)	Subpart 2 Non-attainment; classified Moderate (portion of MDAQMD outside of Western Mojave Desert Ozone Non- attainment Area is unclassified/attainment)
Eight-hour Ozone (Federal 70 ppb)	Non-attainment; classified Severe-15
Ozone (State)	Non-attainment; classified Moderate
PM <sub>10</sub> (Federal)	Non-attainment; classified Moderate (portion of MDAQMD in Riverside County is unclassified)
PM <sub>2.5</sub> (Federal)	Unclassified/attainment
PM <sub>2.5</sub> (State)	Non-attainment (portion of MDAQMD outside of Western Mojave Desert Ozone Non-attainment Area is unclassified/attainment)
PM <sub>10</sub> (State)	Non-attainment
Carbon Monoxide(State and Federal)	Attainment
Nitrogen Dioxide (State and Federal)	Attainment/unclassified
Sulfur Dioxide (State and Federal)	Attainment/unclassified
Lead (State and Federal)	Attainment
Particulate Sulfate (State)	Attainment
Hydrogen Sulfide (State)	Unclassified (Searles Valley Planning Area is non-attainment)
Visibility Reducing Particles (State)	Unclassified

Source: MDAQMD CEQA Guidelines (August 2011). EPA Green Book (January 30, 2015). CARB Area Designation Maps (June 2013)

## 3.3 Air Quality &amp; Greenhouse Gases

**Table 3.3-4 MDAQMD Attainment Plans**

Name of Plan	Date of Adoption	Standard(s) Targeted	Applicable Area	Pollutant(s) Targeted	Attainment Date*
Federal 8-Hour Ozone Attainment Plan (Western Mojave Desert Non-attainment Area)	9-Jun-08	Federal eight hour ozone (84 ppb)	Western Mojave Desert Non-attainment Area (MDAQMD portion)	NO <sub>x</sub> and VOC	2021
2004 Ozone Attainment Plan (State and Federal)	26-Apr-04	Federal one hour ozone	Entire District	NO <sub>x</sub> and VOC	2007
Triennial Revision to the 1991 Air Quality Attainment Plan	22-Jan-96	State one hour ozone	Entire District	NO <sub>x</sub> and VOC	2005
Mojave Desert Planning Area Federal Particulate Matter Attainment Plan	31-Jul-95	Federal daily and annual PM <sub>10</sub>	Mojave Desert Planning Area	PM <sub>10</sub>	2000
1991 Air Quality Attainment Plan	26-Aug-91	State one hour ozone	San Bernardino County portion	NO <sub>x</sub> and VOC	1994

Note: A historical attainment date given in an attainment plan does not necessarily mean that the affected area has been re-designated to attainment.

**Federal Conformity**

A project is conforming if it complies with all applicable District rules and regulations, complies with all proposed control measures that are not yet adopted from the applicable plan(s), and is consistent with the growth forecasts in the applicable plan(s) (or is directly included in the applicable plan). A project is non-conforming if it conflicts with or delays implementation of any applicable attainment or maintenance plan. Conformity with growth forecasts can be established by demonstrating that the project is consistent with the land use plan that was used to generate the growth forecast. An example of a non-conforming project would be one that increases the gross number of dwelling units, increases the number of trips, and/or increases the overall vehicle miles traveled in an affected area (relative to the applicable land use plan).

Federal Conformity regulation (40CFR93) and MDAQMD Rule 2002 which mirrors the federal regulation were adopted in order to ensure that federal actions conform to the applicable implementation plan. Federal actions where the total of direct and indirect emissions in a nonattainment or maintenance area is less than specified rates would screen out of conformity analysis. As presented in Table 3.3-3, the western area of the MDAQMD where the Project is located is severe non-attainment for federal ozone, and moderate non-attainment for federal PM<sub>10</sub>. On the basis of those attainment designations, the Project would screen-out of conformity analysis if:

- NO<sub>x</sub> and VOC emissions are less than 25 tons per year each;
- PM<sub>10</sub> emissions are less than 100 tons per year; and

- Emissions are less than 10% of the non-attainment area emissions inventory.

### **Federal Land Manager Air Quality Related Values**

The Federal Land Manager (FLM) and the Federal official with direct responsibility for management of Federal Class I parks and wilderness areas (i.e., Park Superintendent, Refuge Manager, Forest Supervisor) have an affirmative responsibility to protect the Air Quality Related Values (AQRVs) (including visibility) of such lands, and to consider whether a proposed project with emissions exceeding the “major” source thresholds will have an adverse impact on such values. The FLM’s decision regarding whether there is an adverse impact is then conveyed to the permitting authority for consideration in its determinations regarding the permit. The permitting authority’s determinations generally consider a wide range of factors, including the potential impact of the new source or major modification on the AQRVs of Class I areas, if applicable.

At the request of both State permitting agencies and permit applicants, the FLMs formed the Federal Land Managers’ Air Quality Related Values Work Group (FLAG) to provide better consistency pertaining to their role in the review of new source permit applications near Federal Class I areas. The purpose of FLAG is twofold: (1) to develop a more consistent and objective approach for the FLMs to evaluate air pollution effects on public AQRVs in Class I areas, including a process to identify those resources and any potential adverse impacts, and (2) to provide state permitting authorities and potential permit applicants consistency on how to assess the impacts of new and existing sources on AQRVs in Class I areas.

The FLMs are also concerned about resources in Class II parks and wilderness areas because they have other mandates to protect those areas as well. The information and procedures outlined in the FLAG Report are generally applicable to evaluating the effect of new or modified sources on the AQRVs in both Class I and Class II areas, including the evaluation of effects as part of Environmental Assessments and/or Environmental Impact Statements under the NEPA. However, FLAG does not preclude more refined or regional analyses being performed under NEPA or other programs.

The FLAG 2010 Phase I Report update recommends how to evaluate visibility, ozone phytotoxicity, and deposition impacts from new or modified sources. The FLAG Phase I Report recommends that an applicant apply the “Q/D test” for proposed sources greater than 50 km from a Class I area to determine whether or not any further analysis is necessary. The Q/D test sums emissions of SO<sub>2</sub>, NO<sub>x</sub>, PM<sub>10</sub>, and H<sub>2</sub>SO<sub>4</sub> (i.e. Q in tons per year) and then divides that total by the distance between the source and receptor (D in kilometers). Results equal to or less than 10 do not require further assessment (i.e. Q/D ≤ 10).

### **Greenhouse Gas Regulations**

On May 13, 2010 US EPA finalized the GHG Tailoring Rule (75 FR 31514, June 3, 2010). The Tailoring Rule set major source emissions thresholds that defined when Federal operating permits under

### 3.3 Air Quality & Greenhouse Gases

Prevention Significant Deterioration (PSD) or Title V would be required. Then, on June 23, 2014, the U.S. Supreme Court issued its decision in *Utility Air Regulatory Group v. EPA*, 134 S.Ct. 2427 (2014) (“UARG”). The Court held that EPA may not treat GHGs as an air pollutant for purposes of determining whether a source is a major source required to obtain a PSD or Title V permit. The Court also held that PSD permits that are otherwise required (based on emissions of other pollutants) may continue to require limitations on GHG emissions based on the application of Best Available Control Technology (BACT). In accordance with the Supreme Court decision, on April 10, 2015, the D.C. Circuit issued an amended judgment in *Coalition for Responsible Regulation, Inc. v. Environmental Protection Agency*, Nos. 09-1322, 10-073, 10-1092 and 10-1167 (D.C. Cir. April 10, 2015), which, among other things, vacated the PSD and title V regulations under review in that case to the extent that they require a stationary source to obtain a PSD or title V permit solely because the source emits or has the potential to emit GHGs above the applicable major source thresholds. The D.C. Circuit also directed EPA to consider whether any further revisions to its regulations are appropriate in light of UARG, and if so, to make such revisions. In response to the Supreme Court decision and the D.C. Circuit’s amended judgment, the EPA will likely conduct future rulemaking action to make appropriate revisions to the PSD and operating permit rules.

On August 3, 2015, EPA announced the Clean Power Plan. The Clean Air Act – under section 111(d) – creates a partnership between EPA, states, tribes and U.S. territories – with EPA setting a goal and states and tribes choosing how they will meet it. The Clean Power Plan follows that approach. EPA is established interim and final carbon dioxide (CO<sub>2</sub>) emission performance rates for two subcategories of fossil fuel-fired electric generating units (EGUs): fossil fuel-fired electric steam generating units (generally, coal- and oil-fired power plants); and natural gas-fired combined cycle generating units. To maximize the range of choices available to states in implementing the standards and to utilities in meeting them, EPA is established interim and final statewide goals in three forms:

- A rate-based state goal measured in pounds per megawatt hour (lb/MWh);
- A mass-based state goal measured in total short tons of CO<sub>2</sub>; and
- A mass-based state goal with a new source complement measured in total short tons of CO<sub>2</sub>.

States are expected to develop and implement plans to ensure that power plants in their state – either individually, together or in combination with other measures – achieve the interim CO<sub>2</sub> emissions performance rates over the period of 2022 to 2029 and the final CO<sub>2</sub> emission performance rates, rate-based goals or mass-based goals by 2030.

Additional greenhouse gas regulations are discussed below under State regulations.

### 3.3.2.2 State

#### California Air Resources Board

As discussed above, CARB is responsible for ensuring implementation of the Federal and California Clean Air Acts. In addition to the AAQS, CARB regulates toxic air contaminants and emissions from mobile sources.

#### Toxic Air Contaminants

TACs are pollutants listed by the State of California that pose acute, chronic, and/or cancer health risks to exposed individuals. Hazardous air pollutants (HAP) are pollutants listed by US EPA that pose acute, chronic, and/or cancer health risks to exposed individuals.

The California Office of Environmental Health Hazard Assessment (OEHHA) is responsible for developing the scientific basis for listing and evaluation of health risk from TACs. CARB is responsible for quantifying TAC emissions and controlling TACs by promulgation and enforcement of air toxic control measures (ATCM). Assembly Bill 1807 (AB 1807) passed in 1983 requires the State of California to identify and control TACs. TACs are formally identified through a detailed process which starts when a chemical's risk to human health and the environment is above certain criteria. Once TACs are identified, the emission sources, controls, technologies and costs are reviewed to determine if regulation is needed to reduce emissions. In 1993, AB 1807 was amended by passage of Assembly Bill 2728 (AB 2728) which requires the State to list the 189 Federal HAPs in the TAC list.

In 1987, the AB 2588 air toxics "hot spots" program was established. This program requires subject facilities to report their air toxics emissions, determine localized health risks, and notify nearby residents for whom risk may exceed the notification level. The program was amended in 1992 to require facilities to reduce high risks (e.g. greater than 100 in 1 million cancer risk; or 10 hazard index) through the development of a risk management plan. The Hotspots Analysis and Reporting Program (HARP) is a software program that calculates TAC emission inventories and performs health risk assessments for use in the AB 2588 Program.

In 2015, after preparation of numerous technical support documents and to address the mandate of the Children's Environmental Health Protection Act of 1999; new versions of the Air Toxics Hot Spots Program Guidance Manual (HRA Guidelines) and HARP software (i.e., HARP 2) were released. These resources were used in preparation of the health risk assessment for this Project.

#### Mobile and Portable Emission Sources

The Off-Road Vehicle Regulation (13 CCR 2449) was adopted by the CARB in 2007 to reduce diesel particulate matter (DPM) and NO<sub>x</sub> emissions from in-use off-road heavy-duty diesel vehicles in California. The regulation was amended by CARB in December 2010. Prior to that time, the regulations

### 3.3 Air Quality & Greenhouse Gases

were to be phased in from 2010 to 2020, but the December 2010 rulemaking pushed the start date back to 2014 and the date of final implementation back to 2024. In addition, until CARB receives a waiver from US EPA to regulate in-use off-road engines, the provisions that require further control are not enforceable. Registering fleets through the Diesel Off-road On-line Reporting System (DOORS), labeling equipment, idling limits and sale notification are requirements of the Off-Road Regulation that are still in effect. Regulatory Advisory 10-414 describes the enforcement delay and was last updated in May 2011.

The On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation (13 CCR 2025) was adopted in December 2010. The regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Heavier trucks must be retrofitted with PM filters beginning January 1, 2012, and older trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent. The regulation applies to nearly all privately and federally owned diesel fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds.

Portable engines are regulated by an air toxic control measure (17 CCR 93116) that limits diesel particulate matter and may also be regulated by the Portable Equipment Registration Program (PERP) or local air district permit. In-use portable engines regulated by the ATCM begin phasing in controls to meet emissions reductions criteria on January 1 of 2013, 2017, and 2020. By 2020, in-use portable engines will have Tier 4 particulate emissions characteristics. The PERP program requires applications for new registrations are accepted only for engines that emit less than the interim Tier 4 standards.

#### **Greenhouse Gas Regulations**

In addition to the Federal GHG regulation discussed above under, California has developed State requirements and guidelines. CARB approved the AB 32 Scoping Plan at the Board hearing on December 12, 2008. The Scoping Plan contains the main strategies that California will use to reduce GHGs as required by AB 32. On August 24, 2011, the CARB Board approved the Final Supplement to the AB 32 Scoping Plan Functionally Equivalent Document which accounted for progress already made towards reducing statewide GHG emissions and the effect of the severe and prolonged economic downturn that occurred after 2006.

Control measures contained in the Scoping Plan that may affect Project emissions include, but are not limited to:

- **Transportation Measures.** These measures propose to reduce GHG's from vehicles by making vehicles more efficient, reducing the carbon content of the fuels, and reducing the vehicle miles traveled. Thus, vehicles would emit less GHG emissions in the future.
  - Light Duty Vehicle GHG Standard (T-1). This measure implements AB 1493 (Pavley) standards and planned second phase of the program. Align zero-emission vehicle, and alternative and renewable fuel and vehicle technology programs with long-term climate change goals.

- Low Carbon Fuel Standard (T-2). This measure will reduce the carbon intensity of California's transportation fuels by at least ten percent (10%) by 2020. CARB had previously identified this measure as a Discrete Early Action item which will be implemented through a rulemaking by 2010.
- Vehicle Efficiency Measures (T-4). This includes measures such as sustainable tire practices, properly inflating vehicle's tires, and possibly fuel-efficient tire standards.
- Energy Measures. These measures propose that utility operators replace some fossil fuel electricity generation capacity with renewable sources and reinforce incentives that are offered by local governments to encourage the placement of solar panels on new and existing structures. The Renewables Portfolio Standard (RPS) increases renewables from 12% in the baseline year(s) to 20% in 2020. The Renewable Electricity Standard (RES) is a separate measure that requires 33% renewables by 2020. The RES is implemented by the California Energy and Public Utilities Commissions under SBX1-2, signed by Governor Brown in April 2011.

The *First Update to the Climate Change Scoping Plan* was adopted on May 22, 2014. The First Update identifies opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments. The First Update defines ARB's climate change priorities for the next five years, and also sets the groundwork to reach long-term goals set forth in Executive Orders S-3-05 and B-16-2012. It highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the initial Scoping Plan. It also evaluates how to align the State's "longer-term" GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use. The First Update covers a range of topics but does not assign specific emission reductions to control measures. The First Update includes:

- An update of the latest scientific findings related to climate change and its impacts, including short-lived climate pollutants.
- A review of progress-to-date, including an update of Scoping Plan measures and other state, federal, and local efforts to reduce GHG emissions in California.
- Potential technologically feasible and cost-effective actions to further reduce GHG emissions by 2020.
- Recommendations for establishing a mid-term emissions limit that aligns with the State's long-term goal of an emissions limit 80 percent below 1990 levels by 2050.
- Sector-specific discussions covering issues, technologies, needs, and ongoing State activities to significantly reduce emissions throughout California's economy through 2050.
- Priorities and recommendations for investment to support market and technology development and necessary infrastructure in key areas.
- A discussion of the ongoing work and continuing need for improved methods and tools to assess economic, public health, and environmental justice impacts.

On April 29, 2015, the Governor issued Executive Order B-30-15 establishing a mid-term GHG reduction target for California of 40 percent below 1990 levels by 2030. All state agencies with jurisdiction over sources of GHG emissions were directed to implement measures to achieve reductions of GHG

### 3.3 Air Quality & Greenhouse Gases

emissions to meet the 2030 and 2050 targets. ARB was directed to update the AB 32 Scoping Plan to reflect the 2030 target.

On October 1, 2015, CARB held the Kickoff Public Workshop for the next Scoping Plan update that will reflect the 2030 Target of reducing GHG emissions to 40% below 1990 levels by 2030. Achieving the 2030 target will be done by the continuation of programs established to reach the previously set 2020 GHG emissions reduction target. At the Workshop CARB staff gave slide presentation that indicates achieving the 2030 Target will be accomplished by “continuation of programs established to reach the 2020 GHG emissions reduction target” including:

- Cap-and-Trade Program;
- Low Carbon Fuel Standard;
- Renewable Portfolio Standard;
- Advanced Clean Cars Program;
- Zero Emission Vehicles (ZEV) Program;
- Sustainable Freight Strategy;
- Short-Lived Climate Pollutant Strategy; and
- SB 375 Sustainable Communities Strategy.

Measures that will be developed to reduce GHG emissions are planned for development as follows:

- Governor’s Office pillars framework including:
  - Reduce petroleum use;
  - Increase renewable electricity;
  - Increase building energy efficiency;
  - Reduce short-lived climate pollutants; and
  - Ensure natural/working lands are carbon sink.
- Sector oriented measures.
- Maximize GHG reductions across all areas and realize co-benefits at large industrial sources.
- Multi-agency collaborative process.
- Stakeholder input through public workshops with formal and informal comment periods.

On September 30, 2015, CARB posted the Draft Short-Lived Climate Pollutant Reduction Strategy. The Strategy states:

*The only practical way to rapidly reduce the impacts of climate change is to employ strategies built on the tremendous body of science. The science unequivocally underscores the need to immediately reduce emissions of Short-Lived Climate Pollutants (SLCPs), which include black carbon (soot), methane (CH<sub>4</sub>), and fluorinated gases (F-gases, including hydrofluorocarbons, or HFCs). They are powerful climate forcers and dangerous air pollutants that remain in the atmosphere for a much shorter period of time than longer-lived climate pollutants, such as CO<sub>2</sub>, and are estimated to be responsible for about 40 percent of current net climate forcing. While*

*the climate impacts of CO<sub>2</sub> reductions take decades or more to materialize, cutting emissions of SLCPs can immediately slow global warming and reduce the impacts of climate change.*

Control measures included in the Draft SLCP Reduction Strategy are as follows:

- Carbon black (non-forest) measures:
  - Residential fireplace and woodstove conversion.
  - Sustainable freight strategy State Implementation Plans clean energy goals.
- Methane reduction measures:
  - Dairy manure management.
  - Dairy and livestock enteric fermentation.
  - Landfill gas management.
  - Oil and gas production, processing and storage.
  - Wastewater, industrial and other sources.
- Fluorinated gas reduction measures:
  - Financial incentive for low-GWP refrigeration early adoption.
  - HFC supply phasedown.
  - Sales ban of very-high GWP refrigerants.
  - Prohibition on new equipment with high-GWP compounds.

**Senate Bill 375 (SB 375)** “Transportation planning: travel demand models: sustainable communities strategy: environmental review” was signed by the Governor on September 30, 2008. SB 375 is most concerned with automobile and light truck traffic, but the goal of reducing GHGs covers all transportation sources based on the need for sustainable communities.

*“Each transportation planning agency ... shall prepare and adopt a regional transportation plan directed at achieving a coordinated and balanced regional transportation system, including, but not limited to, mass transportation, highway, railroad, maritime, bicycle, pedestrian, goods movement, and aviation facilities and services.” (Section 65080(a), underline added.)*

The regional transportation plan is to be an internally consistent document and include a sustainable communities strategy (SCS).

*“The sustainable communities strategy shall ...(v) gather and consider the best practically available scientific information regarding resource areas and farmland in the region ....” (Section 65080(b)(2)(B)(v), underline added.)*

*Resource areas include: “areas of the state designated by the State Mining and Geology Board as areas of statewide or regional significance pursuant to Section 2790 of the Public Resources Code, and lands under Williamson Act contracts.” (Section 65080.01(a)(4).)*

Thus, SB 375 recognizes the limestone deposits as a regionally significant resource that requires special consideration in transportation and land use planning efforts.

### 3.3 Air Quality & Greenhouse Gases

The County of San Bernardino Climate Action Plan is discussed below in Section 3.3.2.3 which describes the local regulatory setting.

#### 3.3.2.3 Local

##### MDAQMD

While CARB is responsible for the regulation of mobile emission sources within the State, local air quality management districts are responsible for enforcing standards and regulating stationary sources of air emissions. The MDAQMD is the regional agency responsible for the regulation and enforcement of Federal, State and local air pollution control regulation in the MDAB.

As this document was being prepared the MDAQMD Rule Development Calendar had last been updated on May 7, 2015. Current MDAQMD rules that apply to proposed project sources include:

- **Rule 201 – Permits to Construct** applies to the construction of air emissions sources that are not otherwise exempt under Rule 219.
- **Rule 203 – Permit to Operate** requires air emissions sources that are not exempted by Rule 219 to obtain operating permit.
- **Rule 401 – Visible Emissions** limits visibility of fugitive dust to less than No. 1 on the Ringlemann Chart (i.e. 20% opacity).
- **Rule 402 – Nuisance** applies when complaints from the public are received by the District.
- **Rule 403 – Fugitive Dust** prohibits visible dust beyond the property line of the emission source, requires “every reasonable precaution” to minimize fugitive dust emissions and prevent track-out of materials onto public roadways, and prohibits greater than 100  $\mu\text{g}/\text{m}^3$  difference between upwind and downwind particulate concentrations.
- **Rule 403.2 – Fugitive Dust Control** for the Mojave Desert Planning Area contains the following requirements applicable to limestone processing facilities:
  - a) Stabilize industrial unpaved roads carrying more than ten vehicle trips per day with the majority of those vehicles weighing 30 tons or more;
  - b) Enclose exterior belt conveyors sufficiently to cover the top and sides of the bulk material being transferred, or employ an alternate dust suppression system sufficient to prevent visible fugitive dust.
  - c) Manage or treat bulk material open storage piles sufficiently to prevent visible fugitive dust emissions. For purposes of this Rule, active watering during visible dusting episodes shall be sufficient to maintain compliance;
  - d) Cover loaded bulk material haul vehicles while traveling upon publicly maintained paved surfaces;
  - e) Employ a dust suppression system at bulk material transfer points sufficient to prevent visible fugitive dust;
  - f) Stabilize or eliminate bulk material open storage piles that have been or are expected to be inactive for at least one year;

- g) Stabilize as much unpaved operations area as is feasible;
  - h) Vacuum sweep bulk material spills on paved surfaces weekly or more often, as needed;
  - i) Prevent facility-related bulk material track-out on publicly maintained paved surfaces;
  - j) Clean up facility-related bulk material track-out and spills on publicly maintained roads within twenty-four hours; and
  - k) Employ belt cleaners and/or conveyor return scrapers to minimize conveyor spillage
- **Rule 404 – Particulate Matter Concentration** sets concentration limits based upon the flow rate of the discharge. The concentration limits would apply to discharge from a stack (e.g. baghouse).
  - **Rule 405 – Solid Particulate Matter Weight** limits emissions based upon the weight of material processed.
  - **Regulation IX – Standards of Performance for New Stationary Sources (NSPS)** incorporates Federal regulation (40 CFR 60) which affects the construction of emissions units. Requirements may or may not apply depending upon the size, construction and manufacture date of equipment that will be used. Specifically, NSPS OOO (40 CFR 60.670) applies to equipment in non-metallic mineral processing plants.
  - **Regulation XIII – New Source Review** contains a number of rules that are applied to new and modified sources.
  - **Rule 1160 – Internal Combustion Engines** limits emissions of NO<sub>x</sub>, CO, and VOC from stationary engines.
  - **Rule 1520 – Control of Toxic Air Contaminants from Existing Sources** implements AB 2588 Air Toxics Hot Spots requirements.
  - **Rule 2002 – General Federal Actions Conformity** requires Federal actions to conform to the applicable implementation plan.

In addition to the adopted rules and regulations listed above, MDAQMD has proposed amendments to Rule 1160 and the Rule Development Calendar contains several of the above listed rules that are scheduled to be amended (i.e., 401, 403, and 403.2). Each potential rule change is described briefly as follows:

- **Rule 401 – Visible Emissions** would be amended to exempt sandblasters and pile drivers pursuant to be consistent with state law and would incorporate references to EPA Test Methods 9 and 22 (i.e., visual emissions evaluation). The SIP would be updated with the amended Rule and South Coast AQMD Rule 401 references in Riverside County SIP would be removed.
- **Rule 403 – Fugitive Dust** control measures would be analyzed for cost effectiveness and the Rule amended if necessary. The SIP would be updated with the amended Rule and South Coast AQMD Rules 403 and 403.1 references in Riverside County SIP would be removed.
- **Rule 403.2 – Fugitive Dust Control for the Mojave Desert Planning** control measures would be analyzed for cost effectiveness and the Rule amended to reflect findings and conform with PM Attainment Plan requirements. The SIP would be updated with the amended Rule and South Coast AQMD Rules 403 and 403.1 references in Riverside County SIP would be removed.

### 3.3 Air Quality & Greenhouse Gases

- **Rule 1160 – Internal Combustion Engines** is proposed to be amended as needed to address federal reasonably available control technology (RACT) and may expand scope to include engines between 50 and 500 hp. Particulate matter control measures would be assessed for cost effectiveness and the Rule updated to conform with state and federal rules that apply to affected sources (i.e., ATCM, NESHAP and NSPS). The SIP would be updated with the amended Rule and South Coast AQMD Rules 1110, 1110.1, 1110.2 references in Riverside County SIP would be removed.

#### County of San Bernardino

The County of San Bernardino has prepared a Greenhouse Gas Emissions Reduction Plan (GHG-ERP, 9/2011) that excludes sources which would be considered part of the Project. The GHG-ERP assesses *“GHG emissions in two distinct ways: (1) through the exercise of its land use authority it can affect community/external emissions; (2) through its management of County government and facilities it can affect municipal/internal emissions. The External Inventory includes GHG emissions from land uses within the County’s unincorporated areas where the County has jurisdictional land use authority.”* (GHG-ERP, Page 2-1). The GHG-ERP does not affect emissions from projects that are in within incorporated cities, within the National Forest, or on lands held by the Department of Defense. Thus, the GHG-ERP is not applicable to the Project. Moreover, the GHG-ERP does not propose reducing emissions from stationary sources like the Project. (GHG-ERP Table 4-1, Page 4-2). Lastly, the GHG-ERP was prepared before the 2011 Scoping Plan Update was published which lowered the amount of GHG reductions needed by 2020 from 31% to 16%. The County of San Bernardino updated the Development Review Processes (3/2015) which are applied to discretionary projects that are within the above scope of applicability. If the GHG-ERP were applicable to the Project, then the commercial/industrial performance standards listed below would need to be implemented:

- Waste stream reduction by providing tenants and employees County-approved informational materials.
- Vehicle trip reduction by providing tenants and employees County-approved informational materials.
- Other educational materials.
- Landscape equipment would be at least 20% electric-powered.
- Construction standards ranging from use of approved architectural coatings, low-GHG equipment, training on job efficiency for equipment operators, idling limits consistent with existing state law, non-peak hour truck activity, limited queuing of trucks, waste reduction, contractor support for ridesharing and transit.
- Building design standards including compliance with Title 24 energy efficiency requirements; low flow plumbing fixtures; insulated hot water plumbing and energy efficient boilers; lighting design that incorporates natural light, compact fluorescent light bulbs or equivalent, multi-zone programmable dimming systems, and solar panels providing a minimum of 2.5% of the on-site electricity needs; orientation of building to best utilize natural cooling/heating, reflective roofing

materials, low maintenance building materials, at least 75% oval or round air ducting with testing showing that system sealed, Energy Star appliances, and building automation system; landscaping with drought tolerant and smog tolerant vegetation with shade trees around buildings; computerized irrigation systems that adjusts for weather conditions; exterior storage areas for recyclables and green waste; transportation demand management that reduces trips 20% by inclusion of bicycle parking, carpool/vanpool spaces, and mass-transit facilities (if available).

### **3.3.3 Environmental Consequences/Impacts and Mitigation Measures**

#### **3.3.3.1 Methodology**

Emissions were estimated using methods and parameters from the Mineral Industry Emissions Inventory Guidance, AP-42, EMFAC2011, OFFROAD2011, and CalEEMod. Air dispersion/deposition modeling and health risk assessment were then performed to determine the potential for the Project to result in significant localized impacts.

As discussed in Section 3.3, the Project is limited to expanding the Butterfield and Sentinel Quarry areas but overall combined production from all quarries is limited by the maximum production rate of the LVPP. The Project would allow up to the maximum LVPP production rate to be extracted exclusively from the Butterfield and Sentinel Quarries. This would result in no material being quarried at White Knob which is an indirect effect of the Project that necessitates calculation of White Knob emissions in the baseline.

Appendix F of the AQIA (located in Appendix E of this document) contains information that was provided by Omya on the mining operations.

#### **Baseline Activity Levels**

CEQA Guidelines generally defines the baseline as the physical conditions in existence when the NOP is published. This is problematic for certain types of existing uses that fluctuate to market demands, such as mining projects. Courts have recognized that there may be instances in which calculating the baseline on the date of the NOP does not capture the true pre-project conditions. For this Project, due to the economic downturn during the time that the NOP was published, the baseline used for the analyses in the DEIR/EIS is defined as those conditions that existed during a more representative period. The baseline was determined to be the conditions during the years 2004 through 2006

Table 3.3-5 presents baseline tonnages for Butterfield, Sentinel and White Knob Quarries. The years 2004 through 2006 were averaged in order to determine a representative annual baseline production and throughput for the quarries. Daily and hourly ore fed to the primary crushers (i.e. Sentinel and White knob) is based on the maximum throughput in each crusher system's permit to operate. Other

3.3 Air Quality & Greenhouse Gases

daily and hourly throughputs are based upon ratio of annual tonnages (i.e. if 20% is waste annually, then 20% daily and hourly is assumed).

**Table 3.3-5 Baseline Activity Levels**

	2004	2005	2006	Baseline (tpy)	Baseline (tpd)	Baseline (tph)
Ore to Primary Crusher						
Sentinel	386,835	467,520	309,880	388,078	5,000	600
Butterfield	0	41,701	128,948	56,883		
Subtotal - Sentinel-Butterfield	386,835	509,221	438,828	444,962	5,000	600
White Knob	309,168	311,999	350,895	324,021	4,000	400
<b>Total</b>	<b>696,004</b>	<b>821,220</b>	<b>789,724</b>	<b>768,982</b>	<b>9,000</b>	<b>1,000</b>
Ore Hauled to Plant						
Sentinel	328,810	397,392	263,398	329,867	4,250	510
Butterfield	0	35,446	109,606	48,351		
Subtotal - Sentinel-Butterfield	328,810	432,838	373,004	378,217	4,250	510
White Knob	262,793	265,199	298,261	275,418	3,400	340
<b>Total</b>	<b>591,603</b>	<b>698,037</b>	<b>671,265</b>	<b>653,635</b>	<b>7,650</b>	<b>850</b>
Waste Total						
Sentinel	204,702	184,440	207,780	198,974	2,822	339
Butterfield	0	59,376	81,624	47,000		
Subtotal - Sentinel-Butterfield	204,702	243,816	289,404	245,974	2,822	339
White Knob	151,860	281,698	130,590	188,049	2,258	226
<b>Total</b>	<b>356,562</b>	<b>525,514</b>	<b>419,994</b>	<b>434,023</b>	<b>5,080</b>	<b>564</b>
Waste Crusher Fines						
Sentinel	58,025	70,128	46,482	58,212	750	90
Butterfield	0	6,255	19,342	8,532		
Subtotal - Sentinel-Butterfield	58,025	76,383	65,824	66,744	750	90
White Knob	46,375	46,800	52,634	48,603	600	60
<b>Total</b>	<b>104,401</b>	<b>123,183</b>	<b>118,459</b>	<b>115,347</b>	<b>1,350</b>	<b>150</b>
<b>TOTAL EXCAVATED</b>	<b>948,165</b>	<b>1,223,551</b>	<b>1,091,259</b>	<b>1,087,658</b>	<b>12,730</b>	<b>1,414</b>

Note: The Project baseline is for Butterfield and Sentinel Quarries only and is 378,217 tons per year as shown in this table. The indirect effect of the Project on the LVPP production is relative to the baseline year activity level for the LVPP of 653,635 tons per year shown in this table. The LVPP is physically limited to less than 680,000 tons per year which is the maximum that may be delivered from the Project and doing so would necessitate cessation of operation in the White Knob Quarry which is an indirect effect that is incorporated into this impact assessment.

tpy: tons per year

tpd: tons per day

tph: tons per hour

## 3.3 Air Quality &amp; Greenhouse Gases

**Vehicles**

Vehicle engine size, model year, and hours of operation are presented in the AQIA (Appendix E). Vehicular activity data does not distinguish which units operate in each quarry. Thus the emissions from vehicles are calculated for the fleet and apportioned to quarries based on throughput amount and to units operating on roads by VMT. Some vehicles have no activity. This may be because the equipment was purchased after the baseline years or because the vehicle did not operate in the baseline. Other vehicles were active during the baseline years but have since been retired.

**Crushing**

Primary crushing systems are operated in the Butterfield and Sentinel quarry area (electrified) and in the White Knob quarry area (diesel generator). Table 3.3-6 presents baseline throughputs for each crushing system and the LVPP. Maximum daily and hourly rates are limited by MDAQMD permits to operate (Appendix G of the AQIA located in Appendix E of this document). It is assumed that the crushing systems and LVPP were operated at the maximum permitted daily and hourly rates during the baseline.

**Table 3.3-6 Baseline Stationary Source Throughputs**

Source	kW-hr / ton	Tons / Year	Tons / Day	Tons / Hour
Butterfield-Sentinel Crushing System	0.33	444,962	5,000	600
White Knob Crushing System	0.0	324,021	4,000	400
LVPP	40.0	653,635	7,650	850

Note: Daily and hourly rates for the crushing systems are based upon permit condition limitations. LVPP daily and hourly rates assume the fraction of waste rock produced annually applies on a daily and hourly basis.

**Roads**

Dust from paved roads occurs only off-site because on-site roads are unpaved. The average distance traveled from the LVPP to Omya's customers is 110 miles. The baseline production amount (653,635 tons/year) is assumed to be placed in 25 ton capacity trucks.

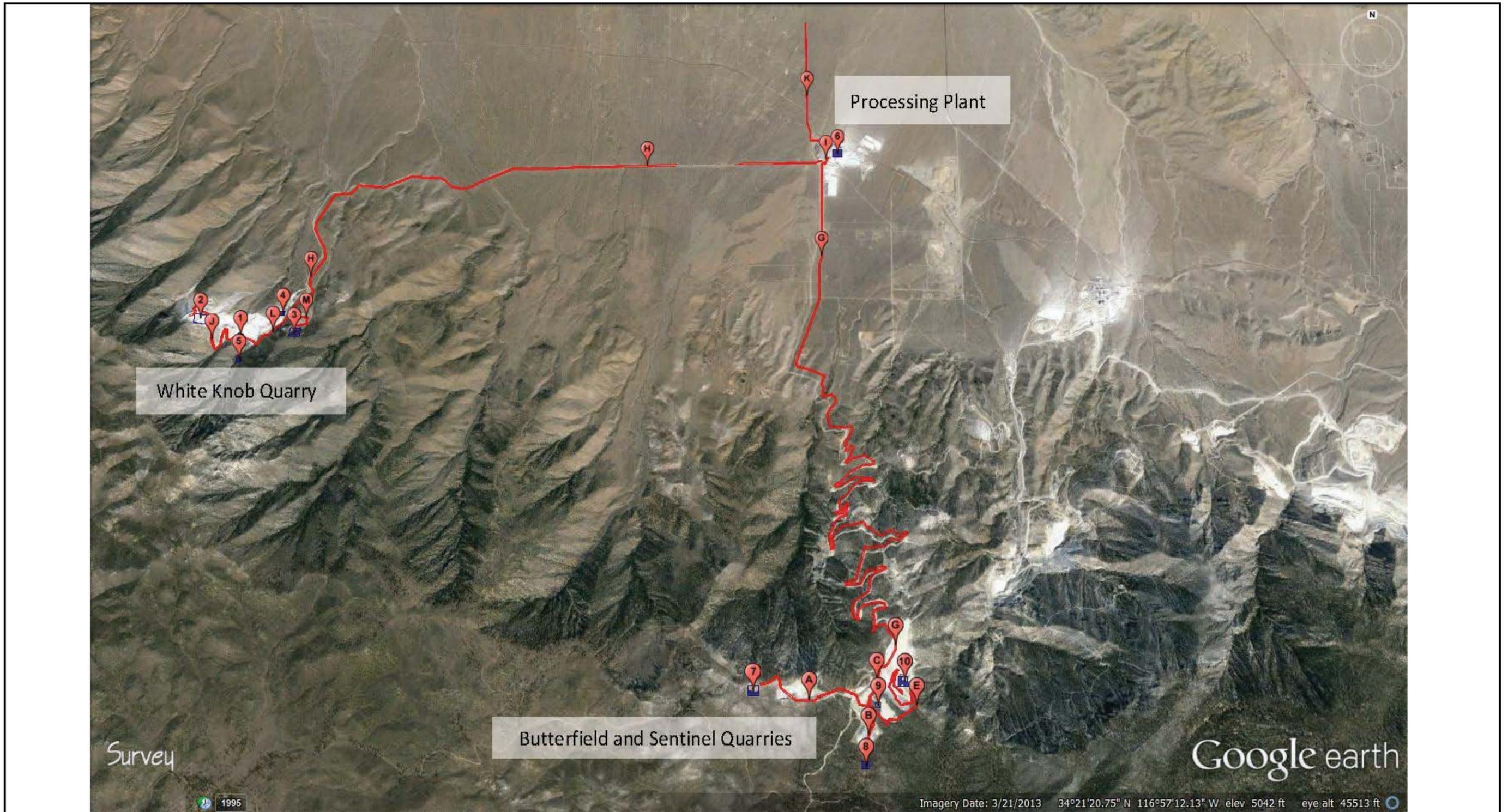
Dust from unpaved roads occurs only on-site because off-site roads are paved. The amount of travel on each unpaved road segment presented in Table 3.3-7 is calculated based upon the average truck capacity of 75 tons and the tonnages moved on each road segment in the baseline. Figure 3.3.2 shows the location of each of the modeled sources including the road segments.

**Table 3.3-7 Baseline Activity on Roads**

Road Segment	Length (ft)	VMT/yr	Annual	VMT/day	Daily	VMT/hr	Hourly
A - Butterfield Pit	3,360	1,618	1.2%	15	0.99%	1.8	1.1%
B - Waste Pile	775	963	0.72%	11	0.71%	1.3	0.8%
C - West Road	1,015	1,355	1.0%	16	1.1%	2.0	1.1%
D – Not Used	0	0	0.0%	0	0.00%	0	0.00%
E - Sentinel Pit	3,000	8,013	6.0%	93	6.0%	11	6.4%
F – Not Used	0	0	0.0%	0	0.00%	0	0.00%
G - Sentinel/Butterfield to Plant	38,000	72,587	54%	816	52%	98	56%
H - White Ridge to Plant	24,260	33,746	25%	417	27%	42	24%
I - Plant Feed	365	1,205	0.90%	14	0.91%	1.6	0.9%
J - White Knob Pit	3,725	8,719	6.5%	106	6.8%	11	6.1%
K - On-Road Trucks <sup>1</sup>	6,186	20,421	*	239	*	27	*
L - Crusher to White Ridge	2,300	5,384	4.0%	66	4.2%	6.6	3.8%
M - White Ridge Pit	1,300	0	0.0%	0	0.00%	0	0.00%
<b>TOTAL<sup>1</sup></b>		154,011	100%	1,794	100%	201	100%

Note: Segment K is used for purposes of modeling only and is not included in the total length of roads on-site.

THIS PAGE IS INTENTIONALLY BLANK



Source: Sespe, 2015.

Figure 3.3.2 Emissions Sources

THIS PAGE IS INTENTIONALLY BLANK

### **Mining Activities**

Mining emissions consist mainly of dust emissions from various sources (e.g. blasting, bulldozing, wind, etc.) and other criteria pollutant emissions from explosives used in blasting (i.e. NO<sub>x</sub> and CO). Excavated tons from each quarry that were reported in 2008 (Appendix G of the AQIA located in Appendix E of this document) and in the baseline were used to create scale factors. Emissions from the 2008 report were then scaled to determine the baseline. The following changes to the 2008 report and assumptions were used in the process of calculating emissions for mining sources:

- Bulldozing reported for the White Knob Quarry was used to scale Sentinel Quarry bulldozing activity because the Sentinel Quarry reported unusually low bulldozing emissions in 2008 and the White Knob bulldozing was judged to be more reflective of typical conditions. The higher activity level is assessed in both the baseline and project scenarios so that the baseline is not inflated for this source.
- Vehicular exhaust and road dust emissions are calculated from scratch except for road dust in the LVPP area that was scaled based on the 2008 emissions.
- Surface areas used for calculation of windblown dust emissions are assigned a scale factor of 1.0 because the size of active areas does not change.
- Control efficiency assigned for chemical dust suppressants on windblown dust from roads was increased from 75% to 90% because the suppressants should be at least as effective as watering which is assigned 90% in the 2008 report.

### **Baseline Emissions**

Emissions factors presented in the AQIA (Appendix E) were calculated for each diesel engine using the methods described in Appendix H of the AQIA. On-road engines were quantified using off-road factors because there are few on-road vehicles and off-road methods result in greater emissions for the same model year engine (i.e. new on-road engines were controlled by regulation before off-road engines). Vehicles that retired before 2012 were excluded so that the emissions characteristics represent the fleet as it existed at the time the Notice of Preparation was published.

Activity weighted emissions factors by unit type were combined with activity data in to calculate baseline vehicular emissions that are presented in Table 3.3-8

## 3.3 Air Quality &amp; Greenhouse Gases

**Table 3.3-8 Baseline Vehicle Emissions**

Location	Type	Avg. (hp-hr)	HC (lb/yr)	NOx (lb/yr)	PM (lb/yr)	CO (lb/yr)	SOx (lb/yr)	CO <sub>2</sub> (tpy)
Pit	Dozer Total	44,393	28	376	18	536	0.012	26
Pit	Excavator Total	57,265	34	447	22	163	0.013	33
Pit	Loader Total	3,543,333	1,468	21,668	950	13,951	0.781	2,064
Plant	Bobcat Total	12,167	24	70	8	81	0.003	7
Plant	Crane Total	5,050	4	46	2	19	0.001	3
Plant	Forklift Total	887,473	447	2,981	308	1,816	0.109	517
Plant	Guzzler Total	0	-	-	-	-	-	-
Plant	Loader Total	71,287	46	625	32	561	0.016	42
Plant	Manlift Total	4,350	2	21	1	9	0.001	3
Plant	Sweeper Total	70,650	62	640	48	307	0.017	41
Roads	Dump Truck Total	165,430	87	1,137	56	1,725	0.034	96
Roads	Fuel Truck Total	25,500	13	175	9	266	0.005	15
Roads	Grader Total	168,392	130	1,862	95	2,101	0.042	98
Roads	Lube Truck Total	93,270	59	780	42	685	0.019	54
Roads	Truck Total	16,706,243	4,897	91,813	2,789	57,696	3.885	9,730
WKQ	Generator Total	847,280	575	8,940	285	13,576	0.271	493
	Grand Total	22,692,682	7,869	131,513	4,663	93,464	5.207	13,217

Note: WKQ = White Knob Quarry.

Quarry emissions are assumed to occur in locations where material is being excavated (quarries) and deposited (overburden areas). Plant emissions are assumed to occur at the LVPP. Road emissions are further allocated to specific roads based upon the VMT presented in Table 3.3-7. VMT is calculated based upon the tons of material being transported and the capacity of haul trucks.

The Roads Subtotal from Table 3.3-8 is combined with road dust and off-site haul truck emissions to quantify the total emissions that occur on roads as presented in Table 3.3-9.

**Table 3.3-9 Baseline Emissions on Roads**

	On-site	Off-site	Total
VMT (miles/yr)	133,590	5,751,988	5,885,578
TSP – Dust (tpy)	248.44	105.89	354.34
PM <sub>10</sub> – Dust (tpy)	70.65	21.18	91.83
PM <sub>2.5</sub> – Dust (tpy)	7.06	5.20	12.26
TSP – Exhaust (tpy)	1.50	4.48	5.97
PM <sub>10</sub> – Exhaust (tpy)	1.50	4.48	5.97
PM <sub>2.5</sub> – Exhaust (tpy)	1.38	4.12	5.50
HC (tpy)	2.59	4.13	6.72
NOx (tpy)	47.88	77.94	125.82
CO (tpy)	31.24	18.70	49.94
SOx (tpy)	0.0020	0.10	0.10
CO <sub>2</sub> (tpy)	9,994	10,732	20,725

Table 3.3-10 and Table 3.3-11 present mining and processing emissions that were scaled up from the 2008 reporting and adjusted as described previously in this section.

**Table 3.3-10 Baseline Mining and Processing Emissions**

Emission Source / Operation / Activity	LVPP (tons per year)			Butterfield and Sentinel Quarries (tons per year)			White Knob Quarry (tons per year)		
	TSP	PM <sub>10</sub>	PM <sub>2.5</sub>	TSP	PM <sub>10</sub>	PM <sub>2.5</sub>	TSP	PM <sub>10</sub>	PM <sub>2.5</sub>
-									
Drilling	-	-	-	0.31	0.25	0.25	0.23	0.19	0.19
Blasting	-	-	-	14.46	7.52	0.43	5.41	2.81	0.16
Explosives	-	-	-	-	-	-	-	-	-
Bulldozing and Grading	0.185	0.090	0.028	28.27	13.75	4.20	20.99	10.21	3.12
Loading Quarry / Pad	0.0072	0.0035	0.0011	0.39	0.19	0.06	1.65	0.81	0.25
Primary Crushing	-	-	-	8.43	1.48	0.46	11.83	3.83	1.20
Ball Mill #1	1.68	0.106	0.033	-	-	-	-	-	-
Tertiary Crushing	34.7	2.25	0.69	-	-	-	-	-	-
Roller Mill #1	3.61	0.242	0.076	-	-	-	-	-	-
Roller Mill #2	2.66	0.167	0.052	-	-	-	-	-	-
Roller Mill #3	1.62	0.104	0.033	-	-	-	-	-	-

## 3.3 Air Quality &amp; Greenhouse Gases

Emission Source / Operation / Activity	LVPP (tons per year)			Butterfield and Sentinel Quarries (tons per year)			White Knob Quarry (tons per year)		
	TSP	PM <sub>10</sub>	PM <sub>2.5</sub>	TSP	PM <sub>10</sub>	PM <sub>2.5</sub>	TSP	PM <sub>10</sub>	PM <sub>2.5</sub>
Roller Mill #4	1.60	0.104	0.033	-	-	-	-	-	-
Surface Treating Plant	0.011	0.0010	0.0003	-	-	-	-	-	-
Rock Storage System/Plan	19.5	5.47	1.71	-	-	-	-	-	-
Optical Sorter	0.019	0.014	0.004	-	-	-	-	-	-
Coarse Product Storage System	0.48	0.080	0.025	-	-	-	-	-	-
Silo 81-70c	0.58	0.082	0.026	-	-	-	-	-	-
Bulk Loadout 82 System	0.16	0.025	0.008	-	-	-	-	-	-
Bulk Loadout 83 System	0.028	0.005	0.001	-	-	-	-	-	-
Stockpiles - Wind Erosion	1.06	0.53	0.21	0.67	0.34	0.13	0.18	0.09	0.04
Exhaust - Stationary and Portable Equipment	0.047	0.046	0.046	0.04	0.04	0.04	-	-	-
Exhaust - Mobile and Vehicular Equipment*	-	-	-	-	-	-	-	-	-
Paved Roads - Entrained Dust*	-	-	-	-	-	-	-	-	-
Unpaved Roads - Entrained Dust*	30.84	9.10	1.40	-	-	-	-	-	-
Wind Erosion From Unpaved Operational Areas and Roads	11.25	5.62	2.25	20.10	10.05	4.02	20.66	10.33	4.13
<b>Total</b>	<b>110.03</b>	<b>24.04</b>	<b>6.62</b>	<b>72.66</b>	<b>33.61</b>	<b>9.59</b>	<b>60.96</b>	<b>28.27</b>	<b>9.08</b>

Notes: Engine exhaust and road dust are calculated elsewhere except for road dust in the LVPP facility and portable water pump engines that are scaled from 2008 levels. Windblown dust is not scaled because the area disturbed daily remains unchanged.

**Table 3.3-11 Baseline Mining and Processing Combustion Emissions**

Sources	CO (tpy)	NOx (tpy)	ROG (tpy)	SOx (tpy)
Sentinel Quarry Blasting & Water Pumps	4.2	1.6	0.042	0.037
White Knob Quarry Blasting <sup>1</sup>	3.71	0.94	0	0
LVPP Heaters	0.12	0.48	0.01	0.01
Total	8.03	3.02	0.052	0.047

Note: <sup>1</sup> White Knob quarry generator emissions are quantified with the off-road vehicle emissions in Table 3.3-10.

### Potential Project Emissions

The Project is limited to expanding the Butterfield and Sentinel Quarry areas but overall combined production from all quarries is limited by the LVPP maximum production rate. The Project would allow up to the maximum production rate for the LVPP to be extracted exclusively from the Butterfield and Sentinel Quarries. This would result in no material being quarried at White Knob which is an indirect effect of the Project that necessitates calculation of White Knob emissions in the baseline. Moreover, the available vehicular activity data does not distinguish which units operate in each quarry. Thus, the emissions from vehicles are calculated for the fleet and apportioned to quarries based on throughput amount and to units operating on roads by VMT. Potential Project activity levels and scaling factors are presented in Table 3.3-12.

**Table 3.3-12 Project Activity Scaling Factors**

Source	Baseline Value	Project Value	Scale Factor
LVPP (excludes wind erosion)	653,635 tons/yr	680,000 tons/yr	1.04
LVPP wind erosion	14.88 acres	14.88 acres	1.00
Off-site Road Emissions	5,885,577 VMT/yr	6,171,084 VMT/yr	1.05
On-site Road Emissions	133,589 VMT/yr <sup>1</sup>	187,084 VMT/yr <sup>1</sup>	1.40
Vehicles Working in Quarries (based on total tons ore and waste moved)	1,521,682 tons/yr	2,295,000 tons/yr	1.51
New Mobile Crusher	0 hp-hr/yr	2,084,855 hp-hr/yr	n/a <sup>2</sup>

Note: <sup>1</sup> Value calculated based upon tonnage moved, capacity of trucks, and road segments traveled.

<sup>2</sup> Activity based on White Knob Quarry crusher activity scaled up for greater production.

Proposed emissions and Project increment are calculated in Appendix I of the AQIA (located in Appendix E of this document) and presented in Table 3.3-13 through Table 3.3-20.

## 3.3 Air Quality &amp; Greenhouse Gases

**Table 3.3-13 Project Vehicle Emissions by Location**

	Average (hp-hr)	HC (lb/yr)	NOx (lb/yr)	PM (lb/yr)	CO (lb/yr)	SOx (lb/yr)	CO <sub>2</sub> (tpy)
Quarry Subtotal	4,984,952	2,093	30,759	1,355	20,035	1.10	2,903
Plant Subtotal	1,093,368	607	4,531	416	2,902	0.15	643
Roads Subtotal	24,029,854	7,262	134,115	4,188	87,490	5.58	13,996
Mobile Crusher	2,084,855	208	5,307	181	6,274	0.67	638
Proposed	32,193,030	10,171	174,712	6,140	116,702	7.50	18,179
Baseline <sup>1</sup>	22,692,682	7,869	131,513	4,663	93,464	5.207	13,217
<b>Project Increment</b>	<b>9,500,348</b>	<b>2,301</b>	<b>43,199</b>	<b>1,477</b>	<b>23,237</b>	<b>2.30</b>	<b>4,957</b>

Note: <sup>1</sup> See also Table 3.3-8

Table 3.3-14 presents proposed emissions on roads and the Project increment from baseline that would result from the Project.

**Table 3.3-14 Project Emissions on Roads**

	On-site	Off-site	Total	Baseline	Increment
VMT (miles/yr)	187,084	3,940,736	4,127,820	3,921,535	206,285
TSP – Dust (tpy)	348	72.6	420	318	102
PM <sub>10</sub> – Dust (tpy)	98.9	14.5	113	84.6	28.9
PM <sub>2.5</sub> – Dust (tpy)	9.89	3.56	13.5	10.5	3.0
TSP – Exhaust (tpy)	2.09	3.07	5.16	4.44	0.72
PM <sub>10</sub> – Exhaust (tpy)	2.09	3.07	5.16	4.44	0.72
PM <sub>2.5</sub> – Exhaust (tpy)	1.93	2.82	4.75	4.09	0.66
HC (tpy)	3.63	2.83	6.46	5.31	1.15
NOx (tpy)	67.1	53.4	120	99.2	21
CO (tpy)	43.8	12.8	56.6	43.6	13
SOx (tpy)	0.0028	0.07	0.07	0.07	0.0035
CO <sub>2</sub> (tpy)	13,996	7,339	21,335	17,061	4,274

Table 3.3-15 presents proposed emissions and the Project incremental emissions from mining and processing activities. The White Knob Quarry would have zero emissions because there would be no activity there if the Project maximum were to be quarried from the Butterfield and Sentinel Quarries.

**Table 3.3-15 Project Particulate Matter Emissions**

Emission Source / Operation / Activity	LVPP (tons per year)			Butterfield and Sentinel Quarries (tons per year)			White Knob (tons per year)		
	TSP	PM <sub>10</sub>	PM <sub>2.5</sub>	TSP	PM <sub>10</sub>	PM <sub>2.5</sub>	TSP	PM <sub>10</sub>	PM <sub>2.5</sub>
Drilling	-	-	-	0.74	0.60	0.60	-	-	-
Blasting	-	-	-	34.46	17.92	1.03	-	-	-
Explosives	-	-	-	-	-	-	-	-	-
Bulldozing, Scraping And Grading Of Material	0.19	0.09	0.03	67.36	32.77	10.01	-	-	-
Loading Of Material(S) Mine / Quarry / Pit	0.01	0.00	0.00	0.92	0.45	0.14	-	-	-
Primary Crushing	-	-	-	20.10	3.52	1.09	-	-	-
Ball Mill #1	1.75	0.11	0.03	-	-	-	-	-	-
Tertiary Crushing	36.05	2.34	0.72	-	-	-	-	-	-
Roller Mill #1	3.75	0.25	0.08	-	-	-	-	-	-
Roller Mill #2	2.77	0.17	0.05	-	-	-	-	-	-
Roller Mill #3	1.68	0.11	0.03	-	-	-	-	-	-
Roller Mill #4	1.67	0.11	0.03	-	-	-	-	-	-
Surface Treating Plant	0.01	0.00	0.00	-	-	-	-	-	-
Rock Storage System/Plan	20.33	5.69	1.78	-	-	-	-	-	-
Optical Sorter	0.02	0.01	0.00	-	-	-	-	-	-
Coarse Product Storage System	0.50	0.08	0.03	-	-	-	-	-	-
Silo 81-70c	0.60	0.09	0.03	-	-	-	-	-	-
Bulk Loadout 82 System	0.16	0.03	0.01	-	-	-	-	-	-
Bulk Loadout 83 System	0.03	0.00	0.00	-	-	-	-	-	-
Stockpiles - Wind Erosion	1.06	0.53	0.21	0.67	0.34	0.13	-	-	-
Exhaust - Stationary and Portable Equipment	0.05	0.05	0.05	0.09	0.09	0.09	-	-	-
Exhaust - Mobile and Vehicular Equipment*	-	-	-	-	-	-	-	-	-
Paved Roads - Entrained Dust*	-	-	-	-	-	-	-	-	-
	TSP	PM <sub>10</sub>	PM <sub>2.5</sub>	TSP	PM <sub>10</sub>	PM <sub>2.5</sub>	TSP	PM <sub>10</sub>	PM <sub>2.5</sub>
Unpaved Roads - Entrained Dust*	32.08	9.47	1.45	-	-	-	-	-	-

## 3.3 Air Quality &amp; Greenhouse Gases

Emission Source / Operation / Activity	LVPP (tons per year)			Butterfield and Sentinel Quarries (tons per year)			White Knob (tons per year)		
Wind Erosion From Unpaved	11.25	5.62	2.25	20.10	10.05	4.02	-	-	-
Project Total by Area	113.97	24.77	6.79	144.44	65.72	17.11	-	-	-
Baseline by Area	110.03	24.04	6.62	72.66	33.61	9.59	60.96	28.27	9.08
<b>Increment by Area</b>	<b>3.94</b>	<b>0.72</b>	<b>0.17</b>	<b>71.78</b>	<b>32.12</b>	<b>7.52</b>	<b>-60.96</b>	<b>28.27</b>	<b>-9.08</b>
<b>Increment Total</b>	<b>14.76</b>	<b>4.57</b>	<b>-1.40</b>						

Note: Elimination of windblown dust from White Knob Quarry accounts for beneficial effect on PM<sub>2.5</sub>. See also Table 3.3-10

Table 3.3-16 presents proposed emissions and the Project increment from mining and processing activities.

**Table 3.3-16 Project Mining and Processing Combustion Emissions**

Sources	CO (tpy)	NOx (tpy)	ROG (tpy)	SOx (tpy)
Sentinel Quarry Blasting & Water Pumps	10.02	3.72	0.088	0.0041
White Knob Quarry Blasting	0	0	0	0
LVPP Heaters	0.124	0.49	0.0054	0.132
Proposed	10.15	4.21	0.09	0.14
<b>Baseline</b>	<b>8.03</b>	<b>2.98</b>	<b>0.04</b>	<b>0.13</b>
<b>Project Increment</b>	<b>2.12</b>	<b>1.24</b>	<b>0.05</b>	<b>0.01</b>

Note: See also Table 3.3-11.

Table 3.3-17 summarizes the incremental change in emissions that would occur if the Project were to operate at the maximum rate of 680,000 tons per year production and 100% of the ore being mined from the Butterfield and Sentinel Quarries.

**Table 3.3-17 Incremental Change in Emissions**

Pollutant	Total Sentinel Butterfield (tons/yr)	Total White Knob (tons/yr)	Total LVPP (tons/yr)	Total Offsite (tons/yr)	Total Project w/o White Knob Reductions (tons/yr)	Total Project w/ White Knob Reductions (tons/yr)
VOC	2.69	-1.54	0.01	0.11	2.82	1.27
NO <sub>x</sub>	48.1	-26.4	0.10	2.07	50.3	23.9
CO	32.6	-21.1	0.07	0.50	33.1	12.0
SO <sub>x</sub>	0.0022	-0.0010	0.0000	0.0027	0.0049	0.0038
TSP	262	-151	4.04	2.93	269	118
PM <sub>10</sub>	87.3	-54.5	0.76	0.68	88.8	34.3
PM <sub>2.5</sub>	14.4	-12.5	0.18	0.25	14.8	2.38
CO <sub>2</sub> e	9,900	-4,978	28.3	0.14	9,929	4,951

### Dispersion Modeling

Dispersion modeling was performed in consultation with the EPA Modeling Guidelines (40CFR 51, Appendix W) to determine the concentration of pollutants at receptors located near the Project and to estimate deposition of dust onto carbonaceous plant species which exist within and surrounding the Project. Consistent with the Guidelines, EPA's AERMOD Gaussian plume model was selected for use. AERMOD requires inputs characterizing the model domain, emissions sources, terrain, and meteorological conditions. The model domain was created to encompass the Project site, the White Knob Quarry site, the Omya processing plant, and nearby receptors beyond which pollutant concentrations would decrease with distance from the Project.

### Sources

Source characteristics including emissions rates, vertical and lateral dimensions, initial velocity, and location were determined by calculation using methods presented in this report and physical characteristics of each source. The large number of sources in the model, large areas on-site over which mobile equipment works, and relatively large distances to receptors were considered in choosing appropriate sizes for model objects. The Project only includes fugitive area sources. There are no point sources (i.e., stacks). Initial lateral and vertical dimensions were selected based on engineering judgement regarding the nature of the source(s) being represented and the physical size of the source(s). The maximum size of a volume source in the model is 100 m x 100 m representing the mine pits.

In general, area sources and sources operating below the surrounding ground level (i.e., in pits) were assigned zero release height while plant equipment and mobile sources were assigned release heights

### 3.3 Air Quality & Greenhouse Gases

that reflect the sources' actual height or represent wake off the source consistent with EPA policy for haul roads. Regardless, the property boundary and off-site receptors are at such great distances from the sources that there is no practical difference between 0 and 4.25 m releases. This is particularly true given that the AAQS analysis assumed that dry depletion of the plume would not occur (deposition is a separate model run). Thus, dust hitting the ground is reflected back into the air. The angle at which pollutants disperse in AERMOD results in pollutants hitting the ground within a lateral distance three times greater than the release height. Thus, the plume hits the ground within 13 m (50 feet) of the source and travels along the ground until it reaches the receptor which is no different than being released at ground level when receptors are hundreds of feet or more distant from the sources.

#### ***Terrain***

Dispersion modeling was performed utilizing flat terrain. Section 4.1 of the AERMOD Implementation Guide (EPA, 12.2016) and other historical guidance documents address modeling sources with terrain-following plumes in sloping terrain.

“For cases in which receptor elevations are lower than the base elevation of the source (i.e., receptors that are down-slope of the source), AERMOD will predict concentrations that are less than what would be estimated from an otherwise identical flat terrain situation....

To avoid underestimating concentrations in such situations, it may be reasonable in cases of terrain-following plumes in sloping terrain to apply the non-DEFAULT option to assume flat, level terrain. This determination should be made on a case-by-case basis, relying on the modeler's experience and knowledge of the surrounding terrain and other factors that affect the air flow in the study area, characteristics of the plume (release height and buoyancy), and other factors that may contribute to a terrain-following plume, especially under worst-case meteorological conditions associated with the source.” (EPA, 12/2016).

In addition, the South Coast AQMD has the following warning posted on it's website.

“WARNING:According to the AERMOD Implementation Guide [Link to external website.](#) (PDF, 133kb) revised August 3,2015, for cases in which receptor elevations are lower than the base elevation of the source, AERMOD will predict concentrations that are less than what would be estimated from an otherwise identical flat terrain situation. While this is appropriate and realistic in most cases, for cases of down-sloping terrain where the plume is terrain-following, AERMOD will tend to underestimate concentrations when terrain effects are taken into account. In order to avoid underestimating concentrations in such situations, AQMD recommends the following:

1. If all receptor elevations are lower than the base elevation of the source, the non-default option within AERMOD should be applied to assume flat, level terrain.
2. If some receptors are lower and some receptors are higher than the base elevation of the source, AERMOD should be run twice – once using the default option and the second time using the non-default option. The maximum ground-level concentration from both runs should be reported.”  
(<http://www.aqmd.gov/home/library/air-quality-data-studies/meteorological-data/modeling-guidance>).

Existing guidance supports the use of the non-default FLAT option and it was used so that the modeling would produce conservatively high concentrations and health risks as compared to the default option.

### ***Meteorological Data***

Meteorological data was purchased from Lakes Environmental after consultation with the MDAQMD. Existing weather stations for which meteorological data was available from the MDAQMD (Barstow, Hesperia, Lucerne Valley, Phelan, Trona, Twentynine Palms, and Victorville) were determined to be unrepresentative of the Project site conditions because they are located far from the site and in desert valleys whereas the Project site is in the foothills and mountains.

Lakes generated prognostic meteorological data for the five-year period of 2008 through 2012 based on coordinates within the Project area using the Mesoscale Meteorological model, MM5 (Pennsylvania State University / National Center for Atmospheric Research). At the time, MM5 was a non-default option and observed meteorological data from a weather station was the recommended option for AERMOD. However, other EPA recommended models (i.e., grid models CAMX & CalPuff) could use MM5 data and be consistent with the Modeling Guidelines in effect at the time. Nevertheless, the observed weather data was determined by MDAQMD and Sespe to be unrepresentative and the MM5 data was determined likely to be more representative of conditions on-site because MM5 uses observational data from the weather stations and interpolates between them based on relevant factors that affect wind speed and direction (e.g., terrain). EPA’s website (<https://www.epa.gov/scram/air-modeling-meteorological-grid-models>) currently states:

*“For air quality modeling purposes, meteorological grid models are used in conjunction with chemical interaction models to provide gridded output of chemical species or pollutant data. Meteorological grid models use mathematical formulations that simulate atmospheric processes such as the change of winds and temperature in time. These meteorological parameters are calculated at distinct spatially equidistant points over an area of interest which is called a grid. When these models are applied in a retrospective mode (i.e. modeling a past event) they are able to blend ambient data with model predictions via four-dimensional data assimilation, thereby yielding temporal and spatially complete data sets that are grounded by actual observations.*”

## 3.3 Air Quality &amp; Greenhouse Gases

*There are several commonly-used meteorological grid models that can develop inputs for air quality models. These grid models differ in their simulation of atmospheric processes but each produce gridded meteorological parameters. There are also several post-processors which are needed to convert the raw meteorological modeling output to suitable air quality model input. A few of the most commonly used meteorological models and post-processors are briefly described below.*

*[The MM5 model] ... is a frequently-used meteorological model for historical episodes. It is a limited-area, nonhydrostatic, terrain-following sigma-coordinate model designed to simulate or predict mesoscale and regional-scale atmospheric circulations."*

Meteorological data used in dispersion modeling was chosen based on the EPA Modeling Guidelines in effect at the time (40CFR51 Appendix W) and which have changed slightly to better incorporate prognostic meteorological grid model as a substitute for measured data in cases where the prognostic data would be more representative.

*The meteorological data used as input to a dispersion model should be selected on the basis of spatial and climatological (temporal) representativeness as well as the ability of the individual parameters selected to characterize the transport and dispersion conditions in the area of concern. The representativeness of the data is dependent on: proximity of the meteorological monitoring site to the area under consideration; complexity of the terrain; exposure of the meteorological monitoring site; and period of time during which data are collected. (70FR 68243 and 82FR 5222).*

*Spatial representativeness of the data can be adversely affected by large distances between the source and receptors of interest and the complex topographic characteristics of the area. Temporal representativeness is a function of the year-to-year variations in weather conditions. Where appropriate, data representativeness should be viewed in terms of the appropriateness of the data for constructing realistic boundary layer profiles and three dimensional meteorological fields. (70FR 68243 and 82FR 5222).*

Former EPA Modeling Guidelines (2005) were silent on use of prognostic meteorological data. However, there was no better option at the time modeling was performed and EPA had come to allow its use with AERMOD in certain situations. Subsequently, EPA changed the Modeling Guidelines (2017) related to meteorological data as described in Federal Register preamble to the updated Modeling Guidelines. EPA states:

*"We made extensive updates and modifications ... to reflect current EPA practices, requirements, and recommendations for determining the appropriate modeling domain and model input data from new or modifying source(s) or sources under consideration for a revised permit limit, from background concentrations (including air quality monitoring data and nearby and other sources), and from meteorology...."*

*The use of prognostic mesoscale meteorological models to provide meteorological input for regulatory dispersion modeling applications has been incorporated throughout the “Meteorological Input Data” subsection, including the introduction of the MMIF as a tool to inform regulatory model applications...” (82 FR 5201-5202, January 17, 2017).*

A portion of the most recent Modeling Guidelines (2017) that addresses how prognostic meteorological data should be evaluated prior to its use is paraphrased below.

*For some modeling applications, there may not be a representative National Weather Service (NWS) or comparable meteorological station available (e.g., complex terrain), and it may be cost prohibitive or infeasible to collect adequately representative site-specific data. For these cases, it may be appropriate to use prognostic meteorological data, if deemed adequately representative, in a regulatory modeling application. However, if prognostic meteorological data are not representative of transport and dispersion conditions in the area of concern, the collection of site-specific data is necessary.*

*The EPA has developed a processor, the MMIF, to process MM5 (Mesoscale Model 5) or WRF (Weather Research and Forecasting) model data for input to various models including AERMOD. MMIF can process data for input to AERMET or AERMOD for a single grid cell or multiple grid cells. MMIF output has been found to compare favorably against observed data (site-specific or NWS)... (Section 8.4.5.1, 2017 Modeling Guidelines).*

- a. *Prognostic model evaluation. Appropriate effort by the applicant should be devoted to the process of evaluating the prognostic meteorological data. The modeling data should be compared to NWS observational data or other comparable data in an effort to show that the data are adequately replicating the observed meteorological conditions of the time periods modeled. An operational evaluation of the modeling data for all model years (i.e., statistical, graphical) should be completed. The use of output from prognostic mesoscale meteorological models is contingent upon the concurrence with the appropriate reviewing authority that the data are of acceptable quality, which can be demonstrated through statistical comparisons with meteorological observations aloft and at the surface at several appropriate locations.*
- b. *Representativeness. When processing MMIF data for use with AERMOD, the grid cell used for the dispersion modeling should be adequately spatially representative of the analysis domain. In most cases, this may be the grid cell containing the emission source of interest. Since the dispersion modeling may involve multiple sources and the domain may cover several grid cells, depending on grid resolution of the prognostic model, professional judgment may be needed to select the appropriate grid cell to use. In such cases, the selected grid cells should be adequately representative of the entire domain.*

## 3.3 Air Quality &amp; Greenhouse Gases

- c. *Grid resolution. The grid resolution of the prognostic meteorological data should be considered and evaluated appropriately, particularly for projects involving complex terrain. The operational evaluation of the modeling data should consider whether a finer grid resolution is needed to ensure that the data are representative. The use of output from prognostic mesoscale meteorological models is contingent upon the concurrence with the appropriate reviewing authority that the data are of acceptable quality. (Section 8.4.5.2, 2017 Modeling Guidelines).*

In summary, the meteorological dataset used in AERMOD to estimate pollutant concentrations was appropriately selected and more representative of conditions on-site and at receptor locations than observational data that could have been used. A co-benefit of purchasing MM5 data was that the electronic file format enabled use of AERMOD which was EPA's preferred model at the time and remains the preferred model today. Otherwise, EPA's ISCST model which is the predecessor to AERMOD and no longer preferred would have been used because the observational meteorological data files available from MDAQMD were formatted for ISCST and lacked certain parameters needed to run AERMOD.

Illustrations of the dataset including a wind rose, a wind speed frequency distribution graph, and a flow chart for the meso-scale meteorological (MM5) modeling system that produced the dataset are provided in Appendix E.

**Receptors**

Several models with a consistent set of volume sources and varying list of receptors (i.e. discrete, boundary, and grid) were run. The location of the discrete receptors is provided in the AQIA (Appendix E). The boundary receptor model run includes only receptors along the boundary around the quarries (Appendix E). The boundary receptor run is used to estimate concentrations of PM<sub>10</sub> and PM<sub>2.5</sub> at the point of maximum impact for comparison to primary ambient air quality standards (i.e. to protect human health). The boundary on the north was chosen to coincide with the limits of the National Forest as suggested by SBNF. The boundary on the south was chosen to reflect the concentration that may be experienced by an individual on the nearest roadway. The boundary on the east was chosen to be half way between the Sentinel Quarry and the neighboring quarry. The boundary on the west was chosen to extend approximately the same distance from the Butterfield Quarry as the boundary on the east extends from the Sentinel Quarry.

Grid receptor model runs were used in the health risk assessment and the deposition model to generate contoured plots of the results. Grid results were used only for illustration purposes with exception of the deposition impact on vegetation. Due to the nature of the sources which release near the ground (i.e., as compared to a source with a tall stack such as a power plant), the concentration of pollutants decreases with distance from the source and, in fact, may follow the terrain as discussed in relation to the use of the FLAT option above. In cases like this, the point of compliance for AAQS evaluation will be on the project boundary. Receptors located along the project boundary are spaced 50 meters apart

which should be acceptable for a site of this size and where the primary sources are mobile (i.e., unlikely to cause a hot spot). Illustrations of contours for pollutants affecting health risk use a grid with 200 meter spacing (Appendix E). The deposition model was prepared to inform the biological impacts of the dust landing on the carbonaceous plants (i.e., as opposed to remaining in air and impacting human health). Areas of carbonaceous plant species span great distances and occur intermittently. Thus, 500 meter grid spacing was used to estimate deposition on the plants.

The deposition model is the only model run that assumes the plume is depleted by deposition. The deposition model considers three sizes of particulates. TSP (i.e. PM<sub>30</sub>), PM<sub>10</sub>, and PM<sub>2.5</sub> are calculated for each source and the amount of each size varies based on the source type accordingly. For instance, the dominant source of dust emissions is the roads which emit a combination of dust and diesel particulate matter. When dust and diesel PM emissions are combined the resulting fractionation for unpaved roadway particulates is 3.34% PM<sub>2.5</sub>; 25.5% PM<sub>10-2.5</sub>; and 71.2% PM<sub>30-10</sub>. The combination of sources operating at the LVPP results in fractionation of 4.5% PM<sub>2.5</sub>; 14.0% PM<sub>10-2.5</sub>; and 81.5% PM<sub>30-10</sub>. Other source fractionations were varied according to the calculated amounts of dust and diesel PM.

### Health Risk Assessment

Constituents in diesel exhaust and dust emissions were speciated into toxic components using the following CARB Speciation Profiles:

- Particulate matter from unpaved roads (PM Profile #470);
- Particulate matter from paved roads (PM Profile #471);
- Particulate matter from aggregate processing (PM Profile #90013);
- Diesel particulate matter (PM Profile #6139 for the 2013 fleet); and
- Diesel total organic gases (Organic Profile #818).

The health risk assessment was performed using a combination of AERMOD dispersion model (version 12345) and HARP2 (version 15180). AERMOD was used to generate plot files containing dispersion coefficients ( $\chi/Q$ ) that were input to the HARP2 Air Dispersion Model and Risk Tool (ADMRT version 15180). To produce the dispersion coefficients, each source in the AERMOD model was assigned the unit rate emissions factor of one gram per second (1.0 g/s). Values in the resulting plot files were then multiplied by emissions rates for each source to determine the ground level concentration (GLC, in units  $\mu\text{g}/\text{m}^3$ ) of each pollutant at each receptor location. Appendix J of the AQIA (located in Appendix E of this document) contains a TAC emissions summary table for the Project. The AQIA also contains a CDROM of with the modeling files.

Peak hour and annual average GLCs calculated by HARP2 were then used for health risk assessment in HARP2. Non-cancer (acute and chronic) and cancer health risks were calculated for individual resident receptors and for worker receptors. Population-wide cancer risk was not calculated due to the remote location of the Project site. The AQIA provides a detailed explanation of the individual modeling for

## 3.3 Air Quality &amp; Greenhouse Gases

specific pathways (i.e., inhalation, ingestion, dermal and mother's milk), breathing and soil ingestion rates and the results of the individual modeling.

### Project Design Features

As described in Section 2.3.17, the Project has incorporated design features and environmental protection measures that minimize the potential for significant impacts. Table 3.3-18 provides a summary of the key Project design features considered in the air quality assessment.

**Table 3.3-18 Key Project Design Features Considered in the Air Quality Assessment**

Air	
AIR-1.	Comply with all relevant MDAQMD regulations and permit conditions to minimize air emissions.
AIR-2.	Ensure the baghouse for the stationary crusher is in a good operating condition as required by the permit.
AIR-3.	Use water or chemical suppressants to control dust at the quarry, crusher site, overburden pads and haul/quarry roads.
AIR-4.	Ensure that diesel equipment and vehicles meet the required CARB diesel regulations.
AIR-5.	Mining activities will be limited or stopped during significant wind events.

#### 3.3.3.2 Significance Criteria

Significance thresholds for evaluating potential air quality impacts associated with the Project were developed from the CEQA Guidelines Environmental Checklist Appendix G and the MDAQMD Guidelines.

The CEQA Checklist contains the following guidance for air quality impacts assessment:

*Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:*

- a) *Conflict with or obstruct implementation of the applicable air quality plan?*
- b) *Violate any air quality standard or contribute substantially to an existing or projected air quality violation?*
- c) *Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?*
- d) *Expose sensitive receptors to substantial pollutant concentrations?*
- e) *Create objectionable odors affecting a substantial number of people?*

The CEQA Checklist contains the following guidance for greenhouse gas emissions impacts assessment:

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

- a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
- b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

MDAQMD CEQA and Federal Conformity Guidelines (August 2011) (MDAQMD Guidelines) provide the following text which describes the significance criteria that have been established by that agency:

*Any project is significant if it triggers or exceeds the most appropriate evaluation criteria. The District will clarify upon request which threshold is most appropriate for a given project; in general, the emissions comparison (criteria number 1) is sufficient:*

1. *Generates total emissions (direct and indirect) in excess of the thresholds given in [Table 4] (The significance thresholds identified in the MDAQMD Guidelines are provided in Table 3.3-19);*
2. *Generates a violation of any ambient air quality standard when added to the local background;*
3. *Does not conform with the applicable attainment or maintenance plan(s);*
4. *Exposes sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a Hazard Index (HI) (non-cancerous) greater than or equal to 1.*

*A significant project must incorporate mitigation sufficient to reduce its impact to a level that is not significant. A project that cannot be mitigated to a level that is not significant must incorporate all feasible mitigation. Note that the emission thresholds are given as a daily value and an annual value, so that multi-phased project (such as project with a construction phase and a separate operational phase) with phases shorter than one year can be compared to the daily value.*

**Table 3.3-19 MDAQMD Significant Emissions Thresholds**

Criteria Pollutant	MDAQMD Annual Threshold (tons)	MDAQMD Daily Threshold (pounds)
Greenhouse Gases(CO <sub>2</sub> e)	100,000	548,000
Carbon Monoxide(CO)	100	548
Oxides of Nitrogen(NO <sub>x</sub> )	25	137
Volatile Organic Compounds(VOC)	25	137
Oxides of Sulfur(SO <sub>x</sub> )	25	137
Particulate Matter(PM <sub>10</sub> )	15	82

## 3.3 Air Quality &amp; Greenhouse Gases

Criteria Pollutant	MDAQMD Annual Threshold (tons)	MDAQMD Daily Threshold (pounds)
Particulate Matter(PM <sub>2.5</sub> )	15	82
Hydrogen Sulfide(H <sub>2</sub> S)	10	54
Lead(Pb)	0.6	3

Source: (MDAQMD, 2011).

MDAQMD Guidelines states that, in general, emissions less than those listed in Table 3.3-19 will result in less than significant impact on air quality. Thus, regional impacts from a project that adds emissions to the air basin in quantities which are less than those listed in Table 3.3-19 would be less than cumulatively considerable.

Localized impacts from stationary sources are not addressed by the values in Table 3.3-19. The Project's modeled concentration of pollutants may not exceed the increment between the AAQS and background concentrations. For pollutants where background already exceeds the AAQS, US EPA Significant Impact Levels (SILs) are used to evaluate the cumulative impact. The SILs are normally used in the context of PSD permitting and represent a de minimis threshold in attainment areas (US EPA, 2007). For non-attainment areas any additional degradation would be significant and so this AQIA uses the SILs (i.e. de minimis level) as significance thresholds. The increment and SIL methodologies address the Project impact as well as the cumulative impact on local concentrations.

Health risk assessment is required to determine whether risk levels exceed the MDAQMD thresholds of 10 in 1 million for cancer impacts and Hazard Index (HI) of 1.0 for non-cancer impacts.

### 3.3.3.3 Impacts and Mitigation Measures

#### Impact Analysis

The Project does not propose to construct any structures other than excavations and piles which are created from mining operations. Thus, only emissions from the operation phase are assessed in the following impact analysis. Project emissions (increment) are compared to the mass-based thresholds from the MDAQMD Guidelines as shown in Table 3.3-20.

**Table 3.3-20 Project Significance Comparisons**

Pollutant	Project Emissions (tons/yr)	MDAQMD Significance Threshold (tons/yr)	Significant?
VOC	1.27	25	No
NO <sub>x</sub>	23.9	25	No
CO	12.0	100	No

Pollutant	Project Emissions (tons/yr)	MDAQMD Significance Threshold (tons/yr)	Significant?
SO <sub>x</sub>	0.0038	25	No
TSP	118	n/a	No
<b>PM<sub>10</sub></b>	<b>34.3</b>	<b>15</b>	<b>Yes</b>
PM <sub>2.5</sub>	2.38	15	No
CO <sub>2</sub> e	4,951	100,000	No
H <sub>2</sub> S	ND	10	No
Pb	0.012	0.6	No

Note: ND = Not Determined.

**Impact AQ-1: Would the Project conflict with or obstruct implementation of the applicable air quality plan? (CEQA Guidelines Threshold Criteria AQ(a) and GHG(a), (b); MDAQMD Criteria 1 & 3)**

**Federal Conformity**

As discussed in Section 3.3.2, Federal conformity analysis is not required provided that:

- NO<sub>x</sub> and VOC emissions are less than 25 tons per year each;
- PM<sub>10</sub> emissions are less than 100 tons per year; and
- Emissions are less than 10% of the non-attainment area emissions inventory.

The Project emits 1.27 tons per year of VOC (i.e. ROG), 23.9 tons per year of NO<sub>x</sub>, and 34.3 tons per year of PM<sub>10</sub>. Thus, VOC, NO<sub>x</sub>, and PM<sub>10</sub> emissions are each less than the Federal conformity screening threshold identified for determining if a Federal conformity analysis would be required.

In 2010, sources within San Bernardino portion of the Mojave Desert Air Basin (CARB 2009 Almanac) emitted NO<sub>x</sub> and PM<sub>10</sub> in the amounts of 55,125 tons per year and 43,646 tons per year, respectively. The Project increment represents 0.043% of the NO<sub>x</sub> emissions and 0.055% of the PM<sub>10</sub> emissions in the region. The standard is to evaluate the emissions inventory within the non-attainment area. However, those emissions were not readily available. The Project may represent a somewhat higher percentage of the total emissions within the Western Mojave Desert Ozone Non-Attainment Area and/or the “portion of MDAQMD outside of Southeast Desert Modified AQMA.” However, is unlikely that the emissions would exceed 10% in any case.

**Class I Wilderness Area Impacts and Federal Land Managers’ Air Quality Related Values**

The Federal Land Managers’ AQRVs apply to new or modified major sources and are generally used for PSD permitting under the Clean Air Act. The Project does not propose a new stationary major source or a modified stationary major source that would require a permit under the Clean Air Act. Fugitive area

## 3.3 Air Quality &amp; Greenhouse Gases

source emissions and vehicular emissions are excluded from determining whether the quarry is a major source (i.e., only emissions from stationary sources are counted). The Omya facility is not considered a major source as evidenced by the fact that it holds local district operating permits rather than does not have a Federal operating permit under Title V of the CAA. A major modification which would trigger review of AQRVs would have a significant emissions increase defined as exceeding the values from 40 CFR Section 52.21(b)(23) shown in Table 3.3-21.

**Table 3.3-21 Comparison of Project Emissions with Major Modification Thresholds**

Pollutant	Major Modification Significant Increase (ton/yr)	Project Emissions (ton/yr)	Mitigated Project Emissions (ton/yr)
CO	100	12	12
NO <sub>x</sub>	40	23.9	15.3
SO <sub>x</sub>	40	0.0038	0.0038
PM	25	118	23
PM <sub>10</sub>	15	34.3	2.1
PM <sub>2.5</sub>	10	2.38	-3.39
H <sub>2</sub> S	10	ND	ND
Pb	0.6	0.012	0.012

As shown in Table 3.3-21, even when fugitive and mobile sources are included in the comparison, the increased emissions from sources operated by Omya do not exceed major modification thresholds and would therefore not be evaluated under the Prevention of Significant Deterioration (PSD) program. By not triggering PSD, the increase in emissions would also not be required to assess the AQRVs. Nevertheless, SBNF staff has required evaluation of potential impacts on AQRVs for this Project.

The FLAG report provides an equation ( $\text{Quantity/Distance} < 10$ ; or  $Q/D < 10$ ) by which projects may screen out of detailed analyses for impacts to AQRVs. Application of the equation is limited to projects that are located more than 50 km from a Class I Wilderness Area. This Project is located 18 km from the San Gorgonio Wilderness Area and may not use the Q/D approach.

Project sources are fugitive and mobile such that a coherent plume is physically impossible. Moreover, intervening terrain between the Project site and the San Gorgonio Wilderness Area is such that there is little possibility that an observer of one could see the other. As shown in Table 3.3-21, were this Project a single stationary source seeking an air quality operating permit, no analysis of AQRVs would be necessary.

Monitoring performed in the San Gorgonio Wilderness Area indicates that nitrates, organic matter, and sulfates have the strongest contributions to degrading visibility on worst days (Appendix E). The concentrations of these pollutants are the result of regional emissions and particularly emissions from the South Coast Air Basin to the west. The Project emits NO<sub>x</sub>, some of which may become nitrates but the relative amount as compared to the entire South Coast Air Basin is de minimis. The Project also emits particulate matter but the worst days are relatively unaffected by particulates. Thus, the Project is unlikely to emit pollutants in amounts that would affect visibility in the San Gorgonio and other nearby

Class I Wilderness Areas. Nevertheless, visibility impact analysis was performed (Appendix N) using the Major Modification thresholds that are shown to be greater than Project emissions increase in Table 3.3-21. Based on the visibility analysis presented in Appendix E, even if the Project were to emit greater amounts of pollutants up to the Major Modification thresholds, the impact on visibility would be less than significant.

Phytotoxic ozone concentrations may result where the plume from a large combustion source travels relatively intact a sufficient distance for the photo-chemical reaction between NO<sub>x</sub>, reactive organics, and sunlight to have occurred and produced ozone. The ozone would then be concentrated at a hot spot where vegetation could be affected. The Project sources of NO<sub>x</sub> are small and distributed over a large area. Therefore, it is unlikely that the Project would cause phytotoxic ozone concentrations.

The deposition AQRV is concerned with the acidification of water bodies. Specifically, sulfur and nitrogen compounds cause sensitive freshwater lakes and streams to lose acid-neutralizing capacity and sensitive soils to become acidified. Other ecosystems, including the forest, may exhibit fertilization and other effects from excess nitrogen deposition. The Project sources of nitrogen and sulfur are small and distributed over a large area. Therefore, it is unlikely that the Project would cause acidification and the Project impact for this AQRV is considered less than significant.

In summary, as discussed above and analyzed in Appendix E, the Project would have a less than significant effect on each of the ARQVs.

### **Greenhouse Gas Emissions**

The MDAQMD has established a significance threshold for GHGs (100,000 tons/yr) to address the CARB Scoping Plan measures and Federal regulations. While the MDAQMD threshold is higher than other local agency screening criteria (i.e. SCAQMD 10,000 MTCO<sub>2</sub>e/yr; San Bernardino County Climate Action Plan 3,000 MTCO<sub>2</sub>e/yr), it is supported by substantial evidence and most directly applicable to the Project. Specifically, 100,000 tons/year of GHG emissions from a single facility constitutes a major source that requires a Federal operating permit. Similarly, the MDAQMD NO<sub>x</sub> significance threshold of 25 tons/year is equal to the major source threshold applicable to areas designated severe non-attainment for ozone.

As discussed in Section 3.3.2.2, the County GHG Plan does not apply to the Project, because it is a stationary source and located on National Forest land. Thus, the 3,000 MTCO<sub>2</sub>e/yr screening criteria is not used. Even if the County screening criteria were used, the performance standards that would then be required could not be implemented because the Project does not involve the construction of buildings or additional employees traveling to the site.

As discussed in Section 3.3.3.1 and shown in Table 3.3-20, the MTCO<sub>2</sub>e/yr for the Project is 4,951, which is below the MDAQMD threshold and therefore considered less than significant.

---

### 3.3 Air Quality & Greenhouse Gases

#### **Carbonate Habitat Management Strategy**

Deposition of dust occurs onto plants surrounding the quarries and specifically areas called out for conservation in the Carbonate Plant Habitat Management Strategy. The Forest Service provided information on modeling that was performed in order to evaluate dust deposition as a potential impact on biological resources in the Class II Wilderness Areas that surround the quarries (i.e. Class II areas are all areas in the National Forest that are not Class I). It was found that existing deposition outside the operational areas of the quarries is on the order of 1.0 gram per square meter per year (g/m<sup>2</sup>-yr). Therefore, based on discussions with the Forest Service, deposition on the order of 1.0 g/m<sup>2</sup>-yr would be considered less than significant. It is anticipated that potential deposition of dust resulting from the Project would be less than this level. Section 3.4 Biological Resources further discusses the potential effects of dust deposition.

**Potential Impact:** Less than Significant

**Mitigation Measure:** None required

#### **Impact AQ-2: Would the Project violate any air quality standard or contribute substantially to an existing or projected air quality violation? (CEQA Guidelines Threshold Criteria (b); MDAQMD Criteria 2)**

To determine if the Project has the potential to violate an applicable air quality standard, the Project emissions were compared to the mass-based thresholds from the MDAQMD Guidelines in Table 3.3-20, above, and to the State and Federal AAQS in Table 3.3-20.

As shown in Table 3.3-20, the increment in Project emissions exceeds the MDAQMD mass-based threshold for PM<sub>10</sub>. Other pollutant emissions occur at or below levels that will significantly affect regional air quality.

Project emissions have the potential to create localized “hot spots” if, when summed with existing ambient concentrations, they result in concentrations greater than the applicable AAQS. The main criteria pollutants of concern for the Project are Total Suspended Particulates (used for deposition modeling), PM<sub>10</sub>, and PM<sub>2.5</sub>. Ambient air quality standards for pollutants that are less of a concern are discussed first followed by modeling results for the criteria pollutants of concern.

CO AAQS exceedance is generally a concern at high volume vehicular intersections in urban areas that operate at level of service (LOS) D or worse and where CO is emitted into partially or completely enclosed spaces such as parking structures and garages. CO modeling is not warranted for the Project and the impact on CO AAQS is considered less than significant.

SO<sub>2</sub> AAQS exceedances are normally a concern for facilities that burn coal or refine petroleum. Diesel fuel used by the Project will meet CARB specifications for sulfur content. SO<sub>2</sub> modeling is not warranted for the Project and the impact on SO<sub>2</sub> AAQS is considered less than significant.

NO<sub>2</sub> AAQS exceedances are normally a concern for facilities with a large combustion source. The quarrying and transportation of materials is performed by diesel engines which are a source of NO<sub>2</sub>. However, the diesel vehicles are comparatively small emitters of NO<sub>2</sub> and they are constantly moving in order to perform the tasks. NO<sub>2</sub> modeling is not warranted for the Project and the impact on NO<sub>2</sub> AAQS is considered less than significant.

On an annual basis, the Project would result in an increase in NO<sub>x</sub> emissions that is less than the CEQA Significance Threshold. Therefore, modeling to determine annual NO<sub>2</sub> concentration for comparison to the AAQS is not warranted.

On an hourly basis, the Project may increase NO<sub>x</sub> hourly potential to emit by adding up to four off-road engines. Specifically, two off-road haul trucks, one loader/excavator, and one mobile crusher/screening system or surface miner. The potential for the Project to cause or contribute to an exceedance of the hourly NO<sub>2</sub> AAQS is unlikely given the size of the operational area (232.4 acres), distance from the quarries where activity is expected to be most intense to the project boundary, and the limited potential increase in hourly activity at any one location on-site. Therefore, modeling hourly NO<sub>2</sub> concentrations is not warranted for the Project and the impact on hourly NO<sub>2</sub> AAQS is considered less than significant.

Emissions of the criteria pollutants of concern for the Project (i.e. PM<sub>10</sub>, PM<sub>2.5</sub>) are modeled to predict concentrations at the off-site point of maximum impact (PMI). For Project sources that are close to the ground relative to the distance to the boundary, the PMIs are predicted at the property boundary. Table 3.3-22 shows impact assessment results for particulate matter air dispersion model that was prepared.

**Table 3.3-22 Project Emissions in Concentration at Point of Maximum Impact**

(all values in units µg/m <sup>3</sup> )	PM <sub>10</sub> -24hr	PM <sub>10</sub> -Annual	PM <sub>2.5</sub> -24hr	PM <sub>2.5</sub> -Annual
Project Emissions	14.4	3.07	3.0	0.37
Background	93	25	30.6	10.6
Project Cumulative Concentration	107.4	28.1	33.6	11.0
Most Stringent AAQS	50	20	12	35
SIL	10.4	2.08	2.5	0.63
<b>Exceeds AAQS?</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>
<b>Exceeds SIL?</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>

Note: PMI for the 24-hr concentrations occurs at 506637.17, 3798752.79 which is located east of Sentinel Quarry. Annual concentration PMI occurs at 505406.72, 3801304.61 which is where the Project boundary crosses Crystal Creek Road.

Results of criteria pollutant modeling show that the Project alone would not exceed the most stringent AAQS but would increase pollutants concentrations above the both 24-hour SILs and the SIL for annual PM<sub>10</sub>. The SILs represent the amount that is cumulatively considerable and are applied as the significance thresholds. The exceedances are because of road dust which is likely overestimated by the

## 3.3 Air Quality &amp; Greenhouse Gases

MDAQMD and US EPA AP-42 calculation methodology. Nevertheless, mitigations have been identified below that will reduce the impacts shown in Table 3.3-22.

**Potential Impact:** Significant

**Mitigation Measure:**

**Mitigation Measure AQ-1:** Dust Control – Unpaved Roads

Unpaved roads shall be controlled by at least 80% using methods that are consistent with MDAQMD guidance.

**Mitigation Measure AQ-2:** Dust Control – Grading

Areas to be graded and where bulldozer operates shall be controlled by at least 85% using methods that are consistent with MDAQMD guidance.

Table 3.3-23 presents the mitigated emissions (Appendix J of the AQIA) and compares the mitigated emissions to significance thresholds. As shown in Table 3.3-22, Mitigation Measures AQ-1 through AQ-2 would reduce Project emissions to less than the MDAQMD significance thresholds.

**Table 3.3-23 Mitigated Significance Comparisons**

Pollutant	Mitigated Emissions (tons/yr)	Significance Threshold (tons/yr)	Significant?
VOC	1.27	25	No
NO <sub>x</sub>	23.9	25	No
CO	12.0	100	No
SO <sub>x</sub>	0.0038	25	No
TSP	23	n/a	No
PM <sub>10</sub>	2.1	15	No
PM <sub>2.5</sub>	-3.39	15	No
CO <sub>2</sub> e	4,951	100,000	No
H <sub>2</sub> S	ND	10	No
Pb	0.012	0.6	No

Localized concentrations are also mitigated to less than significant levels by Mitigation Measures AQ-1 and AQ-2. Modeling results showing mitigated emissions impacts are shown in Table 3.3-24.

**Table 3.3-24 Mitigated Concentration at Point of Maximum Impact**

(all values in units $\mu\text{g}/\text{m}^3$ )	PM <sub>10</sub> -24 hr	PM <sub>10</sub> -Annual	PM <sub>2.5</sub> -24 hr	PM <sub>2.5</sub> -Annual
Project Emissions	7.9	1.72	1.54	0.23
Background	93	25	30.6	10.6
Project Cumulative Concentration	100.9	26.7	32.1	10.8
Most Stringent AAQS	50	20	12	35
SIL	10.4	2.08	2.5	0.63
Exceeds AAQS?	No	No	No	No
Exceeds SIL?	No	No	No	No

Note: PMI for the 24-hr concentrations occurs at 505493.47, 3797728.78 which is located south of the B5 Pad. Annual concentration PMI occurs at 505406.72, 3801304.61 which is where the Project boundary crosses Crystal Creek Road.

**Level of Significance after Mitigation:** Less than Significant

**Impact AQ-3: Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? (CEQA Guidelines Threshold Criteria (c); MDAQMD Criteria 2 & 3)**

As shown previously on Table 3.3-2, the Project region does not meet the AAQS (non-attainment) for ozone, PM<sub>10</sub>, and PM<sub>2.5</sub>. Results of criteria pollutant modeling show that the Project alone would not exceed the most stringent AAQS but would increase pollutants concentrations above the both 24-hour SILs and the SIL for annual PM<sub>10</sub>. The SILs represent the amount that is cumulatively considerable and are applied as the significance thresholds. The exceedances are because of road dust which is likely overestimated by the MDAQMD Guidelines and US EPA AP-42 calculation methodology. Nevertheless, Mitigation Measures AQ-1 and AQ-2 (above) have been identified that will reduce the impacts shown in Table 3.3-24.

**Potential Impact:** Significant

**Mitigation Measure:** AQ-1 and AQ-2

**Level of Significance after Mitigation:** Less than Significant

**Impact AQ-4: Would the Project expose sensitive receptors to substantial pollutant concentrations? (CEQA Guidelines Threshold Criteria (d); MDAQMD Criteria 4)**

To address whether the Project would expose the public, specifically sensitive receptors, to substantial pollutant concentrations, the concentrations of toxic air contaminants were evaluation by conducting a

## 3.3 Air Quality &amp; Greenhouse Gases

HRA. As discussed in Section 3.3.3.1, TACs emitted from Project operation consist mainly of those found in vehicle exhaust and, to a lesser extent, trace amounts of metals and silica found fugitive dust. Table 3.3-25 presents health risk predicted at nearby receptors. As shown in Table 3.3-25, health risk impacts from the Project are less than significant.

**Table 3.3-25 Project Health Risk Impacts**

Receptor ID	Cancer Risk <sup>1</sup>	Chronic Non-Cancer Risk (H.I.) <sup>1</sup>	Acute Non-Cancer Risk (H.I.)	Significant?
R1	2.52	0.042	0.098	No
R2	8.41	0.086	0.093	No
R3	5.82	0.055	0.036	No
R4	4.51	0.046	0.033	No
R5	9.67	0.087	0.068	No
R6	5.69	0.064	0.078	No
R7	6.32	0.066	0.073	No
R8	4.00	0.044	0.048	No
R9	3.96	0.042	0.037	No
R10	2.91	0.031	0.014	No

Note: <sup>1</sup> Excess cancer cases per million people exposed and hazard index (H.I.).

**Potential Impact:** Less than Significant

**Mitigation Measures:** None required

### 3.3.4 Cumulative Effects

The MDAQMD Guidelines significance thresholds take into account the cumulative impact of a project that adds emissions to the air basin. MDAQMD Guidelines state that a project that results in emissions less than those listed on Table 3.3-20 would not present a significant cumulative impact. The project would be less than “cumulatively considerable”. Therefore, the Project with Mitigation Measures AQ-1 and AQ-2 would not present a significant cumulative impact.

### 3.3.5 Alternatives

#### Alternative 1: No Action – Continue Mining under Current Entitlements

Under this alternative, Omya would not expand the Butterfield - Sentinel Quarries. The existing mining activities located on approximately 137 acres within the 954 acres of unpatented placer claims controlled by Omya would continue in accordance with the approved POO and Reclamation Plans and other Federal, State and local regulations.

Cancer risk which would be slightly less than for the Project due to the shortened life of the resource and exposure duration; however, the cancer risk for the Project is already considered less than significant. The additional equipment described in the Amended Plan of Operations would presumably not be added under this alternative. Nevertheless, existing entitlements would allow the project maximum of 680,000 tons to be produced from the existing Sentinel and Butterfield quarries exclusively. Aside from the minor differences in the number and/or type of equipment and the slightly reduced cancer risk, the air quality impacts of the No Action alternative are the same as the Project alternative.

### **Alternative 3: Partial Implementation – Butterfield Quarry Expansion Only**

Alternative 3 would allow for only the expansion of the Butterfield Quarry. The Sentinel Quarry would continue to be mined under its current POO and Reclamation Plan. In this alternative the Butterfield Quarry would have a shorter duration of 20 years through year 2035 instead of 40 years as proposed in Alternative 2. It would also have a smaller footprint than Alternative 2 by approximately 50 acres.

This alternative would have similar differences from the Project as the No Action alternative described above. Specifically, cancer risk would be slightly less than for the Project due to the shortened life of the resource and exposure duration; however, the cancer risk for the Project is already considered less than significant.

### **Alternative 4: Combined Production with the White Knob Quarry**

Historically the limestone ore provided to the LVPP has been approximately a 60/40 ratio between the Butterfield-Sentinel Quarries and the White Knob Quarries. This alternative would assume that instead of the Butterfield and Sentinel Quarries providing 100% (680,000 tpy) of the ore to the LVPP, a more realistic production mix between the quarries would be evaluated.

This alternative was determined by adjusting the ratio of quarry production until the PM<sub>10</sub> emissions were less than the MDAQMD significance threshold (Appendix K of the AQIA). When assessing the air quality impacts of this alternative, it was determined that the Butterfield and Sentinel Quarries could process up to 77% of the ore without exceeding the MDAQMD significance thresholds in Table 3.3-26.

**Table 3.3-26 Alternative 4 Emissions Comparison (77% from Butterfield and Sentinel Quarries)**

Pollutant	Alternative 4 Increment (tons/yr)	MDAQMD Significance Threshold (tons/yr)	Significant?
VOC	0.77	25	No
NOx	15.3	25	No
CO	6.2	100	No
SOx	0.0035	25	No
TSP	60	n/a	No

## 3.3 Air Quality &amp; Greenhouse Gases

Pollutant	Alternative 4 Increment (tons/yr)	MDAQMD Significance Threshold (tons/yr)	Significant?
PM <sub>10</sub>	14.9	15	No
PM <sub>2.5</sub>	-1.58	15	No
CO <sub>2</sub> e	3,515	100,000	ND
H <sub>2</sub> S	ND	10	No
Pb	-0.011	0.6	No

Table 3.3-27 presents predicted concentrations for Alternative 4. Alternative 4 is significant for the 24-hour PM<sub>10</sub> standard and cumulative considerable when compared to PM<sub>10</sub> annual and PM<sub>2.5</sub> 24-hour standards.

**Table 3.3-27 Alternative 4 Concentration at Point of Maximum Impact**

(all values in units µg/m <sup>3</sup> )	PM <sub>10</sub> -24hr	PM <sub>10</sub> -Annual	PM <sub>2.5</sub> -24hr	PM <sub>2.5</sub> -Annual
Project Emissions	10.9	1.50	2.1	0.18
Background	93	25	30.6	10.6
Project Cumulative Concentration	103.9	26.5	32.7	10.8
Most Stringent AAQS	50	20	12	35
SIL	10.4	2.08	2.5	0.63
<b>Exceeds AAQS?</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>
<b>Exceeds SIL?</b>	<b>Yes</b>	<b>No</b>	<b>No</b>	<b>No</b>

Note: Daily PMI for PM<sub>10</sub> occurs at 505533.04, 3797727.34 which is located south of the B5 Pad and daily PMI for PM<sub>2.5</sub> occurs at 506637.17, 3798752.79 which is located east of Sentinel Quarry. Annual concentration PMI occurs at 505406.72, 3801304.61 which is where the Project boundary crosses Crystal Creek Road.

Table 3.3-28 presents health risk results for Alternative 4. The results indicate that Alternative 4 will result in less than significant impacts on health risk. The AQIA (Appendix E) contains contoured plots of health risk for Alternative 4 similar to those presented for the Project

**Table 3.3-28 Alternative 4 Health Risk Impacts**

Receptor ID	Cancer Risk *	Chronic Non-Cancer Risk (H.I.) *	Acute Non-Cancer Risk (H.I.)	Significant?
R1	1.09	0.0064	0.00211	No
R2	3.70	0.0224	0.0019	No
R3	3.47	0.0542	0.0823	No
R4	2.72	0.0447	0.0636	No
R5	4.54	0.0338	0.0187	No

Receptor ID	Cancer Risk *	Chronic Non-Cancer Risk (H.I.) *	Acute Non-Cancer Risk (H.I.)	Significant?
R6	2.45	0.0138	0.0018	No
R7	2.78	0.0167	0.0019	No
R8	1.73	0.0093	0.0014	No
R9	1.76	0.0113	0.0019	No
R10	1.32	0.0099	0.0005	No

Note: \* Excess cancer cases per million people exposed and hazard index (H.I.).

As shown in 7, Alternative 4 would result in a cumulatively considerable concentration of PM<sub>10</sub>. Accordingly, Alternative 4 requires the same Mitigation Measure AQ-1 and AQ-2 as the Project does in order to reduce the impact to less than significant levels or the maximum extent feasible.

Mitigated emissions presented in Table 3.3-29 are less than the SILs which are applied as the significance threshold.

**Table 3.3-29 Mitigated Alternative 4 Concentrations at Point of Maximum Impact**

(all values in units $\mu\text{g}/\text{m}^3$ )	PM <sub>10</sub> -24hr	PM <sub>10</sub> -Annual	PM <sub>2.5</sub> -24hr	PM <sub>2.5</sub> -Annual
Project Emissions	10.9	1.50	2.1	0.18
Background	160.2	18.5	35.1	9.7
Project Cumulative Concentration	171.1	20.2	37.2	9.88
Most Stringent AAQS	50	20	12	35
SIL	10.4	2.08	2.5	0.63
<b>Exceeds AAQS?</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>
<b>Exceeds SIL?</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

Note: Daily PMI for PM<sub>10</sub> occurs at 506638.52, 3798702.95 and daily PMI for PM<sub>2.5</sub> occurs at 506637.17, 3798752.79; both of which are located east of Sentinel Quarry. Annual concentration PMI occurs at 505406.72, 3801304.61 which is where the Project boundary crosses Crystal Creek Road.

THIS PAGE IS INTENTIONALLY BLANK

### **3.4 Biological Resources**

This section of the Draft EIR/EIS describes the types of existing vegetation and wildlife occurring within and around the Project Site. It evaluates the potential impacts of the Project, cumulative effects of the Project, and long-term reclamation activities on the biological resources. This evaluation is primarily based on the SBNF Biological Report prepared for the Project by the SBNF (Forest, 2016). The SBNF Biological Report's analysis included the Project Area and the Analysis Area, as defined in Section 3.4.3.1.

#### **3.4.1 Affected Environment**

##### **3.4.1.1 Regional Setting**

The Project is located on the northern rim of the San Bernardino Mountains south of Lucerne Valley and north of Big Bear Lake, in San Bernardino County, California. All of the proposed mining is located on USFS lands, managed by the Mountaintop Ranger District of the SBNF.

Communities found nearby include the unincorporated community of Lucerne Valley to the north, and the City of Big Bear Lake (incorporated) and the unincorporated communities of Moonridge, Big Bear City, Fawnskin, Sugarloaf, Erwin Lake, Baldwin Lake, and Lake Williams to the south.

##### **3.4.1.2 Local Setting**

For the biological resources evaluation, the local setting includes the Project Area and the biological resources Analysis Area. The Project Area is the area within the specific boundaries of the proposed activities, also referred to as the Project Site. The Analysis Area includes the area in the immediate vicinity of the Project as well as the maximum expected reach of direct and indirect effects and cumulative impacts of the Project.

The Project is located on a ridge top of the San Bernardino Mountains' North Slope with north, south and east facing aspects. It is situated along the divides of multiple watersheds, so drainage generally flows away from the Project (Figure 3.4-1). The site ranges in elevation from approximately 7,600 feet to 7,900 feet. The topography varies between very steep areas on the north end (existing Crystal Creek Haul Road), rising to relatively flat areas at the south end of the Project. The existing Crystal Creek Haul Road extends about 5 miles from the Project to the National Forest boundary, and another 2.5 miles on non-Forest Service land to the north to reach the Omya LVPP.

Crystal Creek, Furnace Canyon Creek, and all other watercourses near the Project generally flow only in response to storm events. Crystal Creek terminates in a dry lakebed in Lucerne Valley several miles north of the analysis area. Furnace Canyon Creek terminates several miles northeast of the Project in Lucerne Valley. Holcomb Creek is tributary to Deep Creek, which ultimately flows into the Mojave River. Crystal Creek Canyon contains several small seeps or springs and water flows are present intermittently

---

### 3.4 Biological Resources

in response to storm events. Certain reaches of lower Crystal Creek contain intermittent water as a result of these springs.

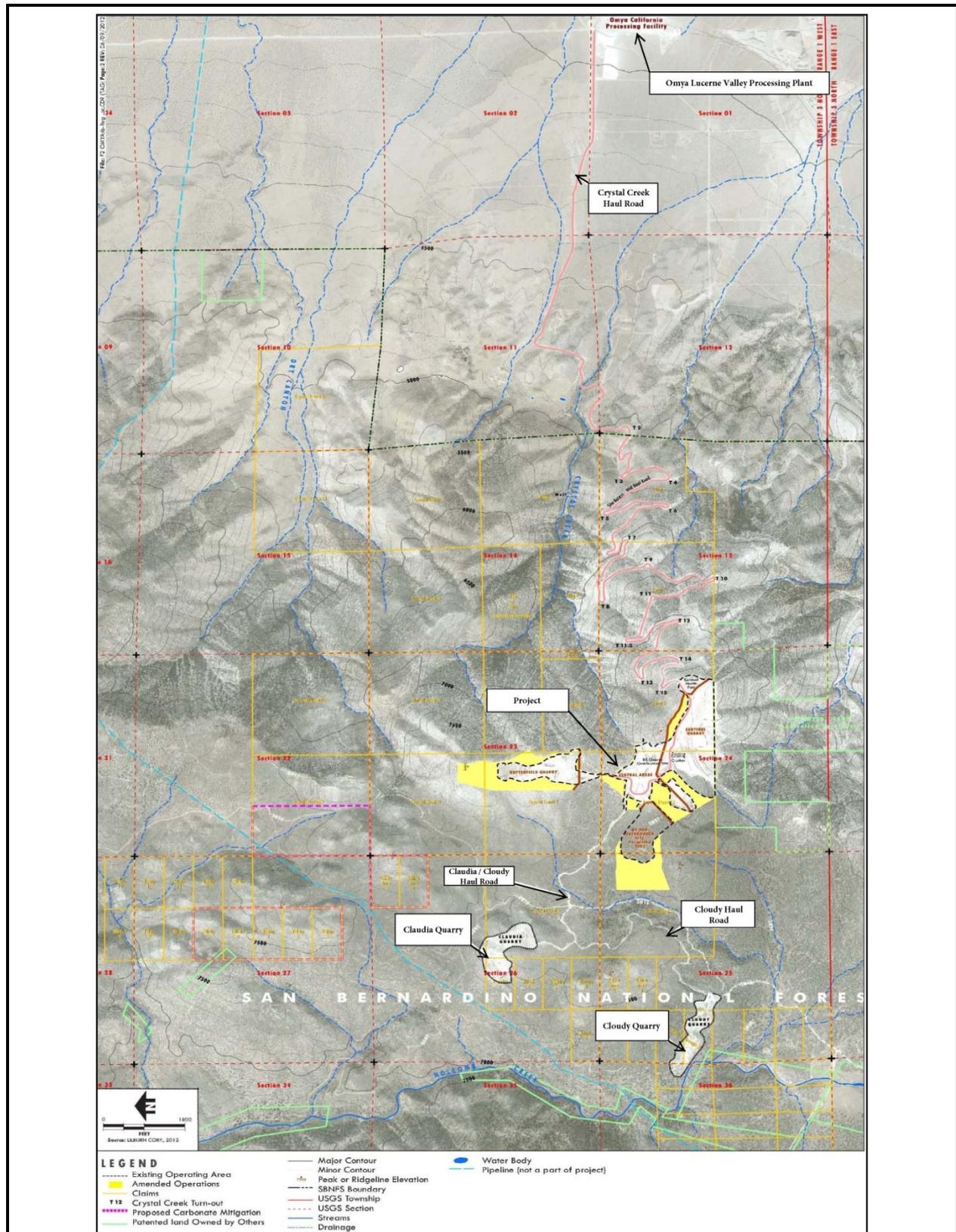
#### **Vegetation Descriptions**

The major plant communities at the Project Area and in the surrounding area are pinyon/juniper woodlands and Jeffrey pine forest. The Crystal Creek Haul Road descends from pinyon/juniper through desert transition chaparral and blackbrush scrub communities down to the LVPP. The following provides a brief description of these and other plant communities in the Project Area.

#### ***Pinyon/Juniper Woodlands***

Pinyon-juniper woodlands occur on semi-arid desert-side slopes of southern California. Single-leaf pinyon pine (*Pinus monophylla*) generally dominates higher elevation slopes and extends into lower montane forests and woodlands, while juniper (*Juniperus osteosperma* and *Juniperus californica*) co-dominates.

Pinyon-juniper woodlands typically are open-canopied with a sparse understory. Understory shrubs are primarily from desert transition chaparral and Great Basin sagebrush communities and include sagebrush (*Artemisia* spp.), bitterbrush (*Purshia tridentata*), mountain mahogany (*Cercocarpus ledifolius*), rabbitbrush (*Chrysothamnus* spp.), yerba santa (*Eriodictyon californicum*), buckwheat (*Eriogonum* spp.) and others. The open vegetation structure in and near the Analysis Area supports multiple rare plant species.



Source: SLR Consulting USA Pty Ltd, 5/2013

Figure 3.4-1 Project Location

THIS PAGE IS INTENTIONALLY BLANK

**Jeffrey Pine Alliance**

Pure conifer, mixed conifer, and hardwood Jeffrey pine stands occur in the Transverse and Peninsular Ranges. Mapped elevations are generally between 3,600 – 9,800 feet, although it is more common in the range between 4,000 – 9,000 feet. Ponderosa pine (*Pinus ponderosa*) may form a component of this alliance and may hybridize with Jeffrey pine where the ranges overlap. This type is often found with significant hardwood components but without an understory of semi-desert shrubs, although eastside pine stands may be adjacent to it at its northernmost extent. Black oak (*Quercus kelloggii*) is the most frequent hardwood associate, generally being in the elevation range between 4,000 – 7,600 feet. Oaks are generally not a component on carbonate soils. Common shrub associates include manzanita species (*Arctostaphylos* spp.), mountain whitethorn (*Ceanothus cordulatus*), deerbrush (*Ceanothus integerrimus*), and bush chinquapin (*Chrysolepis sempervirens*).

**Desert Transition Chaparral (Sonora-Mojave-Baja Semi-Desert Chaparral)**

The slopes below the pinyon-juniper woodlands support a desert transition chaparral with associated species including mountain mahogany (*Cercocarpus ledifolius*), Manzanita (*Arctostaphyllum glauca*), several species of oak (*Quercus cornelleus-mulleri*, *Quercus john-tuckeri*), golden bush (*Ericameria linerifolia*), hollyleaf (*Rhamnus illicifolia*), mormon tea (*Ephedra viridis*), and desert ceanothus (*Ceanothus greggii*).

**Blackbrush Scrub (Coleogyne ramosissima shrubland alliance)**

The lower slopes, generally below the transitional chaparral are dominated by blackbrush (*Coleogyne ramosissima*). Joshua trees (*Yucca brevifolia*) are sub-dominant but visually-prominent in this vegetation. This habitat is generally open and has very low resilience following fire and historically burned very infrequently. Invasion of non-native annual grasses into the interspaces has increased the frequency of fire throughout the Mojave and Great Basin and large areas of this vegetation have been lost.

**Carbonate Soil Habitat**

Soils found in the Project Area are derived from carbonate rock with a coarse-grained sandy texture. These soils provide a unique habitat for several endemic rare plant species, including four Federally listed threatened and endangered plant species. The Federally listed plant species are addressed in the Carbonate Habitat Management Strategy (CHMS). The CHMS and associated rare plants are further discussed in Section 3.4.2.3 under CHMS and Section 3.4.3.3 under the impact analysis.

**Other Habitats**

The North Slope of the San Bernardino Mountains, in general, is characterized by having an abundance of rocky outcrops and steep cliff faces. This habitat type provides shelter, nest sites, escape terrain, and

### 3.4 Biological Resources

foraging sites for a number of species including, but not limited to, nesting birds (e.g., golden eagles, red-tailed hawks, and ravens), bighorn sheep, numerous cliff-dwelling bats, ringtails, and reptiles.

#### **Sensitive Natural Communities**

##### ***Riparian Conservation Areas***

Riparian Conservation Areas (RCAs) are areas defined by SBNF to provide for management of riparian resources. They are areas that consist of geographically distinct resource values and characteristics, which are composed of aquatic and riparian resources, floodplains, and wetlands. They include, but are not limited to, meadows, all areas within a horizontal distance of 328 feet (100 meters) from the edge of perennial streams, and lakes/reservoirs or within approximately 98 feet (30 meters) of the edge of seasonally flowing/intermittent streams. There are several RCAs within or adjacent to the Project Area as shown on Figure 3.4-2.

##### ***Jurisdictional Waters***

A Jurisdictional Delineation (JD) was conducted by Tetra Tech in November 2013 and revised in February 2016 for unnamed and named drainages associated with a 214.8 acre JD survey area (see Section 3.4.3.1 and Appendix F). The JD survey area included areas currently being mined and undisturbed areas that are part of the proposed expansions. The purpose of the JD was to determine the limits of waters subject to regulatory authority under Section 404 and 401 of the CWA and those regulated under California Fish and Game Code 1600 et seq. Four drainage areas were delineated as shown on Figure 3.4-3.

##### ***Habitat Connectivity and Fragmentation***

Movement corridors are distinguished by “passage” species (large wide-ranging animals) and “dweller” species (smaller animals with smaller ranges). Long-term impediments to movement or fragmentation of habitat can result in isolation of populations, making them more susceptible to localized extirpation due to stochastic events or diminished resource availability.

Habitat continuity and connectivity on the North Slope has already been significantly affected as a result of mine development and the existence of Highway 18. The current conditions in the Analysis Area and North Slope already include some impediments to wildlife movement, pollinators, and seed dispersal (large, deep quarries; haul roads with steep cuts, areas devoid of vegetative cover, etc.) affecting some animals, including deer and bighorn sheep.

#### **Wildlife**

The SBNF Biological Report includes a detailed discussion and a list of all animal species that have been recorded in the North Slope, including in and near the Analysis Area. Because animals move, the

following discussions address species that are known from, or have potential to occur, in the North Slope area, and not just those that have been documented in the Analysis Area. It is assumed that these species may, at some time during the Project's life, occur within the reach of potential effects from the Project.

#### ***Invertebrate Occurrences***

The North Slope supports a diversity of invertebrate species associated with vegetation types present. Rare invertebrates that may reside in the springs in the Analysis Area are spring snails and simple hydrophorus diving beetles. Other rare invertebrates that are known from the North Slope or that have potential to occur in the Analysis Area include desert monkey grasshopper, Andrew's marble butterfly, and San Bernardino Mountains silk moth.

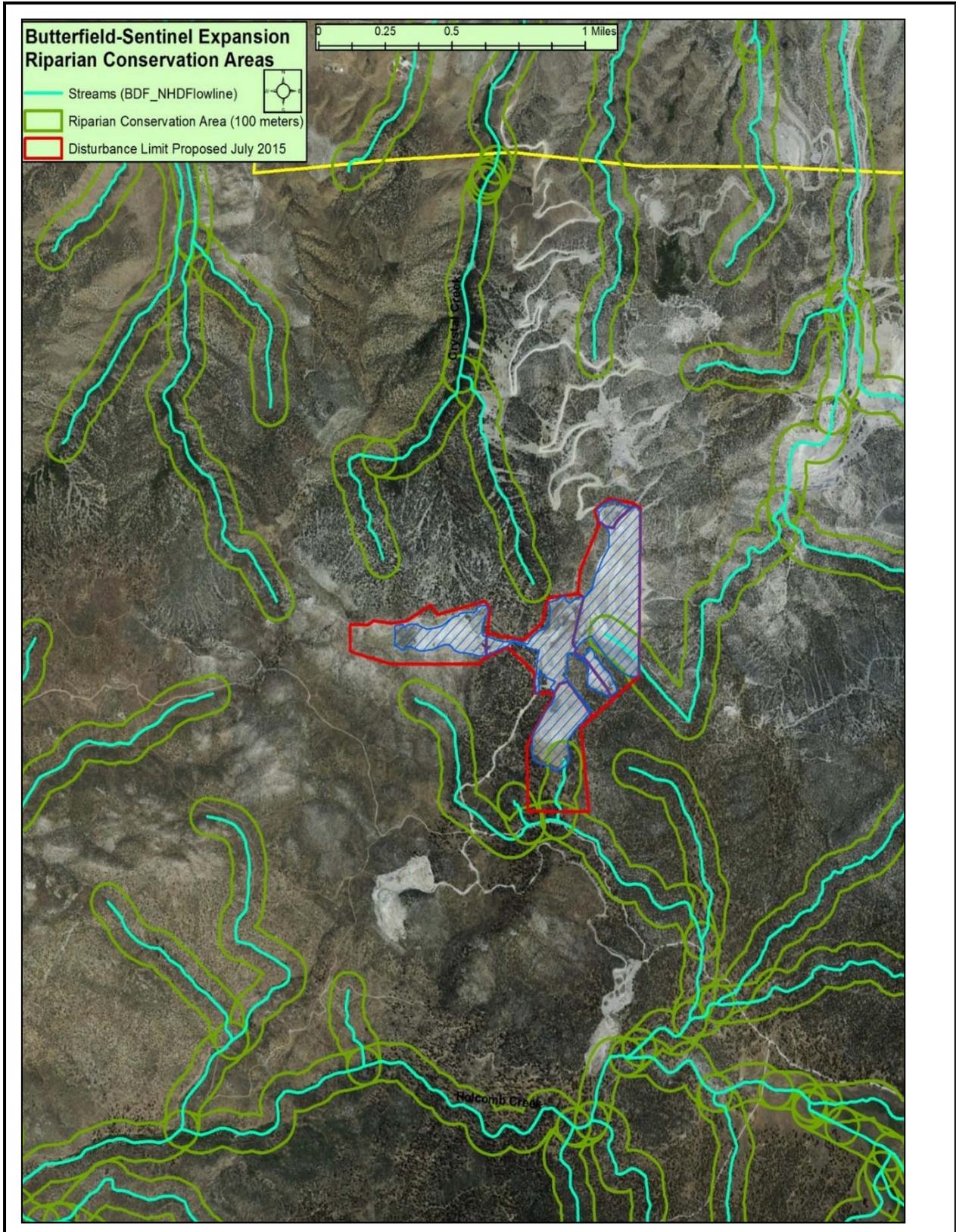
#### ***Fish Occurrences***

There are no bodies of water in or near the Analysis Area that are suited for supporting fish populations.

#### ***Amphibian Occurrences***

Amphibians require a source of standing or flowing water to complete their life cycle. Some terrestrial species can survive in drier areas by remaining in moist environments found beneath leaf litter and fallen logs, or by burrowing into the soil. These xeric-adapted species conserve moisture by emerging only under high humidity conditions or when the weather is cool and/or wet. The springs and drainages on the North Slope provide potential habitat for amphibian species that require permanent water as well as species adapted to drier conditions. Most of the Project Area is not high quality habitat for amphibians; however, Crystal Creek drainage and springs in the immediate vicinity of the Project Area has the potential to support amphibian habitat.

THIS PAGE IS INTENTIONALLY BLANK



Source: SBNF, 2016

Figure 3.4-2 Streams and Riparian Conservation Areas

THIS PAGE IS INTENTIONALLY BLANK

### ***Reptile Occurrences***

The many different types of habitats in the Project Area and Analysis Area would be expected to support a high diversity of reptile species. Unlike amphibians, reptiles are not typically tied to areas where water resources are present and they tend to be more mobile than most amphibians. Reptiles use many different types of substrates, including burrows, sandy or rocky areas, leaf litter, rotting logs, and even debris deposited by humans where they search for food and find shelter. The abundant rock formations and rocky substrates provide excellent cover and foraging habitat for many species of common and rare reptiles.

### ***Bird Occurrences***

The Jeffrey pine forest, pinyon-juniper woodlands, desert transition habitat, and riparian communities on the North Slope provide habitat for many bird species. Many bird species would be expected to use the habitats in the Project Area and Analysis Area on a year-round basis, during the nesting or non-nesting seasons, or as they travel through on their migrations between breeding and wintering grounds. The variety of vegetation types and vegetation structure in the Analysis Area and on the North Slope in general provides many opportunities for foraging, nesting, perching, and sheltering.

### ***Mammal Occurrences***

Mammals typical of all of the vegetation types on the North Slope may occur where there is suitable habitat for foraging, breeding, cover, and movement. Small mammals, such as mice, rats, squirrels, chipmunks, and rabbits are common residents that not only forage and raise their young in the habitats of the Analysis Area, but they are also an important food source for larger mammals and birds of prey. A number of small mammal species, including several bat species, are expected to be associated with rocky outcrop and rock pile habitats. Larger mammals would be expected to use the habitats in the Analysis Area for foraging, shelter, and for movement corridors as they access portions of their territories located outside of the Project Area.

### **Special Status Species**

Figure 3.4-1 provides a summary of the special status species identified by the SBFS expected to occur in or near the Project Area and Analysis Area or those with a probability of occurrence. “Special status” refers to species that are included on a Federal or State list for species of special concern.

**Table 3.4-1 Summary of Special Status Species Expected to Occur In and Near Analysis Area**

<b>Common Name</b>	<b>Occurrence Information</b>	<b>Status</b>
<b>Threatened and Endangered Animals (State and Federal)</b>		
California condor	P in Analysis Area - Potential foraging and nesting on North Slope	FE, SE

## 3.4 Biological Resources

Common Name	Occurrence Information	Status
Desert tortoise	N @ Project Area / P in Analysis Area -Suitable habitat around the plant and access road	FT, ST
Swainson's Hawk	U in Project Area /P in Analysis Area	ST
Southern rubber boa	P in Project Area/Analysis Area	FSS, ST
Southwestern willow flycatcher	No suitable habitat but potential use during migration Suitable habitat in mitigation claim area	FE
<b>Threatened &amp; Endangered Plants (State and Federal)</b>		
Cushenbury puncturebract	Known occurrences; Designated Critical Habitat	FE
Cushenbury buckwheat	Known occurrences; Designated Critical Habitat	FE
Cushenbury milk vetch	Known occurrences; Designated Critical Habitat	FE
Parish's daisy	Known occurrences; Designated Critical Habitat	FT
<b>CDFW Fully Protected Species</b>		
Golden eagle	Y (nesting on North Slope)	SBNFW, CFPS
American peregrine falcon	P for nesting	SBNFW, CFPS
Mountain lion	Y	SBNFW, CPM
Nelson's bighorn sheep	Y	SBNFW, BLMS, CFPS
<b>Forest Service Sensitive and CDFW Species of Special Concern - Animals</b>		
Large-blotched/yellow-blotched ensatina	Y @ Marble Canyon and Arctic Cyn; P @ drainages	FSS, CSSC
California legless lizard	P	FSS, CSSC
Three-lined boa	P	FSS, BLMS
San Bernardino ringneck snake	P	FSS, FSC
San Bernardino mountain kingsnake	Y (Furnace Cyn record)	FSS, CSSC
Two-striped garter snake	P @Crystal Creek, Furnace Cyn	FSS, CSSC
Coast patch-nosed snake	P	SBNFW, FSC, CSSC
California spotted owl	Y @ Crystal Creek	FSS
Gray vireo	Y	FSS, CSSC
Bendire's thrasher	P	SBNFW, CSSC
LeConte's thrasher	P (breeding records @Cushenbury Springs)	SBNFW, CSSC
Yellow warbler	Y@ Crystal Creek	SBNFW, CSSC
Townsend's big-eared bat	Y	FSS, BLMS, CC
Fringed myotis	P	FSS, BLMS, CSSC
Pallid bat	P	FSS, BLMS, CSSC
Long-eared myotis	Y (Holcomb Creek 2014)	SBNFW, CSSC
Long-legged myotis	Y (Holcomb Creek 2014)	SBNFW, CSSC
Spotted bat	P (known from N. Slope areas)	SBNFW, CSSC
Pocketed free-tailed bat	P (known from N. Slope areas)	SBNFW, CSSC
Western bonneted bat	P (known from N. Slope areas)	SBNFW, CSSC
Western red bat	P	CSSC
San Diego pocket mouse	P (record@ Cushenbury Springs)	SBNFW, CSSC
San Diego desert woodrat	Y	SBNFW, CSSC

Common Name	Occurrence Information	Status
American badger	P	SBNFW, CSSC
San Bernardino flying squirrel	P	FSS
Coville's dwarf abronia	Y- Known from Analysis Area	FSS
Crested milk vetch	Y- Known from Analysis Area	FSS
Bear Valley milk vetch	Y- Known from Analysis Area	FSS
Parish's rock cress	Y- Known from Analysis Area	FSS
Shockley's rock-cress	Y- Known from Analysis Area	FSS
<b>Forest Service Sensitive and CDFW Species of Special Concern - Plants</b>		
Parish's alumroot	Y- Known adjacent to the Analysis Area	FSS
Bear Valley phlox	Y- Known from Analysis Area	FSS
<b>SBNF Watchlist - Animals</b>		
Springsnails	P @ Crystal Creek springs/seeps	SBNFW
Dorhn's elegant eucnemid beetle	P	SBNFW
Bicolored rainbeetle	P	SBNFW
Desert monkey grasshopper	P @ lower areas (records for Cushenbury Canyon area)	SBNFW
San Bernardino Mountains silk moth	P (records for Coxey Meadow)	SBNFW
Andrew's marble butterfly	P – host plants are present	SBNFW
Monterey ensatina salamander	P@Crystal Creek and other drainages	SBNFW
Red spotted toad	P @ Crystal Creek	SBNFW
Common chuckwalla	P@ lower areas (known from N. Slope desert slopes)	SBNFW
Zebra-tail lizard	P@ lower areas (records for desert slopes near Deep Creek)	SBNFW
Mojave black-collared lizard	Y@lower areas	SBNFW
Desert night lizard	P (Records for Cushenbury Springs and Cactus Flats)	SBNFW
Mountain garter snake	P	SBNFW
southwestern speckled rattlesnake	Y (records for lower Marble Cyn)	SBNFW
Turkey vulture (breeding)	P	SBNFW
Northern harrier	P	SBNFW
Sharp-shinned hawk (breeding)	Y (Cushenbury Springs record)	SBNFW
Cooper's hawk (breeding)	Y (Crystal Creek nesting; Cushenbury Springs record; sightings @ Analysis Area)	SBNFW
Ferruginous hawk	P (migration; not nesting)	SBNFW
Prairie falcon	Y (Records from Cushenbury Springs; Burnt Flat, Breeding @Deep Canyon, Dry Canyon, Crystal Creek)	SBNFW
Flammulated owl	P	SBNFW
Western screech owl	P (records from Cushenbury Springs)	SBNFW
Northern pygmy owl	P	SBNFW

## 3.4 Biological Resources

Common Name	Occurrence Information	Status
Long-eared owl	P in Crystal Creek (Records from Cushenbury Springs)	SBNFW
Northern saw-whet owl	P	SBNFW
Common nighthawk	P	SBNFW
Mexican whip-poor-will	P	SBNFW
Black swift	Y (records from Deep Canyon)	SBNFW
Calliope hummingbird	P (record @ Cushenbury Springs and Jacoby Cyn)	SBNFW
Williamson's sapsucker	P	SBNFW
Nuttall's woodpecker	Y (records: Jacoby Cyn, Dry Cyn, Crystal Creek, Cushenbury Springs, B-S Analysis Area)	SBNFW
White-headed woodpecker	Y (nearby records)	SBNFW
Gray flycatcher	Y @ Analysis Area	SBNFW
Loggerhead shrike	Y (nearby records)	SBNFW
Plumbeous vireo	Y (nearby records)	SBNFW
Cassin's vireo	Y (nearby records)	SBNFW
Warbling vireo	Y (nearby records)	SBNFW
Pinyon jay	Y (nearby records)	SBNFW
California horned lark (breeding)	Y (nearby records)	SBNFW
Tree swallow	P (known from @Cushenbury Springs)	SBNFW
Swainson's thrush	P (records @ Cushenbury Springs & Jacoby Cyn)	SBNFW
Hermit thrush (breeding)	P (migrant records @ Cushenbury Springs)	SBNFW
Virginia's warbler (breeding)	P (records @Cushenbury Springs)	SBNFW
MacGillivray's warbler	P (records@ Cushenbury Springs and Jacoby Cyn)	SBNFW
Common yellowthroat	P in Crystal Creek (records@ Cushenbury Springs)	SBNFW
Wilson's warbler	Y@ Crystal Creek and Cushenbury Springs	SBNFW
Yellow-breasted chat	P in Crystal Creek (record@ Cushenbury Springs)	SBNFW
Hepatic tanager	P	SBNFW
Summer tanager	P in Crystal Creek (record @ Cushenbury Springs)	SBNFW
Black-chinned sparrow	Y @ Crystal Creek, Dry Cyn, and other N. Slope sites	SBNFW
Lincoln's sparrow	P @ Crystal Creek	SBNFW
Lawrence's goldfinch	P @ Crystal Creek	SBNFW
Western small-footed myotis	Y (Holcomb Creek 2014)	SBNFW
Little brown myotis	P (known from N. Slope areas)	SBNFW
Yuma myotis	P (known from N. Slope areas)	SBNFW
Lodgepole chipmunk	P	SBNFW
Golden-mantled ground squirrel	P	SBNFW

Common Name	Occurrence Information	Status
Southern grasshopper mouse	P (record@ Cushenbury Springs)	SBNFW
Porcupine	P	SBNFW
Ringtail	Y	SBNFW
Western spotted skunk	P	SBNFW
<b>SBNF Watchlist - Plants</b>		
Bear Valley woollypod	Y- Known from Analysis Area	SBNFW
Heckard's paintbrush	Y- Known from Analysis Area	SBNFW
San Bernardino Mountains buckwheat	Y- Known from Analysis Area	SBNFW
Alpine sulpher-flowered buckwheat	P- Reported from near the Analysis Area	SBNFW
Pine green gentian	Y- Known from Analysis Area	SBNFW
Transverse Range Phacelia	P- Reported from near the Analysis Area	SBNFW
Laguna mountains jewel-flower	P- Reported from near the Analysis Area	SBNFW

Notes: Y: Yes species is known to occur  
P: Occurrence of the species is potential  
U: Occurrence of the species is unlikely  
N: Outside of known distribution/range of species  
FE: Federally Endangered  
FT: Federally Threatened  
FSC: Federal Species of Concern  
FSS: Forest Service Sensitive Species  
ST: State Threatened  
SE: State Endangered  
MIS: San Bernardino National Forest Management Indicator Species  
FPT: Federally Proposed for Listing as Threatened  
FC: Federal Candidate  
CC: CDFW Candidate Species  
CFPS: CDFW Fully Protected Species  
CSSC: CDFW Species of Special Concern  
SBNFW: San Bernardino Nation Forest Watchlist  
BLMS: Bureau of Land Management Sensitive

### 3.4.2 Regulatory Framework

#### 3.4.2.1 Federal

##### **Federal Endangered Species Act (ESA) (16 USC §§1531-1544)**

The Federal ESA provides protection for Federally listed endangered and threatened species and their habitats. An “endangered” species is a species in danger of extinction throughout all or a significant portion of its range. A “threatened” species is one that is likely to become endangered in the foreseeable future throughout all or a significant portion of its range. Other special status species include “proposed” species, and “species of concern.” Proposed species are those that have been officially proposed (in the Federal Register) for listing as threatened or endangered. “Species of concern”

### 3.4 Biological Resources

are species for which not enough scientific information has been gathered to support a listing proposal, but still may be appropriate for listing in the future, after further study. A “de-listed” species is one whose population has reached its recovery goal and is no longer in jeopardy.

The Fish and Wildlife Service (USFWS) and NOAA Fisheries administer the Endangered Species Act (ESA). Under the ESA, “take” is defined by the ESA as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect any threatened or endangered fish or wildlife species. Harm may include significant habitat modification where it actually kills or injures a listed species through impairment of essential behavior (e.g., nesting or reproduction). Section 9 of the ESA prohibits “take.” A project may result in “take” of a listed species in one of two ways: a Habitat Conservation Plan (HCP) is prepared by a non-Federal entity and receives a Section 10(a)(1)(B) incidental take permit, or Interagency Consultation occurs under Section 7(a)(2), resulting in the issuance of a Biological Opinion by USFWS or NOAA Fisheries, including an incidental “take” statement that ensured that the expected “take” would not result in jeopardy to the species or adverse modification of designated critical habitat.

#### **Clean Water Act – Section 404/401 Jurisdiction (33 USC §§1251-1376)**

The U.S. Army Corps of Engineers (Army Corps) and the U.S. EPA regulate the discharge of dredged and fill material into “Waters of the United States” under Section 404 of the CWA. Army Corps jurisdiction over non-tidal Waters of the United States extends to the “ordinary high water mark (OHWM),” provided the jurisdiction is not extended by the presence of adjacent “wetlands” (33 CFR Part 328, §328.4). The discharge of dredged or fill material into Waters of the United States at a Project Site requires a Section 404 permit, unless otherwise exempted from regulation by Section 404 of the CWA.

Army Corps regulatory jurisdiction under Section 404 is founded on a connection between the water body in question and interstate commerce. This connection may be direct, through a tributary system linking a stream channel with traditional navigable waters used in interstate or foreign commerce, or may be indirect, through a nexus identified in Army Corps regulations. U.S. Supreme Court decisions have restricted the application of the Waters of the U.S. definition regarding “nonnavigable, isolated, intrastate waters,” ephemeral streams, ditches, and other waters.

The Corps does not generally consider the waters listed below to be waters of the U.S. (51 Fed. Reg. 41,206; 41,217 (Nov. 13, 1986 Preamble to 33 C.F.R. §328.3)). The Army Corps does; however, reserve the right to regulate these waters on a case-by-case basis:

- Non-tidal drainage and irrigation ditches excavated on dry land,
- Artificially irrigated areas that would revert to upland if the irrigation ceased,
- Artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing,
- Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons,

- Water filled depressions created in dry land incidental to construction activity and pits excavated in dry land for purposes of obtaining fill, sand or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of Waters of the U.S.

In association with obtaining a Section 404 permit, a Water Quality Certification under Section 401 of the CWA must be obtained from the Regional Water Quality Control Board. To obtain approval of the application for Water Quality Certification, projects must follow the Army Corps' 404(b)(1) Guidelines which specify avoidance of wetland impacts and minimization and mitigation of impacts to any affected wetlands.

#### **Migratory Bird Treaty Act (16 USC §§703-712)**

The Migratory Bird Treaty Act (MBTA), first enacted in 1918, domestically implements a series of treaties between the United States and Great Britain (on behalf of Canada), Mexico, Japan, and the former Soviet Union. The MBTA provides for international migratory bird protection, and authorizes the Secretary of the Interior to regulate the "taking" of migratory birds. Specifically, the MBTA states that it shall be unlawful, except as permitted by regulations, to "at any time, by any means, or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird..." (16 USC §703(a)). The current list of species protected by the MBTA can be located in Title 50, CFR Section 10.13.

In late 2008, the *Memorandum of Understanding between the USDA Forest Service and the US Fish and Wildlife Service to Promote the Conservation of Migratory Birds* (MOU) was signed, with an addendum in June 2014. The intent of the MOU is to strengthen migratory bird conservation through enhanced collaboration and cooperation between the Forest Service and the USFWS as well as other Federal, State, tribal and local governments. Within the National Forests, conservation of migratory birds focuses on providing a diversity of habitat conditions at multiple spatial scales and ensuring that bird conservation is addressed when planning for land management activities. The MOU covers implementation of the MBTA and the Bald and Golden Eagle Protection Act.

#### **Bald and Golden Eagle Protection Act (16 USC Sections 668–668c)**

The bald eagle and golden eagle are Federally protected under the Bald and Golden Eagle Protection Act. Under the act, it is illegal to take, possess, sell, purchase, barter, offer to sell or purchase or barter, transport, export, or import at any time or in any manner a bald or golden eagle, alive or dead; or any part, nest or egg of these eagles unless authorized by the Secretary of the Interior. Active nest sites are also protected from disturbance during the breeding season.

---

3.4 Biological Resources**Fish and Wildlife Coordination Act of 1958 (16 USC 661 et seq.)**

The Fish and Wildlife Coordination Act requires that whenever any body of water is proposed or authorized to be impounded, diverted, or otherwise controlled or modified, the lead Federal agency must consult with the USFWS, the State agency responsible for fish and wildlife management, and the National Marine Fisheries Service. Section 662(b) of the Act requires the lead Federal agency to consider the recommendations of the USFWS and other agencies. The recommendations may include proposed measures to mitigate or compensate for potential damages to wildlife and fisheries associated with a modification of a waterway.

**Executive Order 13112 – Invasive Species**

This executive order directs all Federal agencies to refrain from authorizing, funding, or carrying out actions or projects that may spread invasive species. The order further directs Federal agencies to prevent the introduction of invasive species, control and monitor existing invasive species populations, restore native species to invaded ecosystems, research and develop prevention and control methods for invasive species, and promote public education on invasive species. As part of a proposed action, the USFWS and the USACE would issue permits and therefore would be responsible for ensuring that the proposed action complies with Executive Order 13112 and does not contribute to the spread of invasive species.

Forest Service Manual 2900 Invasive Species Management, sets forth National Forest System policy, responsibilities, and direction for the prevention, detection, control, and restoration of effects from aquatic and terrestrial invasive species (including vertebrates, invertebrates, plants, and pathogens).

**Executive Order 11990 Protection of Wetlands (42 FR 26961, May 25, 1977)**

Executive Order 11990 requires Federal agencies to provide leadership and take action to minimize destruction, loss, or degradation of wetlands and to preserve and enhance the natural qualities of these lands. Federal agencies are required to avoid undertaking or providing support for new construction located in wetlands unless (1) no practicable alternative exists and (2) all practical measures have been taken to minimize harm to wetlands.

**San Bernardino National Forest Land Management Plan (LMP)**

The SBNF Land Management Plan (LMP) includes forest goals and desired conditions for resources, strategic management direction, and guidance for designing actions and activities during Project planning. The LMP defines the parameters (limits) for management, but offers the flexibility to adapt decisions to accommodate changing resource conditions. The LMP is completely strategic. It does not make project level decisions nor does it compel managers to implement specific actions or activities. Applicable LMP direction has been incorporated into the Project design.

**SBNF Forest Goals and Desired Conditions**

The SBNF LMP includes forest goals and desired conditions for resources, strategic management direction, and guidance for designing actions and activities during project planning. The SBNF LMP includes several goals applicable to this Project:

*Goal 4.1a* - Administer Minerals and Energy Resource Development while protecting ecosystem health (Forest Plan, Part 1, page 38). The desired condition is that approved minerals and energy developments are managed to facilitate production of mineral and energy resources while minimizing adverse impacts to surface and groundwater resources and protecting or enhancing ecosystem health and scenic values.

*Goal 5.1* - Improve watershed conditions through cooperative management. The desired condition is that national forest watersheds are healthy, dynamic and resilient, and are capable of responding to natural and human caused disturbances while maintaining the integrity of their biological and physical processes.

Watersheds, streams, groundwater recharge areas, springs, wetlands and aquifers are managed to assure the sustainability of high quantity and quality water. Where new or re-authorized water extraction or diversion is allowed, those facilities should be located to avoid long-term adverse impacts to national forest water and riparian resources. The Forest Service has acquired and maintains water rights where necessary to support resource management and healthy forest conditions. Forest management activities are planned and implemented in a manner that minimizes the risk to forest ecosystems from hazardous materials.

Additional desired conditions are that geologic resources are managed to protect, preserve and interpret unique resources and values, and to improve management of activities that affect watershed condition and ecosystem health. Geologic hazards are identified, analyzed and managed to reduce risks and impacts where there is a threat to human life, natural resources, or financial investment.

*Goal 6.2* - Provide ecological conditions to sustain viable populations of native and desired nonnative species. The desired condition is that habitats for Federally-listed species are conserved and listed species are recovered or are moving toward recovery. Habitats for sensitive species and other species of concern are managed to prevent downward trends in populations or habitat capability, and to prevent Federal listing. Flow regimes in streams that provide habitat for threatened, endangered, proposed, candidate, and/or sensitive aquatic and riparian-dependent species are sufficient to allow the species to persist and complete all phases of their life cycles. Habitat conditions sustain healthy populations of native and desired nonnative fish and game species. Wildlife habitat functions are maintained or improved, including primary feeding areas, winter ranges, breeding areas, birthing areas, rearing areas, migration corridors, and landscape linkages.

---

3.4 Biological Resources**Forest Service California Spotted Owl Management Policies**

Forest Service Pacific Southwest Region policy is to protect all identified spotted owl territories (the area within a 1.5-mile radius of each nest). The current direction for managing California spotted owls on the SBNF is contained in the Conservation Strategy for California Spotted Owls, as incorporated by reference in the SBNF LMP (USDA Forest Service 2006). The Conservation Strategy established guidelines for spotted owl habitat protection within territories, calling for establishment of owl management areas within a 1.5-mile radius of nest sites for each pair on the Forest. These areas are broken down into a 300-acre protected activity centers that encompass nesting/roosting habitat, and an additional 300-acre area home range core that primarily contains foraging habitat.

The owl nesting season is normally from February 1<sup>st</sup> to August 15<sup>th</sup>. The Conservation Strategy provides for avoidance of disturbance to nesting owls by using a Limited Operating Period for management activities that would be disruptive to spotted owls within 0.25 mile of nests. Disruptive activities within 0.25 mile of nest trees will be avoided or, with authorization, restricted to daylight hours. The Conservation Strategy also contains specific guidelines for vegetation and fuels management efforts within nest stands (30 to 60 acres around the nest trees), protected activity centers, and home range cores.

***Forest Service Sensitive Species***

Under direction from the National Forest Management Act, the Forest Service maintains a list of sensitive species that are managed to maintain and improve their status on the National Forests and prevent a need to list them under the Federal ESA. Forest Service Sensitive Species are designated by each Regional Forester because of a concern for viability within that Forest Service Region.

***SBNF Watchlist Species***

The SBNF maintains a Watchlist of species that the local biologists and botanists have expressed concern about viability either because of apparent downward trends, apparent changes in habitat availability, vulnerability of associated habitats, or very narrow or localized distribution. One purpose of the SBNF Watchlist is to gather information to determine if a species should be listed on the Regional Forester's sensitive species list.

**3.4.2.2 State****California Endangered Species Act (CESA) (California Fish and Game Code §§2050-2116)**

Similar to the Federal ESA, the CESA, along with the Native Plant Protection Act (Fish and Game Code §§ 1900-1913), authorizes the California Fish and Game Commission to designate, protect, and regulate the taking of special status species in the State. However, unlike the Federal ESA, CESA also prohibits take of species proposed for listing (called "candidate species" by the State). CESA defines "endangered" as

those species which are “in serious danger of becoming extinct throughout all, or a significant portion, of its range...” State-listed “threatened” species are those not presently threatened with extinction, but which are “likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts...”. Section 2080 of the Fish and Game Code prohibits the taking of State-listed plants and animals. Any projects that may adversely impact State-listed threatened or endangered species must formally consult with CDFW. CDFW can issue incidental take permits under Section 2081 of CESA.

### **CDFW Species of Concern**

In addition to species formally listed under the ESA and the CESA, “species of special concern” receive consideration by CDFW and local lead agencies during the CEQA process. Species that may be considered for review are included on a list of “Species of Special Concern,” developed by CDFW.

The CDFW maintains a list of Species of Special Concern for wildlife within the state. A California Species of Special Concern (CSSC) is a species, subspecies, or distinct population of fish, amphibian, reptile, bird or mammal native to California that currently satisfies one or more of the following (not necessarily mutually exclusive) criteria:

- Is extirpated from the state or, in the case of birds, in its primary seasonal or breeding role;
- Is listed as Federally, but not State-, threatened or endangered; meets the state definition of threatened or endangered but has not formally been listed;
- Is experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for state threatened or endangered status; and/or
- Has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for state threatened or endangered status.

CSSC is an administrative designation and carries no formal legal status. The intent of designating CSSCs is to focus attention on animals at conservation risk by CDFW, other Federal, State and local governmental entities, regulators, land managers, planners, consulting biologists, and others; stimulate research on poorly known species; and achieve conservation and recovery of these animals before they meet California ESA criteria for listing as threatened or endangered.

### **Fish and Game Code (Section 3503.5) Birds of Prey**

Birds of prey are also protected in California under provisions of the Fish and Game Code, (Section 3503.5), which states that it is “unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (bird-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.” Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered “taking” by the CDFW.

---

3.4 Biological Resources**Fish and Game Code (1600 – 1607) Stream Alteration**

Under Section 1602 of the California Fish and Game Code, a private party must notify CDFW if a project would “substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.” If an existing fish or wildlife resource may be substantially adversely affected by the activity, CDFW may propose reasonable measures to protect those resources. If these measures are agreeable to the party, they may enter into an agreement with CDFW identifying the approved activities and associated mitigation measures.

**Fish and Game Code (Sections 1900 – 1913) Native Plant Protection Act**

The Native Plant Protection Act prohibits the taking, possessing, or sale within the State of any plants with a State designation of rare, threatened, or endangered (as defined by the CDFW). An exception in the act allows landowners, under specified circumstances, to take listed plant species, provided that the owners first notify the CDFW and give that State agency at least 10 days to retrieve the plants before they are plowed under or otherwise destroyed. Project impacts to these species are not considered significant unless the species are known to have a high potential to occur within the area of disturbance associated with construction of the proposed project.

**3.4.2.3 Local****San Bernardino County General Plan Conservation Element**

The County of San Bernardino General Plan Conservation Element (County of San Bernardino 2007) establishes policies to conserve important natural resources. One role of the Conservation Element is to establish policies that reconcile conflicting demands on those resources. The goals and policies of the Conservation Element that apply to biological resources are:

GOAL CO 2. The County will maintain and enhance biological diversity and healthy ecosystems throughout the County.

- POLICY CO 2.1 *The County will coordinate with State and Federal agencies and departments to ensure that their programs to preserve rare and endangered species and protect areas of special habitat value, as well as conserve populations and habitats of commonly occurring species, are reflected in reviews and approvals of development programs.*
- POLICY CO 2.2 *Provide a balanced approach to resource protection and recreational use of the natural environment.*
- POLICY CO 2.3 *In addition to conditions of approval that may be required for specific future development proposals, the County shall establish long-term comprehensive plans for the County’s role in the protection of native species because preservation and conservation of biological resources*

are statewide, Regional, and local issues that directly affect development rights. The conditions of approval of any land use application approved with the BR overlay district shall incorporate the mitigation measures identified in the report required by Section 82.13.030 (Application Requirements), to protect and preserve the habitats of the identified plants and/or animals.

- POLICY CO 2.4 All discretionary approvals requiring mitigation measures for impacts to biological resources will include the condition that the mitigation measures be monitored and modified, if necessary, unless a finding is made that such monitoring is not feasible.

### **San Bernardino County Desert Native Plant Protection Ordinance**

The San Bernardino Desert Native Plant Protection regulations restrict the removal or harvesting of specific desert native plants. The following desert native plants are included if they have stems two inches or greater in diameter or are six feet or greater in height or are of a size otherwise specified in the ordinance: smoketree (*Dalea spinosa*); all species of mesquites (*Prosopis* sp.); all species of the family *Agavaceae* including century plants, nolinias, yuccas; creosote rings ten feet or greater in diameter; all Joshua trees; and any part (living or dead) of desert ironwood (*Olneya testoa*) or species of the genus *Cercidium*.

### **Carbonate Habitat Management Strategy (CHMS)**

The CHMS was developed in 2003 through an intensive collaborative effort. The strategy is designed to provide long-term protection for the carbonate endemic plants while also providing for long-term continued mining in the San Bernardino Mountains. Certain areas of the carbonate habitat reserves are protected from mining impacts in perpetuity by being dedicated and managed as described in the CHMS. A Memorandum of Understandings and Agreement was signed in 2003 by Omya, the USFS, Bureau of Land Management (BLM), San Bernardino County, Specialty Minerals, Mitsubishi Cement Company, California Native Plant Society, and the Cushenbury Mine Trust stipulating that the signatories will implement the CHMS for the dual purpose of conserving threatened and endangered carbonate plants and streamlining the permitting of mining operations.

The listed carbonate-endemic plants are managed by the USFS, San Bernardino County, and other public agencies under the CHMS. Effects to listed carbonate-endemic plants are addressed under the strategy, and mitigated by permanently relinquishing unpatented mining claims or transferring private property into the public domain, and by management of off-site plant occurrences as outlined in the CHMS.

The CHMS, which covers about 160,000 acres (called the Carbonate Habitat Management Area), has three main objectives:

1. Economic: Regulatory certainty for mining activities, protection of the viability of mining, and streamlining and cost reduction of the permitting process
2. Conservation: Maintenance and management of geomorphic and ecological processes of the landscape and placement of habitat blocks to maintain the carbonate plants, to avoid jeopardy (per

### 3.4 Biological Resources

Section 7 of the Federal ESA) and adverse modification or destruction of critical habitat, to contribute to recovery, and to avoid future listings

3. Regulatory: Streamlining of permitting, CEQA review, and County of San Bernardino implementation of the California Surface Mining Reclamation Act (SMARA), as well as allowing BLM and USFS to comply with certain court-ordered stipulations stemming from lawsuits.

The CHMS includes delineation of an initial habitat reserve, designation of conservation units within the Carbonate Habitat Management Area whereby loss and conservation of habitat values can be objectively measured, and contribution by Federal agencies and mining interests to reserve assembly through various mechanisms (e.g., dedication of existing unclaimed Federal land, purchase of private land or land with mining claims, land exchanges, or conservation banking). Implementation of the CHMS has been incorporated by the Forest Service into the SBNF LMP. The Forest Service and BLM prepared a Programmatic Biological Assessment for the CHMS, which concluded that covered activities, including mining activities that complied with the terms of the CHMS, would not result in a jeopardy assessment for listed carbonate endemic plant species under the Federal ESA. Subsequently, the USFWS issued a Programmatic Biological Opinion confirming the no jeopardy conclusion.

#### **Raptor Conservation Strategy (RCS)**

The SBNF is in the process of developing a final RCS for the San Bernardino Mountain's North Slope in coordination with three North Slope mining companies (Mitsubishi, Omya and Specialty Minerals), the USFWS and the CDFW. The SBNF and mining companies are cooperatively participating in the monitoring of nesting special status raptors on the North Slope. The objective of the RCS is to provide consistent management actions, processes, and management tools across the affected mining companies on the North Slope. The RCS is expected to be a dynamic document which will be updated as new information and scientific understanding of the subject species become available.

The intent of the RCS is to ensure compliance with Federal and State laws, provide guidelines for reducing the likelihood of "take" of a State or Federally-protected species, provide direction for acquiring an "incidental take" authorization if necessary and describe an adaptive management approach that provides protection of nests while continuing the mining operations and other activities.

#### **Bighorn Sheep Conservation Strategy**

A North Slope Bighorn Sheep Conservation Strategy is being developed by CDFW and the Forest Service in coordination with three North Slope mining companies. The conservation strategy will include the following:

- Guidelines/thresholds for population status that would trigger augmentation of the herd;
- A strategy/guidelines for developing water sources to respond to drought years;
- Herd monitoring methodology and objectives;
- Avoidance measures to minimize effects on bighorn sheep;

- A requirement that participating mining companies will be a partner in the Bighorn Sheep Conservation Strategy and will help support the long-term management goals of maintaining a sustainable population of bighorn sheep on the North Slope; and
- An endowment supported by the participating mining companies in the area to finance the conservation strategy.

### 3.4.3 Environmental Consequences/Impacts and Mitigation Measures

#### 3.4.3.1 Methodology

This analysis is based on the results of the SBNF Biological Report, biological surveys, review of applicable Federal, State and local requirements, Project design features that have been incorporated into the Project to minimize potential impacts on the environment and comments received during the scoping process.

Scoping letters that contained specific concerns regarding biological resources included, but were not limited to the following letters:

- Letter from CDFW, April 16, 2013;
- Letter from Center for Biological Diversity, June 4, 2013; and
- Letter from Lahontan Regional Water Quality Control Board, June 7, 2013.

A copy of the Scoping Report which includes all comments letters is provided in Appendix B. If necessary, additional consultation with the natural resource agencies will be conducted to further address their concerns.

Because many biological resources are not sedentary and wildlife movements occur in and out of Project Area, the biological resource evaluation included the following locations:

- Project Area: The *Project Area* is the area within the specific boundaries of the proposed activities (expansion of the Butterfield and Sentinel quarries), and is also referred to as the Project Site in other sections of this Draft EIR/EIS.
- Analysis Area: The *Analysis Area* includes the area in the immediate vicinity of the Project as well as the maximum expected reach of direct, indirect and cumulative effects associated with the Project.
- Federal Action Area: The *Federal Action Area*, as defined by the Endangered Species Act and associated regulations, applies only to the discussions of listed species and designated critical habitat under the Federal Endangered Species Act. For this Project, the *Analysis Area* is the same as the *Federal Action Area* and is typically referred to as the Analysis Area throughout the following discussions.

The Project Area is smaller than the Analysis Area. The Project Area for the biological resources analysis is defined as the proposed expanded boundaries of Butterfield and Sentinel Quarries, Butterfield 5

### 3.4 Biological Resources

overburden pad, the Central Area, and the Sentinel North pad. The Crystal Creek Haul Road and the Crystal Creek well site and access road are not considered part of the Project Area, since there are no proposed expansions to these areas. However, since there would be potential indirect impacts to the Crystal Creek Haul Road and the Crystal Creek well site and access road as a result of the extended use of these areas, they are included in the Analysis Area. Since there is no proposed expansion of Omya's LVPP (on private land), and the plant does not depend on this Project to continue operating, it is also not included within the Project Area.

The Analysis Area includes the Project Area (as described above) plus the adjacent areas subject to increased noise, dust deposition, and roll-down of materials, and the downstream reaches of drainages within the reaches of effects. The Analysis Area also includes the carbonate habitat reserve contributions, other Omya mining claims, mining operations in the vicinity of the Project, the North Slope of the Desert Rim Place, portions of the Big Bear Backcountry Place, and the Crystal Creek, Furnace Canyon Creek, and Holcomb Creek watersheds.

The analysis of potential effects includes direct, indirect, and cumulative associated with the Project. The expected likelihood, extent, severity, and duration of effects are addressed in the analyses.

#### **SBNF Biological Report**

Preparation of the SBNF Biological Report began with pre-field reviews. These reviews were conducted to determine which species are known from the Analysis Area or have suitable habitat present and could potentially occur. Data regarding the biological resources in the Analysis Area were obtained through literature review, existing reports and field investigations. Sources reviewed include:

- California Natural Diversity Data Base (CNDDDB 2013);
- California Native Plant Society (CNPS 2013);
- California Consortium of Herbaria (CCH 2013);
- SBNF and Natural Resource Inventory System (NRIS) occurrence databases;
- Results from previous species-specific surveys in the area;
- Field guides;
- Bird observations from E-Bird and Rare Bird Alerts; and
- Other Project related analyses.

In addition, data from Project related surveys and analyses done near the Analysis Area in the past 10-15 years (e.g., fuel reduction projects, mining claim surveys, restoration project surveys, engineering project surveys, wildlife and plant inventories/studies, etc.) were also considered in the SBNF Biological Report.

### Biological Surveys and Survey Limitations

Field surveys for botanical resources were conducted during 1997, 1998, 2008, 2009, 2010, 2011, and 2012 by botanists from Forest Service, Aspen Environmental, Psomas and Associates, Rancho Santa Ana Botanic Garden (RSABG), and Scott White Consulting. Surveys covered all proposed ground disturbance areas within the Analysis Area and all carbonate habitat mitigation lands. Surveys were not performed during because prior years' surveys were as thorough and complete as possible given slope limitations. In addition, because 2012-2015 were drought years, there was an associated likelihood of failing to detect focal species.

The botanical field studies were conducted and focused on a number of primary objectives: 1) recording of dominant vegetation communities, 2) floristic plant surveys, 3) focused rare plant surveys, and 4) focused invasive species surveys. Observations of all plant species were recorded in Appendix A of the SBNF Biological Report (provided in Appendix F of this document). While some of these surveys were intended to be floristic in nature, a more focused search was conducted for special-status plant species that are known to occur near the Analysis Area, or occupy habitats similar to those within the Analysis Area.

All previously recorded Threatened, Endangered, Sensitive Watchlist (TESW) plant occurrences within the Analysis Area that had not been documented for over 5 years were revisited and recorded to current information standards. All suitable carbonate plant habitats (previously mapped as part of the CHMS) were carefully surveyed, focusing on detecting rare and endangered carbonate plant species. All carbonate plant occurrences were surveyed and remapped where previously mapped boundaries were imprecise.

Botanical surveys were performed at times of year when most plant species would be detectable. All focal species that could occur in the Analysis Area had moderate to high detectability during surveys, based on field checks of nearby reference populations. The likelihood of failing to detect these species in areas surveyed is considered low on accessible slopes, but moderate to high on steep and inaccessible slopes.

A number of surveys have been conducted in and near the Project Area and Analysis Areas by biologists from the Forest Service, Psomas and Associates, Tetrattech, Bloom Biological, and other consulting biologists. These survey efforts are summarized in the SBNF Biological Report (Forest, 2016).

The focus of the wildlife surveys was to identify habitat suitability for special status wildlife within the Analysis Area in order to predict those species with a higher probability of occurrence in the Analysis Area. Suitable habitat is assumed occupied by the target species unless sufficient site-specific and species-specific surveys are conducted to assume absence. Surveys included identification of species through direct visual observation of the individuals, observations of evidence of their presence (e.g., burrows, tracks), and hearing their songs or other vocalizations. Focused surveys included surveys for bats and cliff-nesting raptors.

---

3.4 Biological Resources**Jurisdictional Delineation**

A Jurisdictional Delineation (JD) was conducted by Tetra Tech in November 2013 and revised in February 2016 for unnamed and named drainages associated with a 214.8 acre survey area at and near the Project. The JD survey area included areas currently being mined and portions of the site that are undisturbed but are part of the proposed expansions (see Figure 3.4-3). The purpose of the JD was to determine the limits of waters subject to regulatory authority under Section 404 and 401 of the CWA and those regulated under California Fish and Game Code 1600 et seq.

Prior to mobilizing into the field, a review of potential drainage features within the region and the Project Site using recent aerial topography USGS 7.5-minute quadrangle maps and recent satellite photographs was conducted. Field investigations were conducted by Tetra Tech biologists on September 25 and October 8, 2013 to identify the presence of waters subject to regulatory authority. The focus of the field survey was to identify a definable channel bed and bank, determine the OHWM, and to determine if riparian vegetation extended above the OHWM in any locations. Indicators of OHWM included undercut banks on corners, scour pits on the downstream sides of rocks or other in-stream obstacles, sandy berms indicating meandering, sorted sediment deposits, drift lines, and matted vegetation on the upstream side of plants.

Data sources reviewed in conjunction with the field survey included aerial photographs, US Geological Survey topographic maps, and the soil survey published by the Natural Resources Conservation Service (NRCS). The National Wetland Inventory (NWI) has not mapped wetlands within the quarry property boundaries (U.S. Fish and Wildlife Service 2013). Topographic maps and aerial photos were used to identify drainage patterns and washes through the Project Site. The *Review of Ordinary High Water Mark Indicators for Delineating Arid Streams in the Southwestern United States* (U.S. Army Corps of Engineers 2008) was used as guidance for identifying and determining limits of ACOE and CDFW jurisdiction. The JD discusses the use of fluvial geomorphology, physical features that develop within arid stream channels as a result of precipitation events, and vegetation to determine the OHWM and limits of Waters of the State within channels located in arid climates.

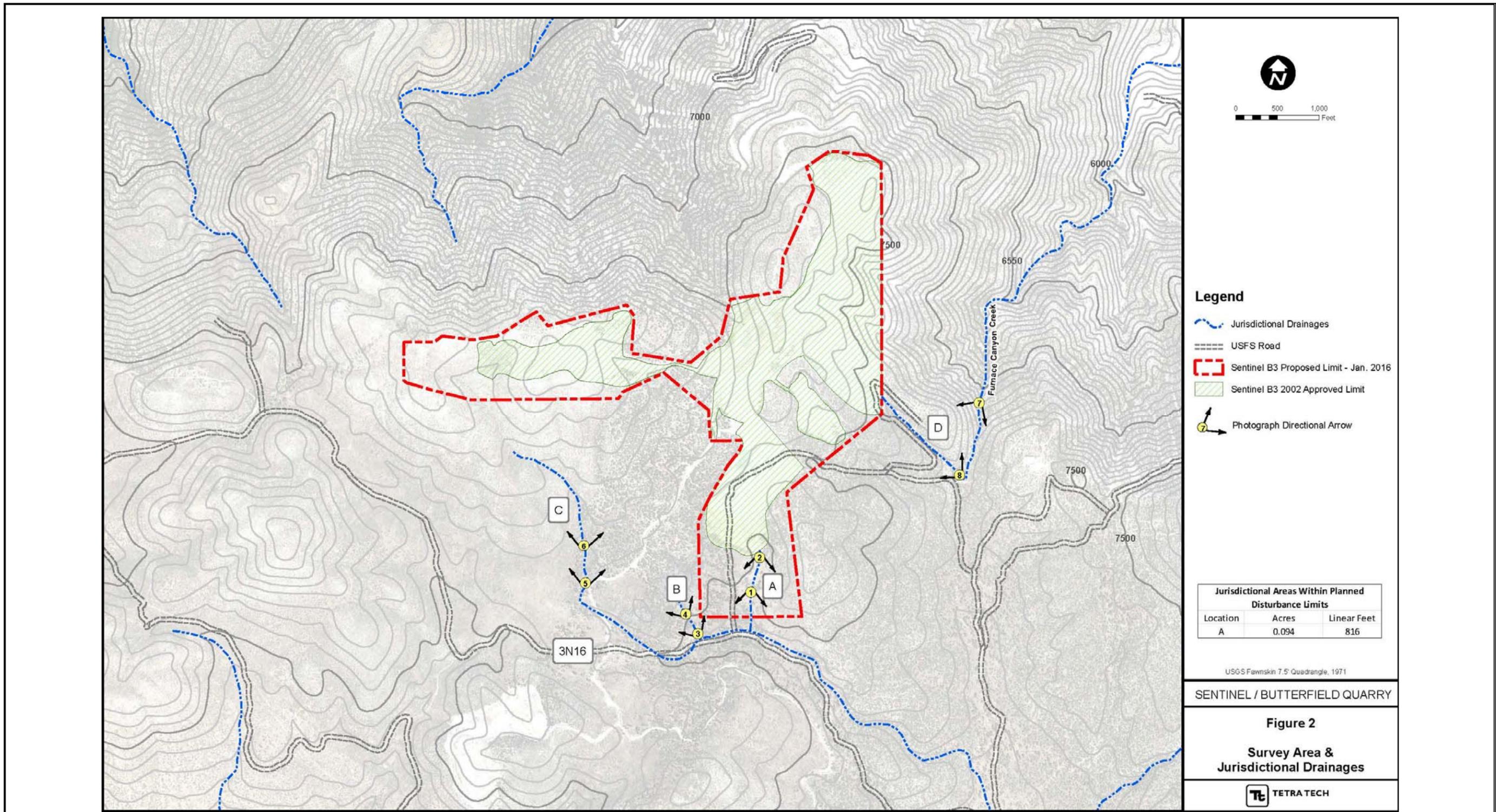
The use of vegetation patterns assists in identifying the OHWM in the arid southwest due to the close association between riparian vegetation and stream hydrology (U.S. Army Corps of Engineers 2008). Therefore, the presence of riparian species can be used to indicate that a wash would receive more frequent flows associated with smaller storm events and to more accurately determine the extent of waters subject to regulatory authority. Arid region riparian vegetation community species compositions can provide information about historic and present hydrological flow regimes. Certain vegetation communities and species are reliable vegetative indicators of surface flows and flow regimes in desert streams and washes. The riparian vegetation classes in an arid environment can be defined into the following three wetness classes:

- Hydroriparian areas that are perennially saturated;
- Mesoriparian areas that are seasonally moist; and

- Xeroriparian areas that are predominantly dry, with infrequent flood events (U.S. Army Corps of Engineers 2008).

The dominant wetness class located at or above the OHWM was identified for the drainages in the JD study area. In addition to signs of OHWM, soil core samples to a depth of 12-inches below grade were taken at specified locations to document soil texture, color, and moisture. Any hydric conditions such as reduced color or mottles were noted. Field conditions for the sampling points within the drainages were documented on Wetland Delineation forms. A complete compendium of plants observed during the survey was prepared and the origin and terminus of the onsite drainage features were documented.

THIS PAGE IS INTENTIONALLY BLANK



Source: Tetra Tech

Figure 3.4-3 JD Survey Area and Jurisdiction Drainages

THIS PAGE IS INTENTIONALLY BLANK

### Project Design Features

As discussed in Section 2.3.17, both NEPA and CEQA encourage project planning to incorporate measures into the project to minimize or avoid environmental impacts. Where the project applicant incorporates such measures into the proposed activities these measures are referred to as project design features. Early incorporation of and commitment to project design features is encouraged because it facilitates sound and collaborative project development and efficient environmental review.

Table 3.4-2 provides a list of the Project design features considered during the evaluation of potential impacts to biological resources. Under CEQA, project design features are typically considered different than mitigation measures. Mitigation measures are measures that were not proposed as part of the project and are in addition to the project design features. The SBNF Biological Report identified measures which they considered necessary to minimize impacts to biological resources. These measures are referred to as project design features and are a combination of CEQA project design features and mitigation measures. Because this is a joint CEQA/NEPA document, the project design features listed below are those which were included as part of the Project and additional measures have been identified as mitigation measures throughout the following impact analysis. Between the Project design features identified below and the mitigation measures identified to address the CEQA Appendix G significance criteria, all of the SBNF measures have been addressed.

**Table 3.4-2 Project Design Features**

<b>Project Design Features</b>	
<b>General Biological Resources</b>	
GEN-1.	<p>Omya shall minimize disturbance or hazards to surrounding vegetation, habitat, and wildlife, such as toxic substances, dust, noise, and lighting, as follows:</p> <ul style="list-style-type: none"> <li>a) New lighting shall be established at the minimum necessary to meet safety requirements, and shall be shielded to avoid lighting the surrounding habitat and the night sky;</li> <li>b) Except as necessary to survey or maintain the safety of the mine site, the Project's disturbance footprint shall be limited to areas designated for mining and related activities;</li> <li>c) Equipment staging areas and other construction or related habitat disturbance shall be limited to areas within the new or existing quarry footprint(s) and shall be designed and operated to the goal of minimizing impacts to adjacent habitat and sensitive biological resources;</li> <li>d) Design future overburden to be placed or backfilled into existing overburden areas and completed quarries as much as feasible to avoid possible impacts to existing Cushenbury oxytheca populations</li> <li>e) Any soil bonding or weighting agents to be used on unpaved surfaces shall be non-toxic to wildlife and plants and non-attractants for wildlife;</li> </ul>

3.4 Biological Resources

<b>Project Design Features</b>	
<b>General Biological Resources</b>	
	<ul style="list-style-type: none"> <li>f) All vehicles and equipment shall be maintained in proper working condition to minimize the potential for spill of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials; except as necessary to repair or remove disabled vehicles or equipment, vehicle servicing shall take place only at a designated area;</li> <li>g) All trash and food-related waste shall be secured in self-closing animal-proof containers and removed daily from the site;</li> <li>h) Only authorized personnel (including CDFW, USFWS and USFS) shall bring firearms or weapons to the site.</li> <li>i) No recreational target shooting will occur on NFS lands within the permit area.</li> <li>j) Standard erosion control measures shall be implemented for all phases of construction and operation where sediment run-off from exposed slopes may enter native soils or habitat or jurisdictional streambeds; and</li> <li>k) Disturbed soils and roads within the Project Site shall be stabilized to reduce erosion potential.</li> </ul>
GEN-2.	<p><i>Employee Training:</i> Omya shall conduct wildlife/plant awareness programs for employees (including new employee orientation and annual refresher trainings). The program will address bighorn sheep, desert tortoise, raptors, other animals of the area, and rare plants. This will include the importance of avoiding harassment/disturbance, adherence to speed limits, adherence to defined project boundaries, reporting guidelines, etc. CDFW and USFS will provide assistance in developing the training program.</p>
GEN-3.	<p><i>Fencing:</i> Omya shall minimize potential impediments to wildlife movement across the site by fencing only those areas within the facility where access must be restricted for safety or security reasons; identifying likely or potential wildlife movement routes across or around the site and avoiding or minimizing potential new barriers to wildlife movement in those areas.</p> <p>In the event fencing is necessary during construction and/or extraction activities, project personnel shall ensure that any such fence meets existing specifications that have been developed to preclude accidental entanglement of bighorn sheep, deer and other animals. Biologists from the Forest Service and CDFW will be consulted for appropriate fence guidelines.</p>
GEN-4.	<p><i>Reclamation:</i> Reclamation of the quarries shall include the creation of angled pathways and interlacing reclaimed benches in order to facilitate the movement of bighorn sheep and other wildlife through the quarries. These benches will be created as the mining sequence is completed and prior to restoration.</p>
GEN-5.	<p><i>Pets and Domestic Animals:</i> Omya employees shall not bring pets or domestic animals to the work site. Omya will not authorize the housing or grazing of domestic animals on their property.</p>

<b>Project Design Features</b>	
<b>General Biological Resources</b>	
GEN-6.	Maintain facilities and grounds in a manner that minimizes any potential impacts to hunting or scavenging raptors and other predators/scavengers ( <i>e.g.</i> , minimize storage of equipment near active quarries that may attract prey, remove trash/garbage daily, etc.). All trash and food-related waste shall be secured in self-closing animal-proof containers and removed daily from the site. Avoid practices that attract/enhance prey populations and opportunities for raptor hunting or scavenging near active quarries, haul roads, and processing areas. This would also help discourage the spread of non-Native birds; to discourage the spread of disease and pathogens, etc.
GEN-7.	Reduce vehicle collision risk to raptors and other scavengers by removing animal carcasses from haul and access roads.
GEN-8.	<i>Disturbance Avoidance:</i> Omya employees and contractors will not use Omya roads in order to access National Forest lands for recreation or hunting. Access for personal use will be through National Forest system roads and trails that are open to the general public.
GEN-9.	<i>Blasting:</i> Prior to blasting activities within the Project Area, mine employees shall conduct a visual inspection (with both naked eyes and binoculars) for a minimum of five minutes to ascertain the presence or absence of bighorn sheep, deer, golden eagles, peregrine falcons or other large animals. If animals are located within the blast area, mine employees shall wait until animals have moved from the area or may use sound such as shout, vehicle or air horns to move them out of the blast area prior to detonation of any blasting materials.
GEN-10.	<i>Biomass Disposal:</i> All woody vegetation to be cleared from the surface (quarry site, haul road, etc.) will be disposed of as follows: <ul style="list-style-type: none"> <li>• All vegetation and organic material will be chipped and/or stockpiled or applied to inactive quarry benches, overburden piles, or on sidecast areas along roads and quarries. This should be done as part of phased reclamation to minimize stockpile duration and associated weed risk.</li> </ul>
GEN-11.	The withdrawal and quit-claim of specified unpatented mining claims (discussed below under Carbonate plants) is also designed to mitigate for the loss of wildlife habitat.
<b>Salvage and Recovery of Plants</b>	
PLANT-1.	In coordination with the Forest Service, Omya will provide for the collection of seed and other propagules as needed in support of the revegetation plan. Propagules shall be collected within the Project Area to the extent possible.
PLANT-2.	In coordination with the Forest Service, Omya will provide for salvage of rare native plants within the Project Area to be propagated and/or transplanted to protected habitat reserve areas at the discretion of the Forest Service.

## 3.4 Biological Resources

<b>Project Design Features</b>	
<b>Carbonate Endemic Plant Species</b>	
CARB-1.	As specified under the CHMS, and within the Project Area, Omya or the Forest Service may at their discretion salvage carbonate endemic plant species (whole plants, cuttings, or seed), and propagules of associated species, to aid in carbonate habitat revegetation efforts on or off-site.
CARB-2.	For Threatened/Endangered Plants: Omya would, upon withdrawal, quit-claim specified unpatented mining claims held within San Bernardino National Forest, and convey specified patented lands, which have been verified by the Forest Service to contain occupied endangered species habitat as mitigation for impacts of the expansion on Cushenbury oxytheca ( <i>Acanthoscyphus parishii</i> var. <i>goodmaniana</i> ) pursuant to the CHMS.
<b>Geology and Soils</b>	
GEO-1.	Control of surface drainage, erosion, and sedimentation of the proposed haul road and quarry operations would involve the following primary components currently being implemented for existing operations: <ul style="list-style-type: none"> <li>a) Limiting surface disturbance to the minimum area required for active operations</li> <li>b) Diverting runoff, where operationally feasible, such that runoff from undisturbed areas does not enter the area of active operations.</li> <li>c) Using ditches, sediment basins and localized control and maintenance measures to intercept and control runoff along the haul road.</li> <li>d) Stabilizing disturbed areas through regarding, revegetation and other restoration practices.</li> <li>e) Direct runoff into the quarries, sediment catchment basins, sumps and culverts.</li> </ul>
GEO-2.	Dispose of sediment from runoff control basins to pre-approved sites rather than side cast and to the greatest extent possible, side-casting into the Crystal Creek drainage will be avoided.
GEO-3.	Control runoff, drainage, off-site transport and erosion at fill and overburden pads by: <ul style="list-style-type: none"> <li>a) Constructing berms near the crest of the pads.</li> <li>b) Placing rip rap, catchment basins and/or energy dissipaters along the toe of the fill and in the drainage below the fill slope.</li> </ul>
GEO-4.	Inspect slope conditions in quarries after a significant seismic event. Quarry operations will be stopped until a qualified geotechnical engineer inspects slopes for unsafe or unstable conditions.
GEO-5.	Routinely inspect quarries for unsafe and unstable conditions.
GEO-6.	Implement quarry design and procedures recommendations identified in approved slope stability investigations and per SMARA requirements.
GEO-7.	Implement BMPs in accordance with the most current Industrial General Stormwater Permit and per the Omya's SWPP Plan.

<b>Project Design Features</b>	
<b>Geology and Soils</b>	
GEO-8.	Minimize ground disturbance to the minimum that is required to construct and operate the quarry.
<b>Scenery</b>	
SCEN-1.	Surface disturbances shall be limited to those areas identified in the Mine Reclamation Plan. Disturbances outside of these areas shall be prohibited.
SCEN-2.	Backfill eastern half of the Butterfield Quarry and portions of the Sentinel Quarry, as feasible.
SCEN-3.	Waste rock shall be deposited into waste rock stockpiles within the quarry footprint to reduce the area of disturbance and visual impact outside of the quarry and to reduce internal slopes and aid in revegetation.
SCEN-4.	Placement of darker materials, as available, on outside of highly visible slopes.
SCEN-5.	Approved color staining methods should be used on highly visible slopes that are not susceptible to raveling to reduce color contrast.
SCEN-6.	Locate replacement crusher or a new mobile crusher system out of viewshed.
SCEN-7.	Reclamation and revegetation shall be implemented per the approved Reclamation Plan on completed benches concurrent with mining. As areas become available, implement concurrent reclamation/revegetation of completed quarries and overburden stockpiles to reduce visual impacts through backfilling, re-contouring and slope reduction, growth media and habitat log placement, revegetation with native plant species, and colorization as applicable.
SCEN-8.	MDAQMD dust controls shall be implemented to reduce visible dust plumes.
<b>Air Quality, GHG, Health Risk</b>	
AIR-1.	Comply with all relevant MDAQMD regulations and permit conditions to minimize air emissions.
AIR-2.	Ensure the baghouse for the stationary crusher is in good operating condition as required by the permit.
AIR-3.	Use water or chemical suppressants to control dust at the quarry, crusher site, overburden pads and haul/quarry roads.
AIR-4.	Ensure that diesel equipment and vehicles meet the required CARB diesel regulations.
AIR-5.	Mining activities will be limited or stopped during significant wind events.

## 3.4 Biological Resources

<b>Project Design Features</b>	
<b>Stormwater</b>	
SW-1.	Comply with the SWPPP BMPs.
<b>Groundwater</b>	
GW-1.	Ensure that water production will remain within Omya's designated FPA.
GW-2.	Comply with all water quality and hazardous materials management regulatory requirements and identified BMP/design features.
GW-3.	Comply with SMARA and reclamation activities identified in the approved Reclamation Plan.
<b>Hazardous Materials</b>	
HM-1.	Comply with the Hazardous Materials Business Plan, SWPPP, SPCC Plan and BMPs as required by these plans and hazardous materials and waste regulatory requirements.
HM-2.	Ensure that the use, transport, management, storage and disposal of fuels (i.e.; diesel and gasoline) and other hazardous materials used for mining operations (i.e.; motor oil, transmission fluids, hydraulic fluids, lubricating greases, brake fluids and/or antifreeze) are in accordance with Federal, State and local hazardous materials and waste management regulations.
HM-3.	Inspect and maintain the fuel storage tank to ensure that the secondary containment (i.e.; double wall tank) and spill prevention controls are operating as required.
HM-4.	Maintain an updated Hazardous Materials Business Plan and hazardous materials inventory per CUPA requirements.
HM-5.	Minimize blasting events to the extent possible (approximately once per week per quarry) and only during daylight hours.
HM-6.	The transportation, storage and handling of explosives will be conducted in accordance with regulatory requirements and only with licensed, trained and qualified professionals.
HM-7.	Maintain all emergency response and spill equipment in proper operating condition and have available at areas where hazardous materials and waste are managed, transported and/or stored.
HM-8.	Ensure all personnel are appropriately trained in hazardous materials and waste management, including spill prevention and response procedures.
<b>Reclamation</b>	
REC-1.	Comply with all aspects of the Reclamation Plan and SMARA requirements.

Project Design Features	
Reclamation	
REC-2.	Reclamation of the quarries shall include the creation of angled pathways and interlacing reclaimed benches in order to facilitate the movement of bighorn sheep and other wildlife through the quarries. These benches will be created as the mining sequence is completed and prior to restoration.
Employee Training	
TR-1.	Develop an Employee Training Awareness Plan that addresses training requirements, as necessary to comply with relevant regulations and approval conditions and mitigations identified in the Final EIR/EIS.

### Mitigation Measures for Biological Resources

Section 3.4.3.3 provides the impact analysis for biological resources and identifies the mitigation measures required to reduce potential impacts to less than significant. The following provides a summary list of those mitigation measures. Implementation of these mitigation measures (as well as the Project design features) were assumed in SBNF's Biological Report's evaluation of effects.

#### Mitigation Measure BIO-1: Relinquish Mining Claims

Omya shall relinquish through a quit-claim process, the identified acreage located within the unpatented mining claims as shown in Table 3.4-3. These areas have been verified by the SBNF to contain habitat for the specified endangered or threatened species pursuant to the CHMS. Table 3.4-6 identifies the number of acres in the Project and mitigation parcels for each T/E plant species. Mitigation for affected T/E plants is a minimum of 3:1 based on conservation value (as described in the CHMS). (SBNF Biological Report PDF CARB-2)

**Table 3.4-3 Mitigation Claim Acreages**

Mitigation Claim Acreages	
Claim	Acreage
Crystal Creek 9 (south ½ only)	80
White Rock 1 and 2	40
Cushenbury 32	175
Claim	Acreage
Rattler 18, 19, 20, 21	80
<b>TOTAL</b>	<b>375</b>

---

3.4 Biological Resources**Mitigation Measure BIO-2: Non-native Species – Inspections**

Omya shall visually monitor the occurrence of non-native invasive plants on-site by visual inspection. The goal is to prevent non-native invasive plants from becoming established and depositing seeds in areas to be re-vegetated at a later date. If inspections reveal that weeds are becoming an issue or have established on-site, then removal would be initiated by Omya in coordination with the Forest Service botanist. Inspections shall be made in conjunction with Project's Reclamation Plan revegetation monitoring. (SBNF Biological Report PDF NNS-1)

**Mitigation Measure BIO-3: Non-native Species – Equipment Cleaning**

To reduce the risk of introducing non-native invasive plants, insects, and pathogens from off-site, all heavy mining equipment (e.g., drill rigs, haul trucks and loaders) must be thoroughly washed of all soil and vegetation debris prior to being brought into the Project Area. (SBNF Biological Report PDF NNS-2)

**Mitigation Measure BIO-4: Non-native Species – Control and Eradication**

Since the Project is expected to last 40 years and new non-native invasive plants and animals may become established in the region, an adaptive management approach is necessary. If any new non-native invasive plants, animals, or pathogens are identified as having a potential for establishment in the Project Area, the Forest Service, CDFW and Omya will develop measures for detection, control, and eradication as necessary. Omya shall be responsible for funding detection, control, and eradication efforts. (SBNF Biological Report PDF NNS-3)

**Mitigation Measure BIO-5: Personnel Training – Domestic and Feral Animals**

Omya personnel will be trained on and will report sightings of domestic sheep, goats, dogs, and cats on and near the facility to the Forest Service and CDFW within two hours of the observation. In the event of domestic or feral animals being found, Omya shall employ a trained trapper to catch and remove the animals following County regulations. CDFW may assist capture/removal efforts if available. (SBNF Biological Report PDF NNS-4)

**Mitigation Measure BIO-6: Wildlife and Plant Awareness Training**

Omya shall conduct wildlife/plant awareness programs for employees (including new employee orientation and annual refresher trainings). The program will address bighorn sheep, desert tortoise, raptors, other animals of the area, and rare plants. This will include the importance of avoiding harassment/disturbance, adherence to speed limits, adherence to defined project boundaries, reporting guidelines, etc. CDFW and USFS will provide assistance in developing the training program. (SBNF Biological Report GEN-2)

**Mitigation Measure BIO-7: Raptor Conservation Strategy**

A RCS shall be developed in coordination with the Forest Service, USFWS, and CDFW. Omya shall provide input to the development/finalization of the RCS and shall follow the guidelines put forth in the effort. The RCS will be tailored for activities associated with mining activities and effects. Upon approval of the Plan of Operations and the Reclamation Plan by the County and the Forest Service, Omya will participate in the implementation of the strategy by contributing to specified survey and monitoring efforts and by the following applicable operation guidelines.

The RCS will cover the North Slope of the San Bernardino Mountains from the White Mountain to Terrace Springs, and will address golden eagles, California condor, peregrine falcon, and prairie falcon. The RCS may be updated to include other raptors in the future if concerns develop over their local population status.

The RCS will be a dynamic document and will be updated as new data and scientific understanding of the aforementioned species become available. It will include monitoring and information gathering and measures to avoid, minimize, rectify, and reduce (or eliminate over time) effects to raptors nesting on the North Slope. The intent is to use systematic monitoring or raptor nesting chronology and observed behavior to develop site- and activity- specific measures to ensure successful nesting and provide for adaptive management opportunities. (SBNF Biological Report PDF RAPTOR-1)

**Mitigation Measure BIO-8: Raptor Monitoring**

If an occupied raptor nest is located within 1.5 miles of the active mining area, the mining company shall provide a qualified biologist to monitor during blasting for disturbance as a result of the mining activities. Monitoring results will be provided to the Forest Service biologist via email within 48 hours of a blast. The Forest Service will coordinate appropriate notification, as necessary, with USFWS and CDFW. (SBNF Biological Report PDF RAPTOR-1)

**Mitigation Measure BIO-9: Raptor Nesting Regulatory Coordination**

If an occupied nest for a Federally or State protected species is found within 1.5 miles of an active quarry operation, the SBNF shall conduct an evaluation to determine the appropriate course of action under applicable State and Federal laws (e.g. "incidental take" authorization, Endangered Species Act Consultation, etc.) (SBNF Biological Report PDF RAPTOR-2)

**Mitigation Measure BIO-10: Raptor Nesting Protection**

If monitoring detects that blasting or other mine activities are resulting in disturbance of nesting raptors that could lead to mortality or nest abandonment, the Forest Service, Omya, USFWS and CDFW, as appropriate, shall evaluate the feasibility of implementing measures to avoid or reduce the effects. The

---

3.4 Biological Resources

RCS will contain some potential methods for reducing or avoiding effects. (SBNF Biological Report PDF RAPTOR-3)

**Mitigation Measure BIO-11: Personnel Training-Desert Tortoise**

Omya shall work with the SBNF and CDFW and incorporate desert tortoise education and awareness into their training for employees, customers, and contractors. This shall include how to minimize impacts to desert tortoises and their habitats. Information about penalties shall also be included. These briefings shall include guidelines about driving in desert tortoise habitat, handling prohibitions, etc. Omya shall work with SBNF and CDFW to develop other protective measures if monitoring identifies a need. (SBNF Biological Report PDF DETO-1)

**Mitigation Measure BIO-12: Desert Tortoise Reporting**

Any sightings of desert tortoises, including dead tortoises, must be reported to the Forest Service biologist. The report should include photos if possible, location, date, time, cause of death (if obvious), and any other pertinent information. (SBNF Biological Report PDF DETO-2)

**Mitigation Measure BIO-13: Ground Clearing**

During the development of the quarry and associated facilities, all initial ground clearing (vegetation removal, grading, etc.) shall ideally occur outside the avian breeding season, and potential nesting habitat shall not be removed from February 1 through August 31, or appropriate dates based on on-site nesting phenology determined by a qualified biologist.

For initial ground clearing (vegetation removal, grading, etc.) that is not feasible to be conducted outside the nesting season, surveys shall be conducted to locate active nests. Any active nest sites that are located shall be buffered and no work shall be conducted within those buffered areas until the nests are no longer active. The buffer distances would be determined by current species-specific standards. (SBNF Biological Report PDF BIRD-1)

**Mitigation Measure BIO-14: Nesting Surveys**

Nesting bird surveys for passerine birds, as outlined under MM BIO-13, guidelines area as follows:

- A qualified biologist shall be experienced and familiar with robust nest-locating techniques or comparable to those described by Martin and Guepel (1993).
- Surveys shall be conducted in accordance with the following guidelines:
  - Surveys shall cover all potential nesting habitat to be disturbed and a 500 foot buffer surrounding areas to be disturbed.
  - At least two pre-construction surveys, separated by a minimum 10 day interval, shall be completed prior to initial grading or grubbing activity; the later survey shall be completed no

more than 10 days preceding initiation of initial grading or grubbing activity. Additional follow-up surveys shall be required if periods of construction inactivity exceed one week in any given area, an interval during which birds may establish a nesting territory and initiate egg laying and incubation. (SBNF Biological Report PDF BIRD-2)

**Mitigation Measure BIO-15: Nesting Season – Crystal Creek Well**

To the greatest extent possible, maintenance activities at the Crystal Creek well and access road would be avoided during the nesting season for California spotted owl and other nesting birds (February 1 through August 15). Exceptions may be considered depending on planned activities and associated noise levels, after coordination with the Forest Service biologist or if protocol-level surveys determine the territory is vacant. If emergency repairs are required within the breeding season, the company shall notify the Forest Service within 24 hours. (SBNF Biological Report PDF CC-1)

**Mitigation Measure BIO-16: Bighorn Sheep Foraging Habitat**

When trucks spray water on haul roads to control fugitive dust, some overspray occurs on road berms for a short distance beyond. Those watered areas sometimes support vegetation that bighorn sheep consume. Omya will not make an effort to eliminate the overspray. The Project's Revegetation Plan shall focus on using native species that will help enhance bighorn sheep habitat. (SBNF Biological Report PDF BHS-1)

**Mitigation Measure BIO-17: Bighorn Sheep Reporting of Mortality**

Omya shall immediately report any bighorn sheep mortalities, whatever the cause, to the CDFW and Forest Service as soon as possible after the observation. The bighorn sheep carcass shall be left in place until the CDFW or Forest Service biologist can examine it and determine the proper disposal method. In the event that mountain lion predation is occurring at levels that compromise the viability of the population, Omya shall cooperate fully by ensuring access to Omya properties to determine the predator involved or, in the event that an individual predator has been identified, for removal of the predator. (SBNF Biological Report PDF BHS-2)

**Mitigation Measure BIO-18: Bighorn Sheep Monitoring/Adaptive Management**

Omya shall monitor bighorn sheep use in and near their operations and at water sources in and adjacent to their operations. Monitoring shall consist of maintenance of cameras stationed at water sources and recording of data from cameras in a database developed by CDFW, as well as collection of observations by Omya employees. An annual monitoring report will be provided to the Forest Service and CDFW. (SBNF Biological Report PDF BHS-3)

---

3.4 Biological Resources**Mitigation Measure BIO-19: North Slope Bighorn Sheep Conservation Strategy**

A Draft North Slope Bighorn Sheep Conservation Strategy will be developed by CDFW and the Forest Service which will include:

- Guidelines/thresholds for population status that would trigger augmentation of the herd;
- A strategy/guidelines for developing water sources to respond to drought years;
- Herd monitoring methodology and objectives.

Omya will be a partner in the North Slope Bighorn Sheep Conservation Strategy and will help support the long-term management goals of maintaining a sustainable population of bighorn sheep on the North Slope. (SBNF Biological Report PDF BHS-4)

**Mitigation Measure BIO-20: Bighorn Sheep Future Conservation and Management**

Within one year after approval, Omya shall begin contributing to a non-wasting endowment, designated as the North Slope Bighorn Sheep Conservation Fund (Fund). The amount of Omya's contributions shall be determined by CDFW in coordination with Omya. The Fund shall be administered by the National Fish and Wildlife Foundation as a sub-account of the California Department of Fish and {Game} Wildlife Master Mitigation Account. This sub-account shall be managed as a long term endowment dedicated to activities that aid in conservation and monitoring of bighorn sheep both within the Cushenbury herd and on proximate habitats, occupied or unoccupied, including the Bighorn Mountains and San Geronio Wilderness where immigration and emigration may connect groups into a functional metapopulation. (SBNF Biological Report PDF BHS-5)

**Mitigation Measure BIO-21: Bighorn Sheep Employee Awareness Training**

Omya will consult with the CDFW to incorporate bighorn sheep education and awareness into their training for employees and contractors. Training will include how to minimize impacts to bighorn sheep and include guidelines for driving, operation of heavy equipment, general quarry operation, and blasting in bighorn sheep habitat. (SBNF Biological Report PDF BHS-6)

**Mitigation Measure BIO-22: Jurisdictional Waters and Agency Consultation**

Prior to activities that could impact Waters of the United States or the State as identified in the Project JD, the ACOE, RWQCB-Lahontan Region and CDFW shall be consulted for concurrence with the findings of the JD and to determine if regulatory permits or approvals (i.e.: Streambed Alteration Agreement, coverage under the National Permit, Waste Discharge Request/Section 401) would be required and if considered necessary, the appropriate permits and/or approvals shall be obtained.

### 3.4.3.2 Significance Criteria

Significant impacts to biological resources would occur if the Project would result in any of the following thresholds (CEQA Guidelines Environmental Checklist Appendix G):

- a) *Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;*
- b) *Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;*
- c) *Have a substantial adverse effect on Federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or any other means;*
- d) *Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;*
- e) *Conflict with any local policies or ordinances protecting biological resources such as a tree preservation policy or ordinance; or*
- f) *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan.*

### **NEPA Analysis Approach**

The analysis of potential effects includes direct, indirect, and cumulative effects associated with the Project. The expected likelihood, extent, severity, and duration of effects are addressed in the analysis. The factors considered in each of level of analysis are explained below.

Direct effects are considered actions or activities that are immediate in space and/or time (e.g., physical damage to plants, death or injury of animals, destruction of eggs, disturbance that disrupts breeding behavior, habitat removal).

Indirect effects are actions or activities that could result in effects to the species but are removed from the project activities in space and/or time (e.g., downstream sedimentation, changes to hydrological patterns, effects to pollinators, invasive species introductions).

Two definitions of Cumulative Effects/Impacts are addressed in this biological resources analysis. Under NEPA, cumulative impacts are those effects caused by past, present, and future Federal, State, and private activities within or onto special-status species and their habitats. This definition applies to all rare species and habitats, even if they are not listed as threatened or endangered. Under the CEQA,

### 3.4 Biological Resources

cumulative effects only consider future non-Federal activities that are reasonably certain to occur. Future Federal activities or activities permitted by Federal agencies are not included under ESA cumulative effects because any proposed future Federal activities or Federally permitted activities must undergo future Section 7 consultation with the USFWS. This definition applies to the cumulative effects analysis for Federally Listed Threatened and Endangered species.

#### **3.4.3.3 Impacts and Mitigation Measures**

##### **Impact Analysis**

The following discussion describes generalized direct and indirect effects that may be common to many of the plants, animals, or habitats in the Analysis Area. The potential impacts associated with specific species are further evaluated later in the specific-species discussions for those species that are known to occur or have the potential to occur in the Analysis Area.

##### ***General Effects to Vegetation Communities/Wildlife Habitat Availability***

Vegetation communities would be disturbed by construction, mining operations, and maintenance activities that remove existing vegetation. As vegetated areas are a critical component of wildlife habitat in terms of foraging sites, food supplies, cover/shelter, and breeding sites, losses of or disturbance to native vegetation can affect habitat currently available for wildlife foraging, sheltering and breeding and the quality for wildlife species. The Project would result in approximately 94.9 acres of new habitat removal, for a total of 232.4 acres of long-term habitat losses. Of those 94.9 acres, approximately 9 acres are Jeffrey pine forest habitat, and 85.9 acres of pinyon/juniper woodlands habitat.

The primary impact of the Project to vegetation would be the initial removal of the land surface and all associated vegetation. The development of the Project would result in a total operational area (existing and proposed areas of disturbance) at the Butterfield Sentential Quarries of approximately 232.4 acres. These effects represent permanent loss of vegetation. Some vegetation would return to the site over the long term through mine reclamation and natural revegetation following completion of mining. However, the density and diversity of this vegetation is expected to be lower than that of the pre-project vegetation.

As identified in the CHMS and discussed below in Mitigation Measure BIO-1, Omya will relinquish 375 acres of unpatented claim lands (South half of Crystal Creek 9, White Rock 1, White Rock 2, Cushenbury 32, and Rattler 18-21) following mineral withdrawal. All of those mitigation parcels would be unavailable for future mining. As a result, approximately 375 acres would become unavailable for future mining in order to mitigate for the proposed development of 94.9 acres and the total extended development (existing and proposed) of 232.4 acres. The mitigation parcels support pinyon/juniper woodland and desert transition habitats with carbonate endemic plants.

With the implementation of habitat and wildlife conservation management strategies (CHMS, RCS and the Bighorn Sheep Conservation Strategy), as well as Project design features (e.g.; GEN-1 through GEN-12) and the mitigation measures (MM) identified in the species specific impact analysis below (e.g.; MM BIO-1, BIO-6 and BIO-20), potential impacts to vegetation communities and wildlife habitat are considered less than significant.

#### ***Potential General Effects to Plants***

As discussed above, habitat loss from removal of the land surface, and to a lesser extent burial of the land surface, would result in the permanent loss of occurrences of multiple species of plants. While it is expected that revegetation efforts conducted during the Project reclamation activities will reintroduce some of these species to the site such that the impacts are considered less than significant, the habitat effects are considered to be permanent due to the long life of the Project.

Plants in/near the Project Area may be affected by erosion, deposition of particulate, dust, and changes in microclimate due to removal of vegetation.

Particulate deposition from ore processing as well as erosion leads to loss of topsoil, including nutrients, native seedbanks, and beneficial microflora and microfauna. Erosion and deposition can also lead to loss of whole plants through undermining or burial. Project design features (e.g.; GEN-1, GEO-1, GEO-2, GEO-3, GEO-7 and GEO-8) for engineering, road maintenance, soils and hydrology would reduce these effects to less than significant.

As discussed in the SBNF Biological Report and in Section 3.3 Air Quality of this Draft EIR/EIS, deposition of dust near the quarries and Crystal Creek Haul Road would affect plants by blocking stomata and stigmatic surfaces, and reducing photosynthesis. This reduction in respiration interferes with the plants ability to make carbohydrates from sunlight (photosynthesis), leading to reduced growth and vigor and increased mortality. Dust and particulate accumulated on leaf surfaces also can effectively shade sunlight from leaves, also reducing photosynthesis. Dust and particulate accumulations can also interfere with pollination and development of fertile seeds. Project design features (e.g., AIR-1, AIR-2, AIR-3, AIR-4, and AIR-5) such as dust abatement on the haul road would be expected to reduce these effects to less than significant.

#### ***Spread or Establishment of Non-Native Invasive Species***

The Forest Service Manual direction for Invasive Species Management is contained in FSM 2900, (December 5, 2011). This direction sets forth National Forest System policy, responsibilities, and direction for the prevention, detection, control, and restoration of effects from aquatic and terrestrial invasive species (including vertebrates, invertebrates, plants, and pathogens). The direction is included in Appendix B of the SBNF Biological Report (provided in Appendix F of this document).

### 3.4 Biological Resources

The SBNF Biological Report identified the noxious and other invasive plants known to occur in or near the Project and Analysis Areas. As discussed in the SBNF Biological report, an inventory for noxious and other invasive plant species was performed concurrently with focused rare plant surveys and floristic inventories for the Project. The surveys that were performed had a moderate likelihood of detecting all target species (including weeds) due to the seasons in which the surveys took place and favorable rainfall conditions.

The risk of transporting new weed infestations into the Analysis Area is considered high because heavy equipment would be used in the Analysis Area over a long period of time and areas of ground disturbance caused by ground-based heavy equipment operations are especially vulnerable to establishment and rapid spread of weeds. For example, soil disturbance associated with mining operations would likely lead to an increased prevalence of cheatgrass and other weeds. However, with the implementation of Project design features and proposed Mitigation Measures (e.g., MM BIO-2, BIO-3, and BIO-4), this potential impact is considered less than significant.

#### ***Potential Effects to Habitat Connectivity and Fragmentation***

Long-term impediments to movement or fragmentation of habitat can result in isolation of populations, making them more susceptible to localized extirpation due to stochastic events or diminished resource availability. Habitat continuity and connectivity on the North Slope has already been significantly affected as a result of mine development and the existence of Highway 18.

The current conditions in the Analysis Area and North Slope already include some impediments to wildlife movement, pollinators, and seed dispersal (large, deep quarries; haul roads with steep cuts, areas devoid of vegetative cover, etc.) affecting some animals, including deer and bighorn sheep.

The existing Sentinel quarry operations are situated on the top of the ridge, rather than mid-slope or at the edge of vegetation types. Nonetheless, the Sentinel quarry and haul road likely represents an impediment to movement for some terrestrial species. The Project as well as the other alternatives would increase the size of cleared disturbed land and the size of the quarries, rather than open up completely new areas. Since the Project would simply enlarge existing quarries, the effects to corridors and connectivity are more limited than if a new area were being developed. The movement of both “dweller” and “passage” species may be affected by increasing the size of quarries which may be impossible for some species to cross. Likewise, with the amount of open space available on the North Slope would be affected.

The Project would also result in a longer duration before the Crystal Creek haul road would be reclaimed. The cleared haul road and use of the haul road likely already represent a challenge to animal movement, both in terms of finding feasible crossing sites and avoiding being hit by vehicles. These conditions would remain until reclamation has been completed.

In addition to past and currently-approved operations, the North Slope habitat connectivity is likely to continue to be affected by future mining. Mitsubishi's proposed South Quarry expansion and Omya's proposed White Knob expansion may further fragment habitat and pose movement impediments. The Mitsubishi proposal would affect several drainages that may also serve as movement corridors. Over the life of the Project, it is reasonable to assume that other mining operations may further affect connectivity and movement through fragmentation and creation of movement impediments.

The Project includes Project design features (e.g., GEN-3, GEN-4) as well as mitigation through relinquishment of 375 acres of mining claims (MM BIO-1). Although data indicate that the claims are not important movement corridors for Nelson's bighorn sheep, they likely do provide movement corridors for other more common species. The Cushenbury 32 claim includes a stretch of riparian habitat around Whiskey Springs that may be an important wildlife movement corridor. To some extent, protecting the areas in mitigation claims from future mining would limit the potential for additional habitat fragmentation.

Long-term impediments to movement or fragmentation of habitat can result in isolation of populations, Other than the potential effects on the Cushenbury herd of Nelson's bighorn sheep associated with habitat fragmentation, the Project would not substantially changes the existing conditions in regards to the movement of any other native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use by native wildlife.

With the implementation of Project design features and the proposed Mitigation Measures discussed in the following sections, this potential impact is considered less than significant.

#### ***Potential Effects to Aquatic, Riparian, Drainage Habitats and Jurisdictional Waters***

Section 3.8 Hydrology and Water Quality describes the hydrologic considerations associated with the Project. A Wetland Jurisdictional Delineation (JD) was prepared by Tetra Tech (November 2013) for the Project. A copy of the JD is provided in Appendix F of this Draft EIR/EIS. The methodology used in the JD is described in Section 3.4.3.1 and the results are discussed below. A copy of the Hydrology and Water Quality Technical Study (SLR Global Environmental Solutions, 2013) is provided in Appendix I of this Draft EIR/EIS.

*Streams and Wetlands:* The Project Site is located in an area characterized by incised, dry ephemeral washes that generally contain water only during storm events. Four drainages with sign of OHWM features were delineated, these included Drainages A, B, C, and D as shown on Figure 3.4-3. Drainage A is located south of the Sentinel quarry and within the expansion area of the B5 overburden pad. This drainage terminates in Holcomb Creek which in turns terminates in the Mojave River northwest of the Project Site. Drainages B and C are on also on the south side of the quarries and also terminate in the Mojave River. Drainage D is on the northeast side of the quarry and is at the headwater of the Furnace Canyon Creek which terminates in the Lucerne Dry Lake. Drainages B, C and D are outside of the

### 3.4 Biological Resources

proposed expansion areas. The drainage to the north of the Project Site is over the steep range front and into unnamed intermittent drainages that eventually feed into Crystal Creek.

Drainages A, B and C have clear connections to the Mojave River and were determined to be jurisdictional Waters of the US and the State. Only Drainage A was found to be within the limits of planned disturbances associated with the Project. A total of 0.094 acres of Drainage A would be impacted by the Project. Drainage D, which terminates in Lucerne Dry Lake, was determined not to be a jurisdictional Water of the US or State. In addition, Drainage D would not be impacted by the Project.

No hydrophytic plants were observed in these drainage areas. No trees and shrubs typically found in more mesic environments such as willows or cottonwoods were observed, nor were any meadows or special aquatic habitats. A formal soil survey was completed for SBNF in 1981 which classified the soils as the Lizzant family. Soils within this family have a loam or sandy loam texture and are poorly developed and thin with a limestone bedrock contact typically found within 10-20 inches from the surface. During the JD field work, when soils were found within the drainage areas they were noted as sandy loam in texture with no hydric characteristics. No soil was observed in Drainage D. There was evidence of movement of sediments and plant debris in the drainages, except for Drainage D. It is likely that the extreme slope of Drainage D facilitates movement of any debris present downstream.

In general, the north-facing drainages on the North Slope have relatively few wildlife surveys. It is likely that these drainages support important and isolated populations of terrestrial species. Additionally, many of these north-facing drainages have more moisture and stringers of vegetation that is different than the surrounding areas. The unnamed drainages, Crystal Creek, Furnace Canyon, and Holcomb Creek provide important habitat for foraging, breeding, shelter, migratory refueling stopovers, and movement corridors. Of those, only Holcomb Creek supports fish (non-native rainbow trout, partially-armored three-spine stickleback, and other non-natives). However, these drainages likely support some amphibians (tree frogs, western toads, ensatina, and possibly red-spotted toads in the desert-facing drainages).

The Project could have some effect on the drainages but the SWPPP BMPs and other Project design features (e.g., GEN-1, GEO 1 through GEO-8), would minimize the potential impacts to drainages to less than significant. These include but are not limited to the following:

- Roads are sloped to direct runoff into quarries.
- Rip rap, berms, hay bales, or other energy dissipaters have been or would be placed at the toe of fill pads or overburden placement areas to minimize the potential for sediment to enter the drainages.
- Numerous culverts, dips, over-side drains or other structures have been constructed along the quarry roads to allow minimum impact on existing drainage patterns and reduce sediment transport.
- These structures are regularly inspected and maintained as necessary.

*Groundwater and Springs:* No groundwater or springs are located near the quarries. Core drilling 100 feet below the final pit floor has not penetrated any water sources or aquifers. The limestone

formations in the quarry area are over 1,000 to 2,000 feet thick and generally highly fractured and permeable. The limestone is underlain by granitic intrusive rocks at depth.

Presently water used in active mining areas of the quarries amounts to about 1.3 acre feet per year, and comes from two wells which are pumping groundwater. These wells were permitted many years ago and Omya would remain within its free production allowance. Water is used primarily for dust control, primary crusher operations, and irrigation of reclamation sites. The amount of water use is expected to double to about 3 acre-feet/year which is not expected to affect the local groundwater. The plant well (at the LVPP) is about 1,100 feet deep and pumps groundwater from alluvium. The Crystal Creek well located in Crystal Creek Canyon is about 200 feet deep and pumps groundwater from fractured granitic basement rocks. The Project is not expected to deplete groundwater resources or cause noticeable dewatering of the off-site groundwater production wells. The potential impact to surface water is considered less than significant.

*Surface Flows:* The Project may cause slight reductions in surface water flow quantities in Furnace Canyon, East Dry Canyon or Holcomb Creek watersheds (less than 0.1%). Effects on surface flow, if any, are expected to be minor because the expansion area constitutes a very small proportion of the total watershed areas. Runoff retained in the Project Area will either evaporate or infiltrate to recharge groundwater. The potential impact to surface water is considered less than significant.

#### ***Disturbance/Displacement/Abandonment – Wildlife***

Use of heavy equipment, small machinery, haul trucks, blasting, and presence of crews in the active mining area and haul road would result in higher noise levels and would likely displace animals that are foraging, denning, moving through, or breeding in the area. These effects and displacement distance would vary by species and are discussed below. It is likely the areas around the Crystal Creek Haul Road have already been abandoned or are avoided by some animal species.

Disturbance effects on wildlife species have been well-documented for a number of species including deer, small mammals, reptiles, and nesting and perching birds. Most species exhibit a "flight" response to disturbance resulting in temporary, or if disturbance is constant, permanent displacement. Flight responses and/or disturbances can negatively affect animal health by requiring increased energy expenditures. Other potential disturbance effects include: alteration of habitat use (avoidance or abandonment of an area – either temporarily or permanently), interruption of reproductive activities (courtship, mating, prenatal care, nesting, etc.), and increased predation (especially of abandoned nests).

Birds are especially sensitive to background noises. Being able to differentiate vocalizations of the same and different species from background noise is important for pair bonding, breeding displays, territory defense, flock communication, etc. Continuous or frequent background sounds may interfere with feeding, breeding, territory defense, and avoiding predators.

### 3.4 Biological Resources

Noise and mining activities at night may also disturb nocturnal species. Blasting would not be conducted at night but night-time mining activities would occur. Noise from night-time mining activities may interfere with interspecific and intraspecific vocalizations/communications, territory establishment and defense, courtship, breeding, and foraging success.

Animals in the areas around the active mining areas would be subjected to the greatest levels of disturbance-associated effects and effects would diminish with distance from the active mining areas. Disturbance-associated effects can be expected to last for the duration of the active mining and reclamation activities.

With the implementation of the Project design features (e.g., GEN-1, GEN-2, GEN-7, GEN-8, GEN-9) and mitigation measures (e.g., BIO-7, BIO-8, BIO-13, BIO-14, BIO-19, BIO-20, BIO-21), these potentials impacts are considered less than significant for wildlife in the area.

#### ***Death and Injury of Individuals – Wildlife***

Some losses of individual animals are likely due to the various activities associated with the Project. The potential for death or injury of animals depends on time of year, activity patterns of the individual species, and the activity taking place. One of the activities with a high risk of death/injury would be during the initial ground clearing. Animals nesting or denning in trees, shrubs, and under rocks may be injured or killed during ground clearing. Additional losses may occur during the blasting and moving of rock and overburden. Equipment use may result in losses of fossorial species if burrows or rotting logs are crushed or moved.

Because ground-clearing and mining activities would occur at any time of year, the risk includes loss of nests, eggs, and chicks of ground and shrub nesting birds. Losses and injury to slow-moving terrestrial species, such as snakes, would also be likely. Blasting, digging, rock moving, and equipment use has the potential to kill or injure animals by crushing, burying, etc. Rock piles and rock outcrops that are undisturbed for periods of time, even short, would likely become occupied by small mammals and reptiles; they would be at risk during blasting and mining operations. Small crevices in rock outcrops provide roosting, hibernating, and breeding habitat for several species of bats. They would also be at risk during mining operations.

Animal death or injury may also occur from collision with mining vehicles along the Crystal Creek Haul Road as well as along roads accessing the Omya LVPP and internal mine access routes. Haul trucks generally move at very slow speeds which would help reduce the likelihood of collisions with most animals. Fully-loaded haul trucks, even when moving at slow speeds, have difficulty stopping quickly; thus, there may be risk of collisions with difficult to see small animals.

Direct losses of animals may occur as a result of disturbance (e.g., where flushing of adults off of nests or abandonment of nests results in loss of eggs or young birds due to predation or exposure). Increased

abandonment of nests may occur in, and adjacent to, the Project Area (especially as a result of disturbance associated with blasting).

With the implementation of Project design features and the proposed Mitigation Measures discussed in the following sections, this potential impact is considered less than significant.

#### ***General Effects to Breeding Animals***

Disturbances prior to nesting/breeding season may result in abandonment of breeding areas (e.g., nests, lambing areas, etc.) and disruption of courtship behaviors resulting in failure to reproduce or moving to adjacent areas and competing with other individuals for resources. Disturbance after breeding has started may result in losses of the season's reproduction if the animals abandon existing nests, eggs, or offspring.

Nests in trees and bushes may be destroyed during vegetation removal. Additionally, nests on the ground or in rock outcrops would also be susceptible to destruction by ground-based equipment and mining operations. For birds, adults would be likely to escape injury or death since they would fly at the beginning of the disturbance. However, eggs and nestlings would not be able to escape and would be more susceptible to being killed or injured.

With the implementation of Project design features and the proposed Mitigation Measures discussed in the following sections, this potential impact is considered less than significant.

#### ***Potential Effects to Cliff and Rock Outcrop Dwelling Species – Wildlife***

A number of animals, including some Forest Service Sensitive and SBNF Watchlist Species, use rock outcrops and cliffs for denning, foraging, escape terrain, and breeding sites (including bats, ringtails, ground squirrels, badgers, raccoons, bighorn sheep, mountain lions, swallows, golden eagles, ravens, hawks, wrens, owls, snakes, lizards, salamanders, invertebrates, etc.). Due to the proximity to suitable cliff nesting habitat, some disturbance to cliff-dwelling animals may occur.

Ultimately, after mining activities and reclamation activities cease on each quarry bench, some of the quarry benches may become usable habitat for nesting, denning, and escape terrain for some species. Because of the difficulty replacing top soil on quarry benches, revegetation is expected to be sparse and patchy for many years after reclamation. As such, foraging habitat and cover on cliffs and rocky outcrops are expected to be limited for many years after reclamation.

Due to the extended lifespan of the Project, there is a degree of uncertainty about the extent and scope of the effects of displacing some species from the steep terrain in the vicinity of the mining operations. However, with the implementation of Project design features and the proposed Mitigation Measures discussed in the following sections, this potential impact is considered less than significant.

---

3.4 Biological Resources***Potential Effects to Log-Dependent, Fossorial, and Small Terrestrial Animals***

Some animals, including Sensitive and Watchlist Species, such as salamanders, lizards, snakes, burrowing rodents, chipmunks, and badgers may be affected by the removal of downed logs and by equipment use during ground-clearing phases.

The Project would result in removal of all surface materials within the expansion area. However, some of the expansion areas have previously-been cleared. In addition, 29 acres of proposed new vegetation removal at the Butterfield Quarry is within the burned area from the 2007 Butler 2 Fire where coarse woody material is substantially reduced in this area. The Project activities would likely result in some losses of soil nutrients and soil production, and increased levels of soil compaction due to the use of heavy equipment. Compaction of soils may result in some effects to fossorial species if compaction occurs when they are in their burrows. It may also prevent burrowing in compacted areas over the life of the Project.

After ground-clearing phases have been completed, the potential for effects to fossorial and log-dependent species may be reduced. With the implementation of Project design features and the proposed Mitigation Measures discussed in the following sections, this potential impact is considered less than significant.

***Climate Change***

In 2008, the Forest Service Chief made climate change a national priority for the Forest Service and formalized a process and responsibilities for addressing climate change (USFS 2008, USFS 2009). The SBNF Forest Plan (USFS 2006) contains resource-specific discussions of the potential effects on climate change as part of the cumulative effects to those resources.

The specific effects of climate change in the Analysis Area over the long life of the Project are impossible to predict. However, the patterns of climate change have been well-documented and are somewhat predictable.

In southern California, climate change is expected to cause the following changes: average temperatures will rise, heat waves, droughts, and extreme precipitation events will become more frequent, snowpacks will decrease, and spring runoff and streamflow will occur earlier in the year (Cayan *et al.* 2008).

The levels of seasonal and annual temperatures are now higher than the highest temperatures recorded and the rate of change is fast. Models show that the amount of warming by 2100 will reach 4-10° F above current averages, depending on greenhouse gas emissions rates. While the exact climate projections are uncertain, it is predictable that the rate of warming will increase substantially over the current rates. It is difficult to predict how the amount of warming may differ seasonally and how it will affect different parts of southern California's landscape. The models suggest that southern California's

heat waves that typically occur in July and August will start earlier and extend into the fall. By the end of the century, the number of heat wave days may increase by a factor of four or more.

(<http://www.scag.ca.gov/sotr/climatechange.htm>)

Climate change is also expected to result in changes in the amount and timing of precipitation, affecting surface and ground water conditions. More frequent drought periods and longer hotter summers are predicted. The models suggest that California's cool season Mediterranean patterns will remain due to the North Pacific winter storm tracks. ([http://www.scag.ca.gov/sotr/climate\\_change.htm](http://www.scag.ca.gov/sotr/climate_change.htm))

The effects of climate change on ecological function include changes for plants and animals in phenology, distribution, physiology, behavior, etc. (Walther *et al.* 2002, Parmesan and Yohe 2003, Root *et al.* 2003, Walther *et al.* 2005, Parmesan 2006, Walther 2010). Parmesan (2006) found a shift in species upslope and northward as climate changes. Parmesan and Yohe (2003) found shifts upper elevation and northern distribution in trees, insects, and birds as a result of climate change. Species with isolated or disjunct distributions or at their elevation limits are especially vulnerable.

Work in the Santa Rosa Mountains (Kelly and Goulden 2008) found that vegetation shifts as a result of climate change can be rapid. They documented rapid upslope shifts in vegetation over a 30-year period. Over the life of the Project, climate change will almost certainly result in changes to the distribution and status of plants and animals in and near the Analysis Area. The distribution of some of the desert species may extend farther up in elevation in/around the Analysis Area. The vegetation community patterns may change over the landscape with the pinyon/juniper communities dying off at the northern/lower edges being replaced by desert transition vegetation.

Similarly, predicted changes in frequencies and durations of droughts and dry periods are likely to result in changes to water tables and surface water conditions. Species that depend on riparian areas and drainages (seeps, springs, and Crystal Creek) may be especially vulnerable.

### **Project Impacts**

**Impact BIO-1: Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? (CEQA Guidelines Threshold Criteria (a)).**

As described in the SBNF Biological Report, there are numerous species with special status that the Forest Service has assumed potentially present in the Analysis Area and that may be affected by the Project. The SBNF Biological Report as well as the following discussion focuses on species known to occur in the Analysis Area, those that have a high likelihood of occurrence based on proximity to the Analysis Area and those that have modeled or suitable habitat in or adjacent to the Analysis Area. Table 3.4-4 provides a summary of the TESW species in and near the Analysis Area along with SBNF's effects/impact determination for all the species identified by SBNF.

---

### 3.4 Biological Resources

In addition to the effects determinations provided in Table 3.4-6, each of the CEQA Appendix G impact criteria have been evaluated below and specific mitigation measures identified as needed to further reduce the potential impacts. Not all of the species evaluated by the Forest Service have been included in the impact discussion below; however, all species were evaluated and detailed analysis for each of these species is provided in the SBNF Biological Report located in Appendix F of this Draft EIR/EIS. As noted previously, some of the mitigation measures identified to address the CEQA significance criteria may also be listed as Project design features by the Forest Service in the SBNF Biological Report. In these cases, a cross reference has been provided by noting the SBNF Biological Report PDF# in parenthesis.

**Table 3.4-4 Summary of Effects Determination for TESW Species in and Near the Analysis Area**

Common Name	Occurrence Information <sup>1</sup>	Determinations <sup>2</sup>
<b><i>Threatened and Endangered Animals</i></b>		
California condor	Potential foraging and nesting on North Slope, including Project and Analysis Areas and mitigation claims.	No Effect
desert tortoise	Suitable habitat around processing plant and access road; not present in Project Area. Known to occur in the Analysis Area at the lower elevation. Not expected on mitigation claims.	May Affect
Southwestern willow flycatcher	No suitable habitat for nesting in Project or Analysis Areas. Suitable habitat in mitigation claim area.	No Effect
Swainson's Hawk	N - nesting in Project and Analysis Areas and mitigation claims; potential foraging. Low likelihood of infrequent overflight.	NTV
Southern boa	P - Project/Analysis Area and mitigation claims.	MAI;NTV
<b><i>Threatened &amp; Endangered Plants</i></b>		
Cushenbury puncturebract	Project and Analysis Areas: occurs and designated Critical Habitat Mitigation claims: occurs and designated Critical Habitat	May Affect species and Critical Habitat
Cushenbury buckwheat	Analysis Areas: occurs and designated Critical Habitat Mitigation claims: occurs and designated Critical Habitat	May Affect species and Critical Habitat
Cushenbury milkvetch	Mitigation claims: occurs and designated Critical Habitat	May Affect – entirely beneficial for species and Critical Habitat
Parish's daisy	Mitigation claims: occurs and designated Critical Habitat	May Affect – entirely beneficial for species and Critical Habitat
<b><i>Forest Service Sensitive Animals</i></b>		
large-blotched/yellow-blotched ensatina	Known from North Slope drainages; Y in Analysis Area. P for mitigation claims. U for Project Area.	MAI; NTV
southern rubber boa	P - Project/Analysis Area and mitigation claims	MAI; NTV
three-lined boa	P - Project/Analysis Area and mitigation claims	MAI; NTV
San Bernardino ringneck snake	P - Project/Analysis Area and mitigation claims	MAI; NTV

## 3.4 Biological Resources

Common Name	Occurrence Information <sup>1</sup>	Determinations <sup>2</sup>
San Bernardino mountain kingsnake	P - Project/Analysis Area and mitigation claims	MAI; NTV
Two-striped garter snake	P - Analysis Area and mitigation claims	MAI; NTV
California spotted owl	Y - Analysis Area	MAI; NTV
gray vireo	Y - Analysis Area; P for Project and mitigation claims	MAI; NTV
Townsend's big-eared bat	P - Project/Analysis Area and mitigation claims	MAI; NTV
fringed myotis	P - Project/Analysis Area and mitigation claims	MAI; NTV
pallid bat	P - Project/Analysis Area and mitigation claims	MAI; NTV
San Bernardino flying squirrel	P - Project/Analysis Area	MAI; NTV
<b>Forest Service Sensitive Plants</b>		
Coville's dwarf abronia	Y in Analysis Area and mitigation claims; N in Project Area	MAI; NTV
crested milk vetch	Y in Project/Analysis Area and mitigation claims	MAI; NTV
Bear Valley milk vetch	Y in Project/Analysis Area and mitigation claims	MAI; NTV
Parish's rock cress	Y in Project/Analysis Area; N in mitigation claims	MAI; NTV
Shockley's rock-cress	Y in Project/Analysis Area; N in mitigation claims	MAI; NTV
Parish's alumroot	Y near Project/Analysis Area; N in mitigation claims	NE; NTV
Bear Valley phlox	Y near Analysis Area; N in Project Area and mitigation claims	MAI; NTV
<b>SBNF Watchlist Animals</b>		
Springsnails	P in Analysis Area and mitigation claims	NTV
Dorhn's elegant eucnemid beetle	P in Project and Analysis Areas and mitigation claims	NTV
bicolored rainbeetle	P in Project and Analysis Areas and mitigation claims	NTV
desert monkey grasshopper	P in Analysis Area (lower elevations in desert habitat)	NTV
San Bernardino Mountains silk moth	P in Project and Analysis Areas and mitigation claims	NTV
August checkerspot butterfly	P in Project and Analysis Areas and mitigation claims	NTV
Andrew's marble butterfly	P in Project and Analysis Areas and mitigation claims	NTV
Monterey ensatina salamander	P in Analysis Areas and mitigation claims; U in the Project Area	NTV
Red spotted toad	P in Analysis Areas and mitigation claims; N in the Project Area	NTV
common chuckwalla	P in Analysis Area; N in Project Area; U in mitigation claims	NTV
Zebra-tail lizard	P in Analysis Area; U in Project Area and mitigation claims	NTV
Mojave black-collared lizard	U in Project Area; Y in Analysis Areas; P in mitigation claims	NTV
Desert night lizard	N in Project Area; P in Analysis Areas and mitigation claims	NTV

Common Name	Occurrence Information <sup>1</sup>	Determinations <sup>2</sup>
coast patch-nosed snake	P in Project and Analysis Areas and mitigation claims	NTV
mountain garter snake	P in Project and Analysis Areas and mitigation claims	NTV
southwestern speckled rattlesnake	N in Project Area; Y in Analysis Areas and mitigation claims	NTV
turkey vulture (breeding)	Not currently known to nest in the San Bernardino Mountains; Could potentially nest in Analysis Area in the future; Y for foraging in Project and Analysis Areas and mitigation claims	NTV
northern harrier	Not currently known to nest in the San Bernardino Mountains; P for foraging in Project and Analysis Areas and mitigation claims	NTV
sharp-shinned hawk (breeding)	P in Project and Analysis Areas and mitigation claims	NTV
Cooper's hawk (breeding)	P in Project Area and mitigation claims; Y for breeding in Analysis Area	NTV
ferruginous hawk	P in Project and Analysis Areas and mitigation claims – migration/foraging only	NTV
golden eagle	Y in Project (foraging) and Analysis Areas (nesting and foraging) and mitigation claims (foraging)	NTV
American peregrine falcon	P for nesting and foraging in Project and Analysis Areas and mitigation claims	NTV
prairie falcon	P for nesting and foraging in Project and Analysis Areas and mitigation claims	NTV
flammulated owl	P in Project and Analysis Areas and mitigation claims	NTV
western screech owl	P in Project and Analysis Areas and mitigation claims	NTV
northern pygmy owl	P in Project and Analysis Areas and mitigation claims	NTV
long-eared owl	P in Project and Analysis Areas and mitigation claims	NTV
northern saw-whet owl	P in Project and Analysis Areas and mitigation claims	NTV
common nighthawk	P in Project and Analysis Areas and mitigation claims	NTV
Mexican whip-poor-will	P in Project and Analysis Areas and mitigation claims	NTV
black swift	Y in Project and Analysis Areas; P in mitigation claims. Foraging, not nesting.	NTV
calliope hummingbird	P in Project and Analysis Areas and mitigation claims	NTV
Williamson's sapsucker	P in Project and Analysis Areas and mitigation claims	NTV
Nuttall's woodpecker	Y in Project Area; P in mitigation claims	NTV
white-headed woodpecker	P in Project Area and mitigation claims; Y in Analysis Area	NTV
gray flycatcher	Y in Analysis Area; P in Project Area and mitigation claims	NTV
loggerhead shrike	Y in Analysis Area; P in Project Area and mitigation claims	NTV
plumbeous vireo	Y in Analysis Area; P in Project Area and mitigation claims	NTV

## 3.4 Biological Resources

Common Name	Occurrence Information <sup>1</sup>	Determinations <sup>2</sup>
Cassin's vireo	Y in Analysis Area; P in Project Area and mitigation claims	NTV
warbling vireo	Y in Analysis Area; P in Project Area and mitigation claims	NTV
pinyon jay	Y in Analysis Area; P in Project Area and mitigation claims	NTV
California horned lark (breeding)	Y in Analysis Area; P in Project Area and mitigation claims	NTV
tree swallow	P in Project and Analysis Areas and mitigation claims	NTV
Swainson's thrush	U in Project Area; P in Analysis Area and mitigation claims	NTV
hermit thrush (breeding)	U in Project Area; P in Analysis Area and mitigation claims	NTV
Bendire's thrasher	N in Project Area and mitigation claims; P in Analysis Area	NTV
LeConte's thrasher	N in Project Area and mitigation claims; P in Analysis Area	NTV
Virginia's warbler (breeding)	P in Project and Analysis Areas and mitigation claims	NTV
yellow warbler	N in Project Area; P in mitigation claims; Y in Analysis Area	NTV
MacGillivray's warbler	U in Project Area; P in Analysis Area and mitigation claim	NTV
common yellowthroat	N in Project Area; P in Analysis Area and mitigation claims	NTV
Wilson's warbler	Y in Analysis Area; P in Project Area and mitigation claims	NTV
yellow-breasted chat	N in Project Area; P in Analysis Area and mitigation claims	NTV
hepatic tanager	P in Project and Analysis Areas and mitigation claims	NTV
summer tanager	N in Project Area; P in Analysis Area and mitigation claims	NTV
Black-chinned sparrow	P in Project and Analysis Areas and mitigation claims	NTV
Lincoln's sparrow	N in Project Area; P in Analysis Area and mitigation claims	NTV
Lawrence's goldfinch	P in Project and Analysis Areas and mitigation claims	NTV
western small-footed myotis	Y in Project/Analysis Areas; P in mitigation claims	NTV
long-eared myotis	Y in Project/Analysis Areas; P in mitigation claims	NTV
little brown myotis	P in Project and Analysis Areas and mitigation claims	NTV
long-legged myotis	Y in Project/Analysis Areas; P in mitigation claims	NTV
Yuma myotis	P in project and Analysis Areas and mitigation claims	NTV
spotted bat	Y in Project/Analysis Areas; P in mitigation claims)	NTV
pocketed free-tailed bat	P in Project and Analysis Areas and mitigation claims	NTV
western mastiff bat	Y in Project/Analysis Areas; P in mitigation claims	NTV
lodgpole chipmunk	Y in Analysis Areas; P in Project Area and mitigation claims	NTV
golden-mantled ground squirrel	Y in Analysis Areas; P in Project Area and mitigation claims	NTV

Common Name	Occurrence Information <sup>1</sup>	Determinations <sup>2</sup>
San Diego pocket mouse	P in Analysis Areas; P in Project Area and mitigation claims	NTV
southern grasshopper mouse	P in Analysis Areas and mitigation claims; U in Project Area	NTV
San Diego desert woodrat	P in Analysis Areas and mitigation claims; N in Project Area	NTV
porcupine	P in Project and Analysis Areas and mitigation claims	NTV
ringtail	Y in Analysis Areas; P in Project Area and mitigation claims	NTV
American badger	P in Project and Analysis Areas and mitigation claims	NTV
western spotted skunk	P in Project and Analysis Areas and mitigation claims	NTV
mountain lion	Y in Project and Analysis Areas and mitigation claims	NTV
Nelson's bighorn sheep	Y in Project and Analysis Areas and mitigation claims	NTV for SBNF metapopulation; VT for Cushenbury herd
<b><i>Other Special Status Animals</i></b>		
San Diego coast horned lizard	P in Analysis Areas; N in Project Area and mitigation claims	NVT
Olive-sided flycatcher	Y in Project/Analysis Areas; P in mitigation claims	NVT
Black-tailed gnatcatcher	U in Project Area; P in Analysis Area and mitigation claims	NVT
California leaf-nosed bat	U in Project Area; P in Analysis Area and mitigation claims	NVT
Western red bat	Y in Project/Analysis Areas; P in mitigation claims	NVT
Silver-haired bat	P in Project and Analysis Areas and mitigation claims	NVT
Hoary bat	Y in Project/Analysis Areas; P in mitigation claims	NVT
Mojave ground squirrel	N in Project Area and mitigation claims; U in Analysis Area	NVT
Mule deer	Y in Project and Analysis Areas and mitigation claims	NVT
<b><i>SBNF Watchlist Plants And Other Rare/Vulnerable Plants</i></b>		
Bear Valley woollypod	Y in Project/Analysis Area; P in mitigation claims	NTV
Heckard's paintbrush	Y in Project/Analysis Area; P in mitigation claims	NTV
San Bernardino Mountains buckwheat	Y in Project/Analysis Area and mitigation claims	NTV
alpine sulfur-flowered buckwheat	N in Project Area; P in Analysis Area and mitigation claims	NTV
pine green gentian	Y in Project/Analysis Area; P in mitigation claims	NTV
Transverse Range phacelia	N in Project Area; Y in Analysis Area; P in mitigation claims	NTV
Laguna mountains jewel-flower	Y near Analysis Area; could colonize	NTV

3.4 Biological Resources

Common Name	Occurrence Information <sup>1</sup>	Determinations <sup>2</sup>
<p><sup>1</sup><u>Occurrence Codes:</u>  <i>Y = Species is known to occur.</i>  <i>P = Occurrence of the species is possible; suitable habitat exists and it is within the distribution of the species.</i>  <i>H = Historic record.</i></p> <p><sup>2</sup><u>Determination Codes:</u>  <i>Threatened/Endangered Species:</i>  <i>NE = No Effect;</i>  <i>NLAA = not likely to adversely affect;</i>  <i>MA = May Affect</i></p> <p><i>Sensitive Species:</i>  <i>MAI = may affect individuals but not likely to lead to a trend to Federal listing for Sensitive species.</i></p> <p><i>Watchlist Species:</i>  <i>Determinations are not made for Watch species – this is simply documentation of an occurrence.</i></p> <p><i>All:</i>  <i>NTV = No threat to viability</i>  <i>VT = Viability threat</i></p>		

**Impact BIO-1a: Threatened and Endangered Plant Species**

Table 3.4-5 provides a list of the T/E plant species that occur in or near the Analysis Area and whether they are located in a designated critical habitat. Following the table, an evaluation of those species is provided.

**Table 3.4-5 Threatened or Endangered Plant Species Evaluated**

Threatened or Endangered Plant Species				
Common Name	Species Name	Critical Habitat On SBNF	Habitat Type	Occurs In/Near Analysis Area
Cushenbury puncturebract	<i>Acanthoscyphus parishii</i> var. <i>Goodmaniana</i>	Designated	Carbonate soils	Y and CH
Cushenbury milk vetch	<i>Astragalus albens</i>	Designated	Carbonate soils	Y and CH
Cushenbury buckwheat	<i>Eriogonum ovalifolium</i> var. <i>vineum</i>	Designated	Carbonate soils	Y and CH
Parish's daisy	<i>Erigeron parishii</i>	Designated	Carbonate soils	Y and CH

Notes: Occurrence Information:

Y = Species is known to occur.

CH = Designated Critical Habitat.

Cushenbury puncturebract, Cushenbury milk vetch and Cushenbury buckwheat are Federally-listed Endangered Species. Parish's daisy is a Federally-listed Threatened Species. As discussed in the SBNF Biological Report (Appendix F), all of these species are also listed in the CNPS Rare Plant Inventory with a ranking of 1B (rare throughout distribution) and a Threat Rank of 1 (seriously threatened in California). The main direct effect from the Project and associated facilities to these species and their designated Critical Habitat would be complete and permanent removal or burial of the land surface. While some revegetation would occur through mine reclamation, and some natural revegetation would occur over time, this is considered to be a permanent loss of habitat for these species.

**Cushenbury Puncturebract:** This Federally-endangered species is an annual that is a member of the buckwheat family. At the time of listing, Cushenbury puncturebract was recognized as Cushenbury oxytheca (*Oxytheca parishii* var. *goodmaniana*). However, later morphological studies identified that the species should be treated as distinct from the genus *Oxytheca* and are properly grouped in the genus *Acanthoscyphus*. The currently accepted name is *Acanthoscyphus parishii* var. *goodmaniana*. The change in name did not change its listing status or the management of the species. It is endemic to carbonate soils of the northeastern San Bernardino Mountains. Of the expansion area of 77 acres for the Project, all but 13 acres (corresponding with about half of the Sentinel overburden expansion) lies within suitable habitat for *Acanthoscyphus parishii* var. *goodmaniana*. All of the expansion area of 29 acres for Alternative 3 is suitable habitat for this taxon. This bears on the Conservation Value under the

### 3.4 Biological Resources

Carbonate Habitat Management Strategy, discussed below. For the habitat reserve contributions, all of the south ½ of Crystal Creek 9, all of White Rock 1&2, about ½ of Cushenbury 32, and all of Rattler 18-21 are suitable habitat.

Occupied habitat of *Acanthoscyphus parishii* var. *goodmaniana* is scattered throughout the Analysis Area as shown in the SBNF Biological Report. There are a total of 14.7 acres of occupied habitat, in many patches, that would be lost within the Analysis Area under either the Project or Alternative 3 (all in the Butterfield Quarry expansion area). There are a total of 37.3 acres of occupied habitat, in many small patches across four habitat reserve contributions (all but the Rattler claims). In addition, there are two mapped occurrences of the aforementioned indeterminate form of *Acanthoscyphus parishii*, intermediate between *Acanthoscyphus parishii* var. *goodmaniana* and *A. p.* var. *cieneensis*, on Habitat Reserve contribution Rattler 18. Together, these two occurrences total about 3.1 acres. However, these acres are not credited toward offsetting losses of *Acanthoscyphus parishii* var. *goodmaniana* caused by the expansion of the Butterfield Quarry due to their indeterminate taxonomic identity.

The occupied and suitable habitat within the Analysis Area is mostly high quality, with minimal disturbance (except for right along the edge of the former B3 quarry) and low incidence of invasive species. The occupied and suitable habitat within the habitat reserve contributions is of similar high quality, species composition, and vegetation characteristics. All of the occupied habitat and about half of the suitable habitat burned in the Butler 2 Fire in 2007 and portions also burned in the 1999 Willow Fire. *Acanthoscyphus parishii* var. *goodmaniana* has exhibited high resilience following these fires.

Designated Critical Habitat blocks for *Acanthoscyphus parishii* var. *goodmaniana* exist on the western and southern margins of the Butterfield 3 Quarry expansion, and along the western edge of the expansions of the Sentinel Quarry operating area. Designated Critical Habitat that would be lost to the development of the Project would total 17.5 acres. All of these acres possess the primary constituent elements of critical habitat for this taxon. There are a total of 104.7 acres of designated Critical Habitat distributed across all five habitat reserve contributions. All of these acres also possess the primary constituent elements of Critical Habitat for this taxon.

**Cushenbury Milk Vetch:** This Federally-endangered species is endemic to carbonate soils of the northeastern San Bernardino Mountains. This species does not occur in the Project Area, and there is no designated Critical Habitat for *Astragalus albens* in the project area. There are 18 acres of mapped occupied habitat and 60 acres of designated Critical Habitat within Habitat Reserve contribution Cushenbury 32. All of these acres possess the primary constituent elements of critical habitat for this taxon. None of the other carbonate habitat reserve contributions for this Project support occupied or critical habitat for this species. The location of the occupied habitat and Critical Habitat for this species in Cushenbury #32 is provided in the SBNF Biological Report.

**Parish's Daisy:** This species does not occur in the Project Area, and there is no designated Critical Habitat for *Erigeron parishii* in the Project area. There are 15 acres of mapped occupied habitat and 59

acres of designated Critical Habitat within carbonate Habitat Reserve contribution Cushenbury 32. All of these acres possess the primary constituent elements of critical habitat for this taxon. None of the other carbonate habitat reserve contributions for this Project support occupied or critical habitat for this species. The location of the occupied habitat and Critical Habitat for this species in Cushenbury #32 is provided in the SBNF Biological Report.

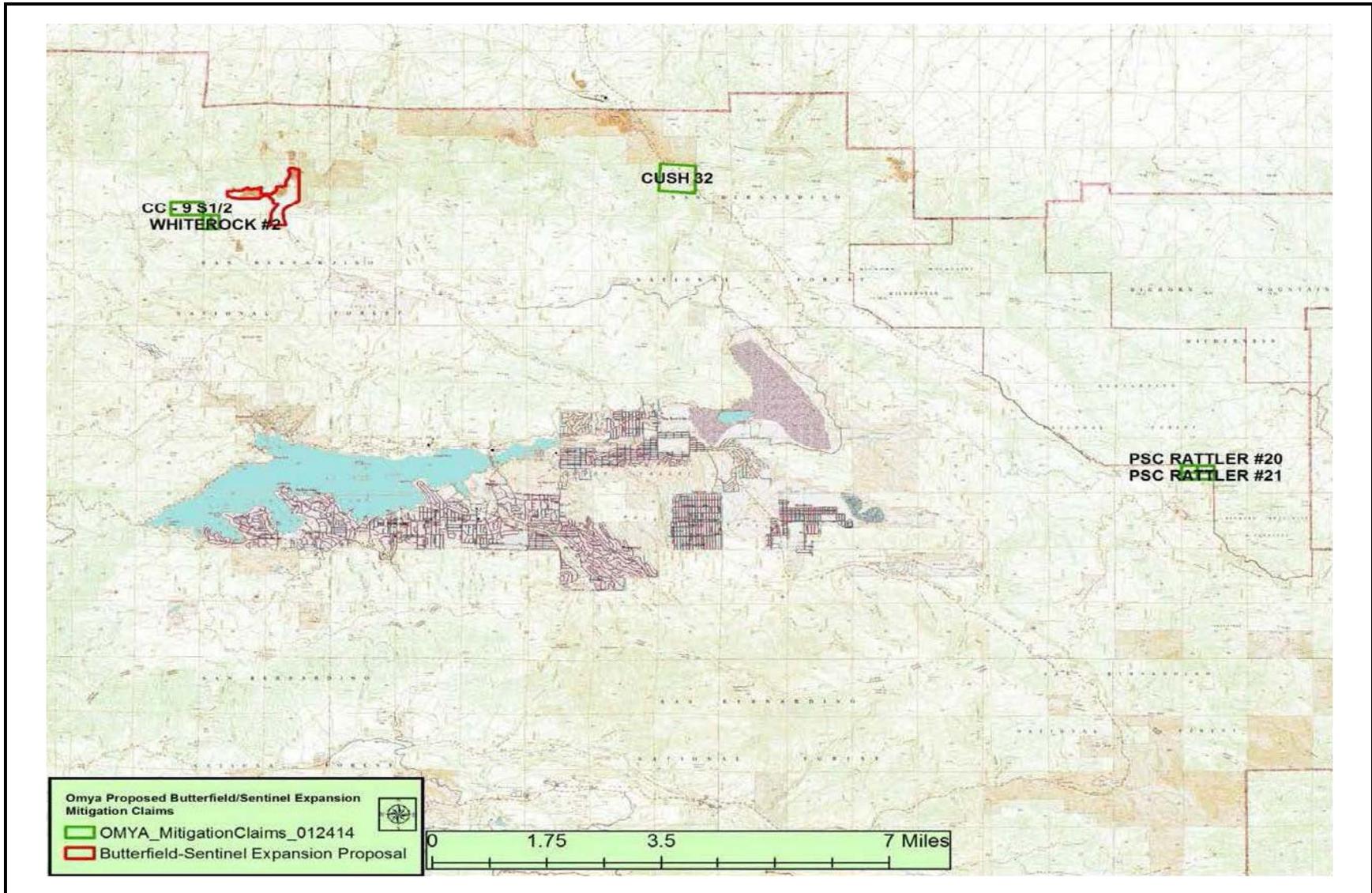
**Cushenbury Buckwheat:** The SBNF Biological Report shows the known occurrences and Critical Habitat for this species. Of the expansion area of 77 acres for the Project, all but 13 acres (corresponding with about half of the Sentinel overburden expansion) lies within suitable habitat for *Eriogonum ovalifolium* var. *vineum*. All of the expansion area of 29 acres for Alternative 3 is suitable habitat for this taxon. This bears on the Conservation Value under the Carbonate Habitat Management Strategy, discussed below. For the habitat reserve contributions, all of the south ½ of Crystal Creek 9, all of White Rock 1&2, about ½ of Cushenbury 32, and all of Rattler 18-21 are suitable habitat.

However, *Eriogonum ovalifolium* var. *vineum* does not occur in the Project Area. It was not found during Project surveys, and has not been previously reported from within or adjacent to the Project Area. About 1.2 miles of the Crystal Creek Haul Road passes through designated critical habitat for this species, and adjacent to occupied habitat within this area. All of this area, except for the Crystal Creek Haul Road prism, possesses the primary constituents of critical habitat. There are a total of about 13 acres of occupied habitat, in several large and many small patches across Cushenbury 32, and one mapped occurrence of about 1.2 acres on Rattler 19. The occupied and suitable habitat within the Analysis Area is high quality, with minimal disturbance and low incidence of invasive species.

Mitigation Measure BIO-1 requires that contributions of carbonate habitat lands to the CHMS Habitat Reserve be made. This would provide an immediate and long term beneficial effect to these species and their critical habitat by removing the primary threat to its continued existence within these areas (i.e., mining). The mechanism of this benefit is quit-claim in combination with a withdrawal from mineral location and entry under the Mining Laws of the United States. This would prevent future mining claims and associated mining activities on these lands for the life of the withdrawal.

The locations and acreage as identified in BIO-1 have been verified by the SBNF to contain habitat for the specified endangered or threatened species pursuant to the CHMS. Figure 3.4-4 shows the locations and Table 3.4-6 provides a summary of the acres of occupied habitat and critical habitat compared to the acreages identified in Mitigation Measure BIO-1.

THIS PAGE IS INTENTIONALLY BLANK



Source: SBNF

Figure 3.4-4 Mitigation Claims

THIS PAGE IS INTENTIONALLY BLANK

**Table 3.4-6 Summary of Acres of Occupied Habitat (Occ) and Critical Habitat (CH) within Footprint of Direct Effects (i.e., habitat removal/burial) and Mitigation Parcels**

Location	Species							
	ACPAG		ASAL4		ERPA3		EROVV	
	Occ	CH	Occ	CH	Occ	CH	Occ	CH
Proposed Project	14.7	17.5	0	0	0	0	0	0
Alt 3 – Butterfield Only	14.7	14.5	0	0	0	0	0	0
<b>Mitigation Parcels</b>								
Crystal Creek 9 (5½)	7.8	26.8	0	0	0	0	0	0
White Rock 1	8.7	0	0	0	0	0	0	0
<b>Mitigation Parcels</b>								
White Rock 2	7.9	0	0	0	0	0	0	0
Cushenbury 32	12.9	41	18	60	15	59	13	45
Rattler 18, 19, 20, 21	0	36.8	0	0	0	0	1.2	14
<b>TOTALS</b>	<b>37.3</b>	<b>104.7</b>	<b>18</b>	<b>60</b>	<b>15</b>	<b>59</b>	<b>14.2</b>	<b>59</b>

Note:

1

USDA plant codes used in the table are *Acanthoscyphus parishii* var. *goodmaniana* (ACPAG), *Astragalus albens* (ASAL4), *Erigeron parishii* (ERPA3), and *Eriogonum ovalifolium* var. *vineum* (EROVV).

For instances where totals do not exactly match the sum of individual acreages displayed, totals are accurate and apparent discrepancies are due to rounding of values for individual parcels.

Potential indirect effects to these species would include dust deposition on occurrences adjacent to the Project and haul road, increased weed risk, and microclimate changes. The duration of the Project would constitute an incremental increase over the baseline condition for affected species and habitat. Project design features to reduce dust, including those intended to meet air quality standards, would minimize these effects to less than significant.

Weed risk would be elevated by increasing the likelihood of introduction and spread of invasive plant species. The increased risk of weed introduction would be primarily due to use of heavy equipment. Heavy equipment can introduce weed seeds and other propagules to areas through soil and debris stuck in tire or track treads and undercarriage. Mitigation Measures BIO-2 through BIO-5 minimize this risk to less than significant.

**Potential Impacts to Threatened and Endangered Plant Species Before Mitigation: Significant Mitigation Measure:**

#### **Mitigation Measure BIO-1: Relinquish Mining Claims**

Omya shall relinquish through a quit-claim process, the identified acreage located within the unpatented mining claims as shown in Table 3.4-7. These areas have been verified by the SBNF to contain habitat

## 3.4 Biological Resources

for the specified endangered or threatened species pursuant to the CHMS. Table 3.4-6 identifies the number of acres in the Project and mitigation parcels for each T/E plant species. Mitigation for affected T/E plants is a minimum of 3:1 based on conservation value (as described in the CHMS). (SBNF Biological Report PDF CARB-2)

**Table 3.4-7 Mitigation Claim Acreages**

Mitigation Claim Acreages	
Claim	Acreage
Crystal Creek 9 (south ½ only)	80
White Rock 1 and 2	40
Cushenbury 32	175
Rattler 18, 19, 20, 21	80
<b>TOTAL</b>	<b>375</b>

**Mitigation Measure BIO-2: Non-native Species – Inspections**

Omya shall visually monitor the occurrence of non-native invasive plants on-site by visual inspection. The goal is to prevent non-native invasive plants from becoming established and depositing seeds in areas to be re-vegetated at a later date. If inspections reveal that weeds are becoming an issue or have established on-site, then removal would be initiated by Omya in coordination with the Forest Service botanist. Inspections shall be made in conjunction with Project's revegetation monitoring. (SBNF Biological Report PDF NNS-1)

**Mitigation Measure BIO-3: Non-native Species – Equipment Cleaning**

To reduce the risk of introducing non-native invasive plants, insects, and pathogens from off-site, all heavy mining equipment (e.g., drill rigs, haul trucks and loaders) must be thoroughly washed of all soil and vegetation debris prior to being brought into the Project Area. (SBNF Biological Report PDF NNS-2)

**Mitigation Measure BIO-4: Non-native Species – Control and Eradication**

Since the Project is expected to last 40 years and new non-native invasive plants and animals may become established in the region, an adaptive management approach is necessary. If any new non-native invasive plants, animals, or pathogens are identified as having a potential for establishment in the Project Area, the Forest Service, CDFW and Omya will develop measures for detection, control, and eradication as necessary. Omya shall be responsible for funding detection, control, and eradication efforts. (SBNF Biological Report PDF NNS-3)

**Mitigation Measure BIO-5: Personnel Training – Domestic and Feral Animals**

Omya personnel will be trained on and will report sightings of domestic sheep, goats, dogs, and cats on and near the facility to the Forest Service and CDFW within two hours of the observation. In the event of domestic or feral animals being found, Omya shall employ a trained trapper to catch and remove the animals following County regulations. CDFW may assist capture/removal efforts if available. (SBNF Biological Report PDF NNS-4)

**Mitigation Measure BIO-6: Wildlife and Plant Awareness Training**

Omya shall conduct wildlife/plant awareness programs for employees (including new employee orientation and annual refresher trainings). The program will address bighorn sheep, desert tortoise, raptors, other animals of the area, and rare plants. This will include the importance of avoiding harassment/disturbance, adherence to speed limits, adherence to defined project boundaries, reporting guidelines, etc. CDFW and USFS will provide assistance in developing the training program. (SBNF Biological Report GEN-2)

**Level of Significance of Effects to Threatened and Endangered Plant Species after Mitigation:** Less than Significant

**Impact BIO-1b: Threatened and Endangered Animal Species**

Table 3.4-8 provides a list of the Federal and State listed T/E animal species evaluated in the SBNF Biological Report.

**Table 3.4-8 Threatened or Endangered Animal Species Evaluated**

Threatened or Endangered Animal Species			
Common Name	Latin Name	Critical Habitat On SBNF	Occurrence in Analysis Area
California condor	<i>Gymnogyps californianus</i>		P – Potential to occur
Southwestern willow flycatcher	<i>Empidonax trailliiextimus</i>	Designated	N – no suitable habitat in Analysis Area but suitable habitat in mitigation areas
Swainson's hawk	<i>Buteo swainsoni</i>		U – unlikely
Southern rubber boa	<i>Charina bottae umbratica</i>		P – Potential to occur
Desert tortoise	<i>Gopherus agassizii</i>		Y near LVPP

Notes: Occurrence Information:

Y = Species is known to occur.

### 3.4 Biological Resources

P = Occurrence of the species is possible; suitable habitat exists, and/or the species is known from nearby locations.

U = Occurrence of the species is unlikely based on habitat present, known distribution/range, rarity, etc.

N = Outside known distribution/range of the species.

Two Federally-listed species, desert tortoise and California condor, are known from or have the potential to occur at within the Analysis Area. No suitable or modeled habitat occurs in the Analysis Area for any other Federally-listed animal. No designated critical habitat is present or proposed in the Analysis Area. One California Threatened species, southern rubber boa, has the potential to occur in the Project Area. The Swainson's hawk, a CDFW Threatened species, is unlikely to occur but still considered in this analysis.

#### ***California Condor (*Gymnogyps californianus*)***

The California condor is both a Federally- and State-listed as Endangered. Critical habitat was designated in 1976 but none is present in the Project Area.

California condors have been observed at several locations in the San Bernardino Mountains since 2002, including the White Mountain area of the North Slope (sighting of two condors approximately 1 mile west of the Butterfield Quarry). USFWS records of radio-tagged condors suggest that as California's condor population continues to grow, the areas they cover is expanding. Condors appear to be traveling long distances from the main population sites on the coast on a more frequent basis.

Currently, condors are not thought to regularly forage over the San Bernardino Mountains and no nesting is known. The closest nest is approximately 120 miles away and the closest historic nest record was approximately 75 miles away. Foraging likely occurs on an occasional basis and may increase in frequency as the population expands and if closer nest sites are established. Some cave nesting structures that condors prefer may occur on the North Slope. If condors chose to nest on the North Slope or in areas closer to the North Slope over the life of the Project, foraging likelihood over the Project and Analysis Areas would increase. Because of this potential expansion the SBNF Biological Report assumed that the California condor will occupy the North Slope sometime during the life of the Project.

Potential effects to California condors include habitat loss, disturbance, displacement, and death or injury from mining operations. These effects are discussed in the beginning of this section under Common Effect to Plants and Wildlife and are summarized below as they apply to California condor.

While much of the North Slope's rock structures do not appear to have suitable cave-like formations preferred by condors for nesting, a systematic survey for suitable nest structures has not been conducted. Cliff/rock outcrop habitat that might support suitable nest substrates would not be affected by the Project. There is some marginally suitable nesting habitat in the vicinity of the Project but it would not be directly affected.

The entire Analysis Area could be used for foraging. The Project would result in permanent losses of the undisturbed foraging habitat. The Project would result in 94.9 new acres of habitat being cleared of vegetation and could no longer be able to support habitat for many of the species that condors would scavenge.

California condors may be disturbed if they nest or forage within line-of-sight of the haul road or a quarry or if they nest close enough to be disturbed by the noise and vibrations associated with blasting. However, they may become acclimatized to that activity and develop a higher tolerance for those types of disturbance. Any activity outside of what they are accustomed to may be the cause of disuse or abandonment.

Background disturbance levels around the existing quarries and haul road are already relatively high. No increased levels of background noise or human activities are proposed by the Project. However, the Project would extend the duration of the disturbance for an additional 40 years beyond current approvals.

Mitigation Measures BIO-6 through BIO-9 identified below include several measures to help limit the potential for disturbance of raptors as a result of mining activities, including participation in a RCS for the North Slope area.

The RCS describes protective measures, inventories for nesting raptors, and behavioral response monitoring if nests are found in close proximity to active mining sites. The RCS covers the North Slope of the San Bernardino Mountains from White Mountain to Terrace Springs, and addresses special status raptors (currently, golden eagle, California condor, and peregrine falcons). The RCS may be updated to include other raptors in the future if concerns develop over their local population status.

Because California condors are not currently known to regularly occupy or nest on the North Slope, the potential for death or injury is considered unlikely at this time. However, if in the future, California condors become more regular visitors or start to nest within close proximity of the Project Area, there may be some risk and in accordance with the RCS, consultation with the USFS and CDFW would be required. With the implementation of the identified Mitigation Measure BIO-1 and the following Mitigation Measures BIO-7 through BIO-10 the Project would have a less than significant impact.

**Potential Impact to California Condors Before Mitigation:** Significant

**Mitigation Measures:** MM BIO-1 and the following

**Mitigation Measure BIO-7:** Raptor Conservation Strategy

A RCS shall be developed in coordination with the Forest Service, USFWS, and CDFW. Omya shall provide input to the development/finalization of the RCS and shall follow the guidelines put forth in the effort. The RCS will be tailored for activities associated with mining activities and effects. Upon approval of the Plan of Operations and the Reclamation Plan by the County and the Forest Service,

### 3.4 Biological Resources

Omya will participate in the implementation of the strategy by contributing to specified survey and monitoring efforts and by the following applicable operation guidelines.

The RCS will cover the North Slope of the San Bernardino Mountains from the White Mountain to Terrace Springs, and will address golden eagles, California condor, peregrine falcon, and prairie falcon. The RCS may be updated to include other raptors in the future if concerns develop over their local population status.

The RCS will be a dynamic document and will be updated as new data and scientific understanding of the aforementioned species become available. It will include monitoring and information gathering and measures to avoid, minimize, rectify, and reduce (or eliminate over time) effects to raptors nesting on the North Slope. The intent is to use systematic monitoring or raptor nesting chronology and observed behavior to develop site- and activity- specific measures to ensure successful nesting and provide for adaptive management opportunities. (SBNF Biological Report PDF RAPTOR-1)

#### **Mitigation Measure BIO-8: Raptor Monitoring**

If an occupied raptor nest is located within 1.5-miles of the active mining area, the mining company shall provide a qualified biologist to monitor during blasting for disturbance as a result of the mining activities. Monitoring results will be provided to the Forest Service biologist via email within 48 hours of a blast. The Forest Service will coordinate appropriate notification, as necessary, with USFWS and CDFW. (SBNF Biological Report PDF RAPTOR-1)

#### **Mitigation Measure BIO-9: Raptor Nesting Regulatory Coordination**

If an occupied nest for a Federally (as of 2013, includes golden eagle and California condor) or State protected species is found within 1.5 miles of an active quarry operation, the SBNF shall conduct an evaluation to determine if an “incidental take” authorization should be requested from the USFWS, under the applicable law (Endangered Species Act or Federal Bald and Golden Eagle Protection Act.) (SBNF Biological Report PDF RAPTOR-2)

#### **Mitigation Measure BIO-10: Raptor Nesting Protection**

If monitoring detects that blasting or other mine activities are resulting in disturbance of nesting raptors that could lead to mortality or nest abandonment, the Forest Service, Omya, USFWS and CDFW, as appropriate, shall evaluate the feasibility of implementing measures to avoid or reduce the effects. The RCS will contain some potential methods for reducing or avoiding effects. (SBNF Biological Report PDF RAPTOR-3)

**Level of Significance of Effects to California Condors after Mitigation:** Less than Significant

***Desert Tortoise (Gopherus agassizii)***

The desert tortoise is Federally-listed as Threatened and listed as Threatened under the California Endangered Species Act. Critical Habitat for the desert tortoise has been designated and a revised Recovery Plan has been developed. There is no designated or proposed Critical Habitat for desert tortoise in the SBNF or the Project Area.

No direct effects to tortoises or their habitat would be expected as a result of the Project. However, the Crystal Creek Haul Road, the Omya LVPP, and the Crystal Creek well are each in suitable likely occupied desert tortoise habitat. Therefore, the potential of injury or death of individual tortoises over the life of the Project could be considered an indirect effect.

However, even though the suitable desert tortoise habitat is assumed to be occupied, it would most likely be at a very low density due to it being at the periphery of the distribution and lower habitat quality. In addition, the haul road and facilities that are in suitable habitat are already in place and no expansion is proposed, other than potentially extending the use of the haul road. Therefore, the effects to habitat are considered part of the baseline and the Project would not be expected to affect suitable habitat and the potential for injury or death is considered low.

With the implementation of the following Mitigation Measures, the potential impact to the desert tortoise is considered less than significant.

**Potential Impact to Desert Tortoise Before Mitigation:** Significant

**Mitigation Measures:****Mitigation Measure BIO-11:** Personnel Training-Desert Tortoise

Omya shall work with the SBNF and CDFW and incorporate desert tortoise education and awareness into their training for employees, customers, and contractors. This shall include how to minimize impacts to desert tortoises and their habitats. Information about penalties shall also be included. These briefings shall include guidelines about driving in desert tortoise habitat, handling prohibitions, etc. Omya shall work with SBNF and CDFW to develop other protective measures if monitoring identifies a need. (SBNF Biological Report PDF DETO-1)

**Mitigation Measure BIO-12:** Desert Tortoise Reporting

Any sightings of desert tortoises, including dead tortoises, must be reported to the Forest Service biologist. The report should include photos if possible, location, date, time, cause of death (if obvious), and any other pertinent information. (SBNF Biological Report PDF DETO-2)

**Level of Significance of Effects to Desert Tortoise after Mitigation:** Less than Significant

## 3.4 Biological Resources

***Southern Rubber Boa (Charina bottae umbratica)***

The southern rubber boa is a Forest Service Sensitive Species and listed as Threatened by the California Endangered Species Act. The SBNF has a habitat management guide for southern rubber boa on the SBNF (USFS 1985). In July 2012, the Center for Biological Diversity petitioned the U.S. Fish and Wildlife Service to list this species under the Federal Endangered Species Act. USFWS has yet to determine whether listing is warranted.

There are records of southern rubber boa on the north side of Big Bear Lake, within about two miles of the Project Area. While the Project Area is outside of the known distribution for this species, the Project Site and Crystal Creek and Furnace Canyon have suitable habitat that could support this species. It is a very difficult species to detect during surveys and those areas have not been well surveyed due to ruggedness and inaccessibility.

While most of the Analysis Area generally lacks heavy downed log component that is often cited as the primary habitat trait needed by this species, several recent SBNF records have been from areas that also lack this component but have an abundance of rock outcrops. The rock features in the Analysis Area support suitable habitat for this species. The probability of occurrence and density may be low due to being on the periphery of the distribution. However, this species may occur within the Project and Analysis Areas.

Implementation of the Project may affect individuals, but is unlikely to result in a trend toward Federal listing nor is the Project expected to interfere with maintaining viable well-distributed populations of this species. With the implementation of the Project design features and Mitigation Measures BIO-1 and BIO-6, the Project would have a less than significant impact on this species.

**Potential Impacts to Southern Rubber Boa before Mitigation:** Significant

**Mitigation Measures:** BIO-1, BIO-6

**Level of Significance of Effects to Southern Rubber Boa after Mitigation:** Less than Significant

***Swainson's Hawk (Buteo swainsoni)***

Swainson's hawk is a CDFW Threatened species. This species is not a regular breeder in the San Bernardino Mountains. Swainson's hawks have been detected at Cushenbury Springs and Blackhawk Mountain in the Analysis Area. Nesting in or near the Project Area is possible, but considered very unlikely. While the Project Area does not support preferred foraging habitat, Swainson's hawks may fly over on an occasional basis.

**Potential Impacts to Swainson's Hawks Before Mitigation:** Less than Significant

**Mitigation Measure:** None required

**Impact BIO-1c: Other Special Status Species – Plants**

There are seven Forest Service Sensitive plant species known or likely to occur in or near the Analysis Area. These include: Coville's dwarf abronia, crested milk-vetch, Bear Valley milk-vetch, Parish's rockcress, Shockley's rockcress, Parish's alumroot, and Bear Valley phlox.

These species would be affected by ground-disturbing activities in the Project Area, as described under general effects earlier in this section. The Project may affect individuals but is not likely to lead to a trend to Federal listing of the Forest Service Sensitive species with potential to occur in the Project Area and would not threaten the viability of the populations. As discussed in the SBNF Biological Report (Appendix F), all of these species also have a CNPS Rare Plant Rank of 1B (rare throughout distribution), 2B (rare in California, more common elsewhere), or 4 (limited throughout distribution).

***Coville's Dwarf Abronia (Abronia nana var. covillei)***

This species is a Federal Sensitive Species. It was not found in the Project Area during the Project surveys. However, previous surveys did find this species in the Analysis Area. No impacts are expected for *Abronia nana var. covillei*. Contribution of the Rattler claims under Mitigation Measure BIO-1 shall have a beneficial effect on the species by protecting habitat from future mining and associated activities.

***Crested Milkvetch (Astragalus bicristatus)***

This Federal Sensitive Species is widely scattered in and near the Project Area, and was recorded during Project surveys. Within the Project Area, this species occurs in three small occurrence groups within the Sentinel Quarry overburden pile expansion area, with about 80 individual plants in total. These plants would be permanently lost through clearing and burial of their habitat. However, the portion of the area represents a small fraction of this species' range in the San Bernardino Mountains.

The implementation of the Project may affect individuals, but would unlikely result in a trend toward Federal listing for *Astragalus bicristatus*. The Project is not expected to interfere with maintaining viable well-distributed populations of *Astragalus bicristatus*; therefore the potential impact to this species is considered less than significant.

***Bear Valley Milkvetch (Astragalus lentiginosus var. sierra)***

This Federal Sensitive Species is known from within the Project Area. It was recorded scattered throughout the Butterfield Quarry expansion area and continuing west and south of the Analysis Area. In total, about 25 individual plants of this taxon were recorded within the Analysis Area.

The primary effect will be permanent habitat loss through removal or burial of the land surface. However, the habitat loss within the Analysis Area represents a small fraction of the suitable habitat for

---

### 3.4 Biological Resources

this species in the San Bernardino Mountains. Since the recorded occurrences of this species extend to the south and west of the proposed Butterfield Quarry expansion, it is likely that recolonization of this species on mined surfaces will occur beginning during the reclamation phase and thereafter.

The implementation the Project may affect individuals, but would unlikely result in a trend toward Federal listing for *Astragalus lentiginosus* var. *sierrae*. The Project is not expected to interfere with maintaining viable well-distributed populations of *Astragalus lentiginosus* var. *sierra* therefore the Project will have a less than significant effect on this species.

#### ***Parish's Rock Cress (Boechea parishii)***

This Federal Sensitive Species is known from within the Project Area. It was recorded scattered throughout the Butterfield Quarry expansion area and continuing west and south of the Analysis Area. In total, about 25 individual plants of this taxon were recorded within the Analysis Area. The primary effect will be permanent habitat loss through removal or burial of the land surface. The habitat loss within the Analysis Area represents a small fraction of the habitat for this species in the San Bernardino Mountains.

The implementation of the Project may affect individuals, but would unlikely result in a trend toward Federal listing for *Boechea parishii*. The Project is not expected to interfere with maintaining viable well-distributed populations of *Boechea parishii*. The Project will have a less than significant impact on this species.

#### ***Shockley's Rock Cress (Boechea shockleyi)***

This Federal Sensitive Species is known from within the Project Area. The primary effect will be permanent habitat loss through removal or burial of the land surface. The habitat loss within the Analysis Area represents a small fraction of the habitat for this species in the San Bernardino Mountains. The implementation of the Project may affect individuals, but would not likely result in a trend toward Federal listing for this species. The Project is not expected to interfere with maintaining viable well-distributed populations of the species. Therefore the Project would have a less than significant impact on this species.

#### ***Parish's Alumroot (Heuchera parishii)***

This Federal Sensitive Species is endemic to the San Bernardino Mountains in San Bernardino County. While it was not found during Project surveys, one *Heuchera parishii* occurrence is known near the Project Area, about 60 feet north of the Butterfield Quarry expansion. This occurrence is from an earlier record and was not recorded during recent surveys. It is presumed extant. The implementation of the Project may affect individuals, but would unlikely result in a trend toward Federal listing for this species. The Project is not expected to interfere with maintaining viable well-distributed populations of the species. Therefore the Project would have a less than significant impact on this species.

***Big Bear Valley Phlox (Phlox dolichantha)***

*Phlox dolichantha* is a Federal Sensitive Species and is endemic to the northeastern San Bernardino Mountains. It was not found during Project surveys; however, surveys following the Butler 2 Fire did discover one *Phlox dolichantha* occurrence near the Analysis Area, about 50 feet north of the Butterfield 3 Quarry expansion at the nearest point. This occurrence supports about 100 individuals. There are three additional records from the Butler 2 Fire surveys, between 0.25 and 0.5 mile west of the Analysis Area, totaling about 200 plants. This occurrence was not recorded during recent surveys, but is presumed extant. It is not anticipated that the implementation of the Project would affect individuals or, result in a trend toward Federal listing for this species. The Project is not expected to interfere with maintaining viable well-distributed populations of the species. Therefore the Project would have a less than significant impact on this species.

**Potential Impacts to Forest Service Sensitive Plants before Mitigation:** Significant

**Mitigation Measures:** BIO-1

Project design features as described in Table 3.4-2 have been incorporated into the Project to reduce effects to Forest Service Sensitive plants. Additionally, the mitigation areas set aside for the Federally-listed plants (Mitigation Measure BIO-1) are very likely to also provide habitat for other Forest Service Sensitive plant species.

**Level of Significance to Forest Service Sensitive Plants after Mitigation:** Less than Significant

**Impact BIO-1d: Other Special Status Species – Amphibians and Reptiles**

The primary effect of the Project to Forest Service Sensitive, State Species of Special Concern, and SBNF Watchlist amphibian and reptile species would be habitat loss through removal of the soil, rocks and vegetation on the land surface. Habitat loss through burial of the surface features would also occur. Indirect effects would include the effects of dust, weeds, and hydrology and would be expected to be localized and minimized through application of Project design features (see Table 3.4-2) and Mitigation Measures required by other species and resources. All of these effects are discussed in previous sections under General Effects. Direct and indirect effects would continue for the life of the Project. However, the Project is not expected to result in a loss of viability for the majority of these wildlife species. Effects to these Special Status species of reptiles are expected to be less than significant.

***Large-Blotched Ensatina (Ensatina klauberi) and Yellow-Blotched Ensatina (Ensatina eschscholtzii croceater)***

Large- and yellow-blotched ensatina are Forest Service Sensitive Species and CDFW Species of Special Concern. The yellow-blotched ensatina is also a BLM Sensitive Species.

---

3.4 Biological Resources

Large- and yellow-blotched ensatinas have been found in Crystal Creek in 2000 and 2005 (SBNF records), Arctic Canyon and Marble Canyon in 2005 (CNDDDB), and likely occur in all or most of the north-facing canyons/drainages on the North Slope. They may also occur in some of the north-facing drainages that would be affected by the Project and haul road. The Arctic and Marble Canyon records are from approximately 5,800 feet and the Crystal Creek occurrences were from approximately 6,400 feet. The likelihood of this species occurring in the Project Area is considered unlikely but they probably occur at or near the Crystal Creek well site.

Mortality or injuries of ensatinas and habitat degradation may occur as a result of road maintenance of the Crystal Creek Haul Road (if side casting occurs into the drainages) and from maintenance of the Crystal Creek well and access road. Because ensatinas have short home ranges (greatest known distance 134 feet), there is potential for populations to become more isolated. Because of the small home ranges and discontinuity between suitable habitat on the North Slope, there is likely already a lack of intermixing of populations between the North Slope canyons.

The implementation of the Project may affect individuals, but is unlikely to result in a trend toward Federal listing for large/yellow-blotched ensatina. The Project would not be expected to interfere with maintaining viable well-distributed populations of large- and yellow-blotched ensatina. With the implementation of the Project design features and Mitigation Measures BIO-1 and BIO-6, the Project would have a less than significant impact on this species.

**Potential Impact to Large/Yellow-Blotched Ensatina before Mitigation:** Significant

**Mitigation Measure:** BIO-1, BIO-6.

**Level of Significance to Large/Yellow-Blotched Ensatina after Mitigation:** Less than Significant

***Southern California Legless Lizard (Anniella stebbinsi)***

The California legless lizard *Anniella pulchra* is a Forest Service Sensitive Species and a CDFW Species of Special Concern. While this species is generally more of a coastal species, there is habitat on the North Slope that appears to be suitable in the lower parts of north-facing drainages and legless lizards in the genus *Anniella* have been documented in the Mojave Desert. The likelihood of occurrence in the Analysis Area is considered relatively low. However, the species may be present and undetected due to the difficulty in surveying for this species and the low number of surveys along the North Slope due to ruggedness and inaccessibility.

Implementation of the Project may affect individuals, but is unlikely to result in a trend toward Federal listing; the Project would not be expected to interfere with maintaining viable well-distributed populations of this species. With the implementation of the Project design features and Mitigation Measures BIO-1 and BIO-6, the Project would have a less than significant impact on this species.

**Potential Impact to Southern California Legless Lizard before Mitigation:** Significant

**Mitigation Measures:** BIO-1, BIO-6

**Level of Significance to Southern California Legless Lizard after Mitigation:** Less than Significant

**Northern Three-Lined Boa (*Lichanura orcutti*)**

The taxonomy for rosy boas in California has recently changed with two species being currently identified: the northern three-lined boa (*Lichanura orcutti*) and the rosy boa (*Lichanura trivirgata*). Formerly, *Lichanura trivirgata* was divided into two subspecies, *L.t. gracia* (desert rosy boa) and *L.t. roseofusca* (coastal rosy boa) (<http://www.californiaherps.com/snakes/>). The northern three-lined boa is a Forest Service Sensitive Species and a BLM Sensitive Species

While no species specific surveys have been done in the Project Area, there is suitable habitat for this species in the Analysis Area and it is likely to occur along the haul road and in Crystal Creek. However, the Project Area is about 1,000 feet above the known elevation limit for this species with little moisture; therefore, it is unlikely that this species occurs in the areas that would be directly affected by the expansions.

Implementation of the Project may affect individuals, but is unlikely to result in a trend toward Federal listing nor is the Project expected to interfere with maintaining viable well-distributed populations of this species. With the implementation of the Project design features and Mitigation Measures BIO-1 and BIO-6, the Project would have a less than significant impact on this species.

**Potential Impact to Northern Three-Lined Boa before Mitigation:** Significant

**Mitigation Measures:** BIO-1, BIO-6

**Level of Significance to Northern Three-Lined Boa after Mitigation:** Less than Significant

**San Bernardino Ringneck Snake (*Diadophis punctatus modestus*)**

The San Bernardino ringneck snake is a Forest Service Sensitive Species and a Federal Species of Concern (formerly USFWS Candidate species).

San Bernardino ringneck snakes are known to occur around Big Bear Lake. The Project Area, Crystal Creek, Furnace Canyon and the mitigation claim areas have suitable habitat that could support this species. It is a very difficult species to detect during surveys and those areas have not been well-surveyed due to ruggedness and inaccessibility

Individual snakes sheltering in rock formations may be killed or injured as rocks or ground cover are moved during mining operations. The implementation of the Project may affect individuals, but is unlikely to result in a trend toward Federal listing; the Project would not be expected to interfere with maintaining viable well-distributed populations of this species. With the implementation of the Project design features and Mitigation Measures BIO-1 and BIO-6, the Project would have a less than significant impact on this species.

## 3.4 Biological Resources

**Potential Impact to San Bernardino Ringneck Snake before Mitigation:** Significant

**Mitigation Measures:** BIO-1, BIO-6

**Level of Significance to San Bernardino Ringneck Snake after Mitigation:** Less than Significant

***San Bernardino Mountain Kingsnake (Lampropeltis zonata parvirubra)***

The San Bernardino mountain kingsnake is a Forest Service Sensitive Species and a CDFW Species of Special Concern.

There is a 1996 CNDDDB record for San Bernardino mountain kingsnake in Furnace Canyon at 6,600 feet. There are several Forest Service records at similar elevations within 7-15 miles west of the Project Area. The likelihood San Bernardino mountain kingsnakes occurring at the Project Area, along the haul road, and in Crystal Creek as well as the mitigation claim areas is considered high.

Individual snakes sheltering in rock formations may be killed or injured as rocks and ground cover are moved during mining operations. Implementation of the Project may affect individuals, but is unlikely to result in a trend toward Federal listing as the Project would not be expected to interfere with maintaining viable well-distributed populations of this species. With the implementation of the Project design features and Mitigation Measures BIO-1 and BIO-6, the Project would have a less than significant impact on this species.

**Potential Impact to San Bernardino Mountain Kingsnake before Mitigation:** Significant

**Mitigation Measures:** BIO-1, BIO-6

**Level of Significance to San Bernardino Mountain Kingsnake after Mitigation:** Less than Significant

***Two-Striped Garter Snake (Thamnophis hammondi)***

The two-striped garter snake is a Forest Service Sensitive Species and a CDFW Species of Special Concern. Two-striped garter snakes are known from Big Bear and Baldwin Lake areas to the south of the project. Typical habitat for this species is not located at the Project Area. However, they may occur in Crystal Creek, including at the well site where the haul road crosses at the northern end and in the mitigation claim areas.

The implementation of the Project may affect individuals, but is not likely to result in a trend toward Federal listing; the Project would not be expected to interfere with maintaining viable well-distributed populations of this species. With the implementation of the Project design features and Mitigation Measures BIO-1 and BIO-6, the Project would have a less than significant impact on this species.

**Potential Impact to Two-Striped Garter Snake before Mitigation:** Significant

**Mitigation Measures:** BIO-1, BIO-6

**Level of Significance to Two-Striped Garter Snake after Mitigation:** Less than Significant

***Coast Patch-Nosed Snake (Salvadora hexalepis virgultea)***

CDFW Species of Special Concern and SBNF Watchlist, Federal Species of Concern. There is the potential for this species to occur in the Project Area, Analysis Area and mitigation claim areas.

Individual snakes sheltering in rock formations may be killed or injured as rocks and ground cover are moved during mining operations. The implementation of the Project is not likely to result in a trend toward Federal listing nor is the Project expected to interfere with maintaining viable well-distributed populations of this species. With the implementation of the Project design features and Mitigation Measures BIO-1 and BIO-6, the Project would have a less than significant impact on this species.

**Potential Impact to Coast Patch-Nosed Snake before Mitigation:** Significant

**Mitigation Measures:** BIO-1, BIO-6

**Level of Significance to Coast Patch-Nosed Snake after Mitigation:** Less than Significant

**Impact BIO-1e: Other Special Status Species – Birds**

There are a number of special status bird species that are included on various lists (e.g., Federally Sensitive Species, California Sensitive Species, California Fully Protected Species, CDFW Species of Special Concern, SBNF Watchlist, Forest Service Sensitive Species and/or Federal and California Candidate Species) that may be present in the Analysis Area. Table 3.4-4 provides a list of occurrence and effects determination.

The primary effect to special status bird species is habitat loss through removal of the soil, rocks and vegetation on the land surface. Habitat loss through burial of the surface features would also occur. Indirect effects would include the effects of dust, weeds, and hydrology. Mining activities (e.g., presence of people and equipment, blasting, noise, etc.) can also be expected to result in disturbance possibly causing displacement or abandonment close to the active mining areas.

Direct and indirect effects would continue for the life of the Project. However, the Project is not expected to result in a loss of viability for the majority of these wildlife species. Some of the effects would be expected to be localized and minimized through application of Project design features (see Table 3.4-2) and Mitigation Measures required by other species and resources. All of these effects are discussed in previous sections under General Effects.

The following mitigation measures apply to migrating and breeding/nesting birds in general and will minimize potential impacts to these species to less than significant.

**Potential Impact to Special Status Birds before Mitigation:** Significant

**Mitigation Measures:** BIO-1, BIO-6 and the following:

**Mitigation Measure BIO-13:** Ground Clearing

### 3.4 Biological Resources

During the development of the quarry and associated facilities, all initial ground clearing (vegetation removal, grading, etc.) shall ideally occur outside the avian breeding season, and potential nesting habitat shall not be removed from February 1 through August 31, or appropriate dates based on on-site nesting phenology determined by a qualified biologist.

For initial ground clearing (vegetation removal, grading, etc.) that is not feasible to be conducted outside the nesting season, surveys shall be conducted to locate active nests. Any active nest sites that are located shall be buffered and no work shall be conducted within those buffered areas until the nests are no longer active. The buffer distances would be determined by current species-specific standards. (SBNF Biological Report PDF BIRD-1)

#### **Mitigation Measure BIO-14: Nesting Surveys**

Nesting bird surveys for passerine birds, as outlined under MM BIO-13, guidelines area as follows:

- A qualified biologist shall be experienced and familiar with robust nest-locating techniques or comparable to those described by Martin and Guepel (1993).
- Surveys shall be conducted in accordance with the following guidelines:
  - Surveys shall cover all potential nesting habitat to be disturbed and a 500 foot buffer surrounding areas to be disturbed.
  - At least two pre-construction surveys, separated by a minimum 10 day interval, shall be completed prior to initial grading or grubbing activity; the later survey shall be completed no more than 10 days preceding initiation of initial grading or grubbing activity. Additional follow-up surveys shall be required if periods of construction inactivity exceed one week in any given area, an interval during which birds may establish a nesting territory and initiate egg laying and incubation. (SBNF Biological Report PDF BIRD-2)

#### **Mitigation Measure BIO-15: Nesting Season – Crystal Creek Well**

To the greatest extent possible, maintenance activities at the Crystal Creek well and access road would be avoided during the nesting season for California spotted owl and other nesting birds (February 1 through August 15). Exceptions may be considered depending on planned activities and associated noise levels, after coordination with the Forest Service biologist or if protocol-level surveys determine the territory is vacant. If emergency repairs are required within the breeding season, the company shall notify the Forest Service within 24 hours. (SBNF Biological Report PDF CC-1)

**Level of Significance to Special Status Birds after Mitigation:** Less than Significant

#### ***California Spotted Owl (Strix occidentalis occidentalis)***

The California spotted owl is a Forest Service Sensitive, a CDFW Species of Special Concern, a USFWS Bird of Conservation Concern, a BLM Sensitive species, and an American Bird Conservancy Watchlist

species. The California spotted owl was petitioned for listing under the Endangered Species Act in 2000. In February 2003, USFWS determined that listing was not warranted at that time. In May 2004, the California spotted owl was again petitioned for listing. In June 2005, the USFWS released a finding that indicated that there was substantial scientific evidence or information showing that listing may be warranted and they initiated a status review. In May 2006, the USFWS announced a 12-month finding on the petition that found that the petitioned action was not warranted at that time

There is one spotted owl territory (Crystal Creek-Desert – SB030) that overlaps a small portion of the Analysis Area. A territory is considered to be habitat within 1.5 miles of a nest and is meant to represent the typical breeding home range for this species. No mapped spotted owl habitat overlaps with the Project Area.

The Project Area does not support high quality nesting and roosting habitat with dense canopy closure; therefore, the Project would not be expected to result in degradation or loss of habitat for nesting or daytime roosting due to the lack of preferred conditions. The area may be used for foraging. Crystal Creek supports suitable habitat for this species and it is possible that the spotted owl could choose to use a nest tree near the Crystal Creek well site. Mitigation Measure BIO-15 includes a measure for avoiding planned maintenance of the well site during nesting season which would minimize the potential for disturbance during nesting season.

It is possible that blasting and noise from the operations could disturb the spotted owls during the day if they happen to be in close proximity to the mining operations. Noise from night-time mining activities may interfere with communication, courtship, breeding and foraging but it is considered unlikely since nighttime activities are limited and there would be no night time blasting. If spotted owls reoccupy the North Slope, they might simply avoid the area for nesting, roosting and foraging.

The likelihood of death or injury to California spotted owls is considered extremely low and probably only has potential to occur if a nest were built close enough to the active mining site that blasting would startled nestlings or young owls so that they fell out of the nest.

Implementation of the Project may affect individuals, but is unlikely to result in a trend toward Federal listing; the Project would not be expected to interfere with maintaining viable well-distributed populations of this species. With the implementation of the Project design features and Mitigation Measures BIO-1 and BIO-13 through BIO-15, the Project would have a less than significant impact on this species.

**Potential Impact to California Spotted Owl before Mitigation:** Significant

**Mitigation Measures:** BIO-6, BIO-13 through BIO-15

**Level of Significance to California Spotted Owl after Mitigation:** Less than Significant

## 3.4 Biological Resources

***Willow Flycatcher (Empidonax traillii)***

There are five subspecies of the willow flycatcher currently recognized with three of these subspecies occurring in California and potentially migrating through the North Slope and Project Area.

- *E. t. brewsteri* (little willow flycatcher) is a Forest Service Sensitive Species.
- *E. t. adastus* is a CDFW Endangered species and USFWS Bird of Conservation Concern.
- *E. t. extimus* (southwestern willow flycatcher) is Federally-listed as Endangered and is addressed discussed above in Treated and Endangered Species discussion.

Most of the Analysis Area lacks suitable habitat for willow flycatchers. The only area that may occasionally have migrant willow flycatchers is in the lower portion of Crystal Creek, including where the haul road crosses north of the SBNF boundary. Migrant willow flycatchers are known to occur in or near other sites on the North Slope (most notably, Cushenbury Springs) during spring and fall. They have been observed within several miles of the Analysis Areas.

Migrant willow flycatchers may occasionally be disturbed if they use portions of Crystal Creek during migratory stopovers. However, there are no effects to willow flycatcher habitat expected in the Project Area.

Mitigation Measure BIO-1 (claim Cushenbury #32) includes Whiskey Springs, a small riparian oasis that supports suitable habitat for this species. It is likely that migrant willow flycatchers use this area on occasion. As a result of the relinquishment of the claim, this suitable habitat would be protected from the effects from future mining. Mitigation claim Crystal Creek #9 also includes a tributary to Greenlead Canyon. This area burned in 2007 but may, at some point in the future, provide suitable habitat for migrant willow flycatchers.

Because of the small amount of suitable habitat, the likelihood of negative effects to migrant willow flycatchers is considered very low. Mitigation Measure BIO-1 which includes relinquishment of claims with suitable, and probably occupied, habitat would be a beneficial effect for this species.

Implementation of the Project may affect individuals, but is unlikely to result in a trend toward Federal listing; the Project would not be expected to interfere with maintaining viable well-distributed populations of this species. With the implementation of the Project design features and Mitigation Measures BIO-1 and BIO-13 through BIO-15, the Project would have a less than significant impact on this species.

**Potential Impact to Migrant Willow Flycatcher before Mitigation:** Significant

**Mitigation Measure:** BIO-1 and BIO-13 through BIO-15

**Level of Significance for Migrant Willow Flycatcher after Mitigation:** Less than Significant

***Gray Vireo (Vireo vicinior)***

The gray vireo is a Forest Service Sensitive Species and a CDFW Species of Special Concern. There is suitable nesting and foraging habitat for gray vireos in and near the Project Area, in Crystal Creek, and along the haul road. They have also been recorded in the surrounding area at Furnace Spring; at Mitsubishi's West Quarry, and at Cushenbury Spring.

Approximately 94.9 new acres of vegetated landscape, some of it currently suitable gray vireo habitat, would essentially become unusable for the life of the operation and longer because the landscape will be changed in such a way that even many decades after restoration the habitat quality will be degraded. Mitigation Measure BIO-1 includes mitigation for the habitat losses. Unpatented claim lands held by Omya would be relinquished following mineral withdrawal. As a result, approximately 375 acres would become unavailable for future mining in order to mitigate for the development of 94.9 acres. The mitigation parcels support pinyon/juniper woodland and Jeffery pine habitats suitable for gray vireo.

The Mitigation Measures BIO 13 through BIO-15 have measures to locate and avoid active nests during the initial ground clearance. As such, the likelihood of direct losses of gray vireos is considered low. The implementation of the Project may affect individuals, but is unlikely to result in a trend toward Federal listing; the Project would not be expected to interfere with maintaining viable well-distributed populations of this species. With the implementation of the Project design features and Mitigation Measures BIO-1 and BIO-13 through BIO-15, the Project would have a less than significant impact on this species.

**Potential Impact to Gray Vireo before Mitigation:** Significant

**Mitigation Measures:** BIO-1 and BIO-13 through BIO-15

**Level of Significance for Gray Vireo after Mitigation:** Less than Significant

***Bendire's Thrasher (Toxostoma bendirei)***

Bendire's thrasher is a CDFW Species of Special Concern and is a SBNF Watchlist species. There is potential for it to occur in the Analysis Area but not in the Project Area or mitigation claim area. Suitable habitat would not be affected. Implementation of the Project is unlikely to result in a trend toward Federal listing; the Project would not be expected to interfere with maintaining viable well-distributed populations of this species.

**Potential Impact to Bendire's Thrasher before Mitigation:** Less than Significant

**Mitigation Measures:** None required

***LeConte's Thrasher (Toxostoma leconteri)***

LeConte's thrasher is a CDFW Species of Special Concern and is a SBNF Watchlist species. There is potential for it to occur in the Analysis Area but not in the Project Area or mitigation claim area.

---

### 3.4 Biological Resources

Suitable habitat for this species would not be affected. Implementation of the Project is unlikely to result in a trend toward Federal listing; the Project would not be expected to interfere with maintaining viable well-distributed populations of this species.

**Potential Impact to LeConte's thrasher before Mitigation:** Less than Significant

**Mitigation Measures:** None required

***Yellow Warbler (Dendroica petechial brewsteri)***

The yellow warbler is a CDFW Species of Special Concern and is a SBNF Watchlist species. The species is known to occur in the Analysis Area and there is potential for it to occur in the Analysis Area and mitigation claim area. There is no potential for it to occur in the Project Area. No effects to suitable habitat would be expected. Implementation of the Project is unlikely to result in a trend toward Federal listing nor is the Project expected to interfere with maintaining viable well-distributed populations of this species.

**Potential Impact to Yellow Warbler before Mitigation:** Less than Significant

**Mitigation Measures:** None required

***Golden Eagle (Aquila chrysaetos)***

The golden eagle is a SBNF Watchlist Species, identified by the Forest Service as having a local viability concern, a CDFW Watchlist Species, and a California State Fully-Protected Species. It is protected under the Bald and Golden Eagle Protection Act (Eagle Act), the Migratory Bird Treaty Act (MBTA; Executive Order 13186), and the California Fish and Game Code

Golden eagles are known to nest on and near the North Slope, including the Analysis Area. The North Slope also supports suitable foraging habitat and there are a number of golden eagles observations in the North Slope area, including using wildlife drinkers at the mines.

The North Slope has been monitored for nesting raptors since 2014. Several golden eagle nest territories are known within the Analysis Area, with occupancy levels and nest sites varying from year-to-year.

Potential effects to golden eagles can be categorized by habitat loss, disturbance, displacement, and death or injury from mining operations. These effects are discussed in a general manner above in the section referred to as Common Effects to Plants and Wildlife. Effects more specific to the Project Area are discussed below.

As mentioned, much of the Analysis Area is suitable for prey species used by golden eagles. Currently, the disturbed areas in, and adjacent to, the existing quarries are mostly bare rock and do not support much vegetation that would provide cover or forage for golden eagle prey animals. Some of the

proposed expansion area is not considered high quality foraging habitat due to the proximity to the active mining operation and high levels of disturbance. Nonetheless, it is probably used occasionally by foraging golden eagles.

As a result of the Project, much of the expansion area would eventually be cleared of vegetation. The resulting landscape would have exposed rock and little vegetation for cover and forage. This would represent a permanent loss of currently suitable prey habitat.

The Project Area does not support suitable cliff or rock outcrop features for nesting but as noted, there are suitable sites in the vicinity which are being used by golden eagles. Golden eagles are also known to occasionally nest in trees which means that the habitat found directly around the Project Area could potentially be used for nesting.

At the completion of mining, the inactive quarry benches may provide suitable nest sites for golden eagles. However, the quarry sites would mostly be unsuitable for foraging due to lack of cover and forage and limited access for prey species. Parts of the haul road may revegetate over time providing vegetation and cover for prey species. However, the lack of top soil and large areas of bare rock would limit the amount of revegetation and it may only be marginal for prey habitat.

The Bald and Golden Eagle Protection Act prohibits anyone, without a permit from "taking" bald and golden eagles. The definition of "take" includes "disturb." "Disturb" is defined as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

Disturbance from mining activities, in particular blasting, may affect behavior, reduce amount of time foraging, affect physiology, increase the chances of predation of eggs or nestlings, and change use patterns. At some point, disturbance may cause them to abandon the areas where they have been foraging and nesting, or not use as much which may affect occupancy and reproductive success.

Golden eagles may be disturbed if they nest or forage within line-of-sight of the haul road or Project quarries or if they nest close enough to be disturbed by the noise and vibrations associated with blasting. Background disturbance levels around the existing quarries (and adjacent mining operations) are already relatively high. Therefore, eagles currently in the area may have already acclimatized to that activity and have developed a higher tolerance for those types of disturbances. An eagle pair choosing to nest in the quarry or haul road vicinity may possibly have a higher tolerance for those types of disturbance due to habituation. However, any activity outside of what they are accustomed to may be the cause of disuse or abandonment.

Mitigation Measures BIO-7 through BIO-10 includes the preparation of a Raptor Conservation Strategy. The RCS has protective measures to help limit the potential for disturbance of raptors as a result of

---

### 3.4 Biological Resources

mining activities. It includes the requirement to take inventories for nesting raptors, and to conduct behavioral response monitoring if nests are found close to active mining sites.

Over the long life of the Project, there is some limited potential for individual golden eagles to be injured or killed as a direct or indirect result of mining operations. The potential risks include death or injury of golden eagles that are scavenging on dead animals on the mine roads as a result of collisions with haul trucks and other mine vehicles. Because of the slow speeds of vehicles on the haul roads, this is considered unlikely but cannot be ruled out completely. Even considering the potential that an eagle may have developed a higher tolerance to disturbances due to habituation, there is also a risk of death or injury as a result of disturbance from the mining operations, particularly from blasting. There are a number of studies that have evaluated disturbance distances for nesting raptors to be from 0.125 mile to 1.25 mile.

In addition to immediate impacts, the definitions of “take” and “disturb” also cover impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present. If the eagle returns, such alterations could agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, sheltering habits, or cause injury, death or nest abandonment.

Implementation of the Project may affect individuals, but is unlikely to result in a trend toward Federal listing; the Project would not be expected to interfere with maintaining viable well-distributed populations of this species. With the implementation of the Project design features and Mitigation Measures BIO-1, BIO-6, BIO-7 through BIO-10 and BIO-13 through BIO-15, the Project would have a less than significant impact on this species.

**Potential Impact to Golden Eagle before Mitigation:** Significant

**Mitigation Measures:** BIO-1, BIO-6, BIO-7 through BIO-10, BIO-13 through BIO-15

**Level of Significance for Golden Eagle after Mitigation:** Less than Significant

#### **Impact BIO-1f: Other Special Status Species**

##### ***Bats***

Effects to the following additional special status bat species were evaluated: Long-eared Myotis (*Myotis evotis*); Fringed Myotis (*Myotis thysanodes*); Long-legged Myotis (*Myotis Volans*); Small-footed Myotis (*Myotis ciliolabrum*); Western Red Bat (*Lasiurus blossevillii*); Spotted Bat (*Eucerna maculatum*); Townsend’s Big-eared Bat (*Corynorhinus townsendii*); Pallid Bat (*Antrozous pallidus*); Mexican Free-tailed Bat (*Tadarida brasiliensis*); Pocketed Free-tailed Bat (*Nyctinomops femorosaccus*); Western Mastiff (Bonneted) Bat (*Eumops perotis*); Yuma Myotis (*Myotis yumanensis*); Little Brown Myotis (*Myotis lucifugus*)

These species of bat are listed as Forest Service Sensitive and/or CDFW Species of Special Concern and are known to occur or are likely to occur in the Project Area. The species listed above were either acoustically detected or physically identified in the Project Area during the 2014 Bat Habitat Assessment (TetraTech, 2013); or identified by the Forest Service as having the potential to occur in the Analysis Area.

Mortality/injury of bats living in rock outcrops, cliffs, and crevices could occur if animals did not flush prior to blasting and rock moving operations. Blasting and noise from the operations could disturb roosting bats during the day causing them to flush, possibly increasing the risk of predation. Noise from night-time mining activities may interfere with important vocalizations that are used for communicating between colony members and territorial disputes. Night-time noise could also interfere with courtship, breeding, and foraging success.

The Project may result in long-term loss of roosting, foraging, breeding, and hibernating habitat for these species. When mining and reclamation has ceased on each quarry bench, some of the rock faces of the quarry may again provide suitable sheltering habitat, depending on the proximity to ongoing mining activities and disturbance. When all mining and reclamation has ceased, then crevices and fractures throughout the quarry would be available for bat roosting. In, and near, areas of active mining operations, it is unlikely that bats would use the rock outcrops and cliff faces due to the disturbance.

The implementation of the Project may affect individuals, but is unlikely to result in a trend toward Federal listing; the Project would not be expected to interfere with maintaining viable well-distributed populations of these species. With the implementation of the Project design features and Mitigation Measures BIO-1, the Project would have a less than significant impact on this species.

**Potential Impact to Bats before Mitigation:** Significant

**Mitigation Measure:** BIO-1

**Level of Significance for Bats after Mitigation:** Less than Significant

#### ***San Bernardino Flying Squirrel (Glaucomys sabrinus californicus)***

The San Bernardino flying squirrel is a Forest Service Sensitive Species and a CDFW Species of Special Concern. Additionally, in August 2010 a petition to list this species as threatened/ endangered was submitted to USFWS. In April 2016, the USFWS determined that Federal listing was not warranted.

While no species-specific surveys have been done in the Project Area, there is suitable habitat in parts of the Project Area. Where mixed conifer forest habitat would be eliminated in the Project Area, there would be a permanent loss of suitable flying squirrel habitat (less than 10 acres of marginally suitable habitat). As the mitigation claims do not support suitable habitat for this species, the loss of suitable habitat would be not be mitigated. If present when the ground is being cleared, there is a risk that individual flying squirrels may be killed or injured if they are present in trees to be dropped. Pre-felling disturbance would likely result in adult flying squirrels abandoning the tree; however, baby flying

---

### 3.4 Biological Resources

squirrels may not be able to escape. The later in the summer that these activities occur, the fewer potential losses of individuals are expected from the Project since babies would be more able to escape.

Implementation of the Project may affect individuals, but is unlikely to result in a trend toward Federal listing; the Project would not be expected to interfere with maintaining viable well-distributed populations of this species.

**Potential Impact to San Bernardino Flying Squirrel before Mitigation:** Less than Significant

**Mitigation Measure:** None required

***San Diego Pocket Mouse (Chaetodipus fallax fallax)***

The San Diego Pocket Mouse is a CDFW Species of Special Concern and a SBNF Watchlist species. There is potential for this species to be in the Analysis Area and in the mitigation claim areas. They are unlikely to occur at the Project Site.

Implementation of the Project would not be expected to interfere with maintaining viable well-distributed populations of this species.

**Potential Impact to San Diego Pocket Mouse before Mitigation:** Less than Significant

**Mitigation Measure:** None required

***San Diego Desert Woodrat (Neotoma lepida intermedia)***

The San Diego Desert Woodrat is a CDFW Species of Special Concern and a SBNF Watchlist species. There is potential for this species to occur in the Analysis Area and in the mitigation claims area. It is not expected in the Project Area.

Implementation of the Project would not be expected to interfere with maintaining viable well-distributed populations of this species.

**Potential Impact for San Diego Desert Woodrat before Mitigation:** Less than Significant

**Mitigation Measure:** None required

***American Badger (Taxidea taxus)***

The American Badger is a CDFW Species of Special Concern and a SBNF Watchlist species. There is potential for this species to be in the Project Area, Analysis Area and in the mitigation claim areas.

There is potential for mortality of badgers during ground clearing if they were unable to escape den sites. Equipment could collapse burrows, resulting in entrapment or suffocation. Any currently suitable or occupied habitat that would be developed into quarry or associated disturbed areas would become

unsuitable for this species. High levels of disturbance due to presence of humans and equipment would likely cause displacement, behavioral changes, or displacement from areas near active mining operations.

Implementation of the Project would not be expected to interfere with maintaining viable well-distributed populations of this species. With the implementation of the Project design features and Mitigation Measures BIO-1, the Project would have a less than significant impact on this species.

**Potential Impact to American Badger before Mitigation:** Significant

**Mitigation Measure:** BIO-1

**Level of Significance for American Badger after mitigation:** Less than Significant

***Nelson's Bighorn Sheep (Ovis canadensis nelsoni)***

Nelson's bighorn sheep is a BLM Sensitive species, was identified by the Forest Service as a local viability concern species, and is a SBNF Watchlist species. Nelson's bighorn sheep are considered a CDFW Fully-Protected mammal under section 4700 of the Fish and Game Code. The SBNF consulted and obtained input from CDFW regarding local expertise and knowledge of the San Bernardino Mountains population of bighorn sheep.

Nelson's bighorn sheep in the San Bernardino Mountains are considered to constitute two separate populations: the larger population (San Gorgonio Herd) occurs in the vicinity of Mount San Gorgonio in the San Gorgonio Wilderness; the other population (Cushenbury Herd) occurs on the northern edge of the range in desert-facing canyons (e.g., Furnace, Bousic, Arctic, and Marble Canyons). The Cushenbury bighorn sheep herd is currently believed to be about 15 individual animals, down from an estimated 40-50 in the 1990s. Lambing areas have not been validated. CDFW's tracking studies of the Cushenbury herd have found use by bighorn sheep around the existing Butterfield and Sentinel Quarries, the Project Site, Crystal Creek and Furnace Canyon.

Potential impacts to the Cushenbury herd of bighorn sheep include loss of habitat, habitat fragmentation, disturbance, displacement, death or injury from mining operations.

The Project would result in disturbance of 94.9 new acres that would be developed into quarry and covered with an overburden pile. This habitat is suitable for foraging, resting, moving between use areas, and escape terrain. No lambing habitat is expected to be affected. Mitigation Measure BIO-1 (relinquish of mining claims) may have some value as habitat for bighorn sheep, although the areas associated with Mitigation Measure BIO-1 are not known to be used frequently by bighorn sheep.

After reclamation, the Project Site may provide for escape/resting terrain and vegetation for forage. Revegetation sites have been demonstrated to provide preferred habitat for bighorn sheep and will be an imperative component to mitigating for loss of habitat value during active mining.

### 3.4 Biological Resources

Fragmentation of habitat and impediments to movement may negatively affect the health and survival of individual bighorn sheep by requiring them to move more and spend more energy seeking adequate food and water, and suitable habitat for shelter, escape, and lambing. The expanded areas of disturbance from the Project are likely to increase the amount of fragmentation and isolation of habitat patches to the north and west of the Project Site. In addition, the existing isolation and impediment to movement posed by the Crystal Creek Haul Road would be extended in time due to the life of the Project. Once the haul road is reclaimed, permeability would be increased. The overall effects to bighorn sheep would depend on the degree of impermeability created by the expanded quarries and the continued use of the haul road. If they represent major impediments to movement, the health of individuals as well as the entire Cushenbury bighorn population may be affected due to inability to access areas important for reproduction and lambing, obtaining food and water, and escaping predators.

Bighorn sheep may be displaced from areas they currently occupy as a result of the Project due to new disturbance or if habitat availability and quality are reduced to a point that they need to move to obtain adequate browse and water.

There could be some risk to individual bighorn sheep as a result of mining operations. The risk associated with blasting is two-fold: 1) bighorn sheep near the blast may be hit by flying rocks; and, 2) bighorn sheep may be startled by a blast; responses such as running or jumping in response to disturbance have been observed to result in injuries and death, particularly for lambs. There is also a risk of collisions with haul trucks and other mine vehicles using the haul roads; however, that risk is considered low due to the slow speed of mine vehicles and high degree of visibility on the haul roads.

**Potential Impact to Bighorn Sheep before Mitigation:** Significant

**Mitigation Measures:** BIO-1, BIO-6 and the following:

**Mitigation Measure BIO-16:** Bighorn Sheep Foraging Habitat

When trucks spray water on haul roads to control fugitive dust, some overspray occurs on road berms for a short distance beyond. Those watered areas sometimes support vegetation that bighorn sheep consume. Omya will not make an effort to eliminate the overspray. The Project's Revegetation Plan shall focus on using native species that will help enhance bighorn sheep habitat. (SBNF Biological Report PDF BHS-1)

**Mitigation Measure BIO-17:** Bighorn Sheep Reporting of Mortality

Omya shall immediately report any bighorn sheep mortalities, whatever the cause, to the CDFW and Forest Service as soon as possible after the observation. The bighorn sheep carcass shall be left in place until the CDFW or Forest Service biologist can examine it and determine the proper disposal method. In the event that mountain lion predation is occurring at levels that compromise the viability of the population, Omya shall cooperate fully by ensuring access to Omya properties to determine the

predator involved or, in the event that an individual predator has been identified, for removal of the predator. (SBNF Biological Report PDF BHS-2)

**Mitigation Measure BIO-18:** Bighorn Sheep Monitoring/Adaptive Management

Omya shall monitor bighorn sheep use in and near their operations and at water sources in and adjacent to their operations. Monitoring shall consist of maintenance of cameras stationed at water sources and recording of data from cameras in a database developed by CDFW, as well as collection of observations by Omya employees. An annual monitoring report shall be provided to the Forest Service and CDFW. (SBNF Biological Report PDF BHS-3)

**Mitigation Measure BIO-19:** North Slope Bighorn Sheep Conservation Strategy

A Draft North Slope Bighorn Sheep Conservation Strategy will be developed by CDFW and the Forest Service which will include:

- Guidelines/thresholds for population status that would trigger augmentation of the herd;
- A strategy/guidelines for developing water sources to respond to drought years;
- Herd monitoring methodology and objectives.

Omya will be a partner in the North Slope Bighorn Sheep Conservation Strategy and will help support the long-term management goals of maintaining a sustainable population of bighorn sheep on the North Slope. (SBNF Biological Report PDF BHS-4)

**Mitigation Measure BIO-20:** Future Conservation and Management

Within one year after approval, Omya shall begin contributing to a non-wasting endowment, designated as the North Slope Bighorn Sheep Conservation Fund (Fund). The amount of Omya's contributions shall be determined by CDFW in coordination with Omya. The Fund shall be administered by the National Fish and Wildlife Foundation as a sub-account of the California Department of Fish and {Game} Wildlife Master Mitigation Account. This sub-account shall be managed as a long term endowment dedicated to activities that aid in conservation and monitoring of bighorn sheep both within the Cushenbury herd and on proximate habitats, occupied or unoccupied, including the Bighorn Mountains and San Gorgonio Wilderness where immigration and emigration may connect groups into a functional metapopulation. (SBNF Biological Report PDF BHS-5)

**Mitigation Measure BIO-21:** Bighorn Sheep Employee Awareness Training

Omya will consult with the CDFW to incorporate bighorn sheep education and awareness into their training for employees and contractors. Training will include how to minimize impacts to bighorn sheep and include guidelines for driving, operation of heavy equipment, general quarry operation, and blasting in bighorn sheep habitat. (SBNF Biological Report PDF BHS-6)

## 3.4 Biological Resources

**Summary for Bighorn Sheep:** The Project would affect some bighorn sheep habitat and result in continued human activities in areas that bighorn sheep utilize. The Project design features and mitigation measures are expected to be sufficient to avoid “take” of bighorn sheep, as defined by CDFW. The Project is not expected to affect the viability of Nelson’s bighorn sheep, as a species, on the SBNF. Due to the small size of the Cushenbury herd of bighorn sheep and apparent decline over the past two decades, there remain viability concerns for the Cushenbury herd. The mitigation measure that calls for implementation of the Bighorn Sheep Conservation Strategy will help address those concerns over the long-term.

**Level of Significance for Bighorn Sheep after Mitigation:** Less Than Significant.

***Mountain Lion (Felis concolor californica)***

The mountain lion is a SBNF Watchlist species and a CDFW Specially Protected Mammal. The SBNF consulted and obtained input from CDFW regarding local expertise and knowledge of the San Bernardino Mountains population of mountain lions.

Mountain lions have been documented in the Analysis Area, including using the wildlife water developments at the mines on the North Slope. They are occasionally hit by vehicles on Highway 18 (and other roads). The population in Big Bear/North Slope area may be declining, primarily due to impediments to immigration as a result of urbanization, Interstate 15 and road kill. Mountain lion population is also being impacted as a result of a persistent depressed population of mule deer, their primary prey, in the overall San Bernardino Mountains.

The types of potential effects are similar to those discussed above for Nelson’s bighorn sheep in terms of disturbance, habitat loss/degradation/ fragmentation, environmental toxins, death/injury, etc. In addition, if the Project caused displacement, or reduction in size, or loss of the North Slope deer herds, mountain lions may be excluded from the area due to lack of a sustainable prey base. Mitigation Measures BIO-1 (relinquish of mining claims) may have some value as habitat for the mountain lion.

**Potential Impact to Mountain Lion before Mitigation:** Significant

**Mitigation Measure:** BIO-1

**Level of Significance for Mountain Lion after Mitigation:** Less than Significant

**Impact BIO-2: Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? (CEQA Guidelines Threshold Criteria (b))**

***Riparian and Wetland Habitats***

The potential impacts to riparian habitat and wetlands are discussed in Section 3.4.3.1 under Jurisdictional Delineation (JD) and in Hydrologic Considerations Potential Effects to Aquatic, Riparian and Drainage Habitats. Riparian areas were also addressed in the SBNF Biological Report.

The following is a brief summary of these resources and potential impacts.

Crystal Creek, Furnace Canyon, Holcomb Creek as well as other unnamed drainages on the north facing side of the North Slope provide important habitat for foraging, breeding, shelter, migratory refueling stopovers, and movement corridors. Of those, only Holcomb Creek supports fish (non-native rainbow trout, partially-armored three-spine stickleback, and other non-natives). However, these drainages likely support some amphibians (tree frogs, western toads, ensatina, and possibly red-spotted toads in the desert-facing drainages). (SBNF Biology Report)

Four drainages (Drainages A, B, C, and D as shown in Figure 3.4-3) with signs of OHWM features were delineated in the JD. These drainages generally only flow after storm events. During the field work conducted for the JD, no hydrophytic plants or evidence of hydrophytic plants were observed in any of the drainages within the Project survey area. There were also no trees or shrubs found in more mesic environment, such as willows or cottonwoods or any mesic meadows or special aquatic habitats observed in the Project survey area.

Drainages A, B and C have clear connections to the Mojave River and were determined to be jurisdictional Waters of the US and the State. However, only Drainage A was found to be within the limits of planned disturbances associated with the Project. A total of 0.089 acres of Drainage A could be impacted by the Project. Drainage D, which terminates in Lucerne Dry Lake, was determined not to be a jurisdictional Water of the US or State. In addition, Drainage D is outside of any planned disturbances and would not be impacted by the Project.

Under Section 401 of the CWA and the Porter-Cologne Water Quality Act, Drainage A appears to be subject to the RWQCB-Lahontan Region regulatory approval. Because the total loss of jurisdictional waters in Drainage A is under the 0.1 acre threshold, a request to ACOE for coverage under the Nationwide Permit would not be required. Under Section 1600 of the California Fish and Game Code, CDFW may require a Streambed Alteration Agreement. In accordance with Mitigation Measure BIO-23 (below), the agencies will be consulted for concurrence with the findings of the JD and to determine whether regulatory permit or approvals would be required.

Project design features (e.g., GEN 1 through GEN-8, GEO-1 through GEO-8) that minimize the potential impact to these resources include activities such as, roads being sloped to direct runoff into the quarries, rip rap, berms, hay bales, or other energy dissipaters have been or will be placed at the toe of fill pads or overburden placement areas to minimize the potential for sediment to enter the drainages. Numerous culverts, dips, over-side drains or other structures have been constructed along the quarry

---

### 3.4 Biological Resources

roads to allow minimum impact on existing drainage patterns and reduce sediment transport. These structures are regularly inspected and maintained as necessary. Drainage patterns of minor dry drainages in the mining area crossed by haul roads would not be altered.

Presently water used in the active quarry mining areas amounts to about 1.3 acre feet per year, and comes from two wells which are pumping groundwater. These sources were permitted many years ago. No changes are proposed to the water sources. The amount of water use is expected to double to about 3 acre-feet/year which is not expected to affect the local groundwater. The Project may cause slight reductions in surface water flow quantities in Furnace Canyon, East Dry Canyon or Holcomb Creek watersheds (less than 0.1%). Effects on surface flow, if any are expected to be minor because the expansion area constitutes a very small proportion of the total watershed areas. Runoff retained in the Project Area will either evaporate or infiltrate to recharge groundwater.

The Project design features described in Section 2.3.17 of the Project Description include measures to protect water quality and riparian habitat.

**Potential Impact to Riparian/Wetland Habitat before Mitigation:** Significant  
**Mitigation Measure:**

**Mitigation Measure BIO-22:** Jurisdictional Waters and Agency Consultation

Prior to activities that could impact Waters of the United States or the State as identified in the Project JD, the ACOE, RWQCB-Lahontan Region and CDFW shall be consulted for concurrence with the findings of the JD and to determine if regulatory permits or approvals (i.e.: Streambed Alteration Agreement, coverage under the National Permit, Waste Discharge Request/Section 401) would be required and if considered necessary, the appropriate permits and/or approvals shall be obtained.

**Level of Significance to Riparian/Wetland Habitat after Mitigation:** Less than Significant

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

Soils in the Project Area are derived from carbonate rock which provides a unique habitat for several endemic rare plants species, including four Federally listed threatened and endangered plant species. The Federally listed plant species are addressed in the CHMS. The CHMS is designed to provide long-term protection for the carbonate endemic plants while also providing for long-term continued mining in the San Bernardino Mountains. Certain areas of the carbonate habitat reserves are protected from mining impacts in perpetuity by being dedicated and managed as described in the CHMS. A Memorandum of Understandings and Agreement was signed in 2003 by Omya, the USFS, Bureau of Land Management (BLM), San Bernardino County, Specialty Minerals, Mitsubishi Cement Company, California Native Plant Society, and the Cushenbury Mine Trust stipulating that the signatories will implement the CHMS for the dual purpose of conserving threatened and endangered carbonate plants and streamlining the permitting of mining operations.

Mitigation Measure BIO-1 requires that Omya relinquish through a quit-claim process specific acerage within the unpatented mining claims as shown in Table 3.4-3 (above). With the implementation of Mitigation Measure BIO-1, the Project would have a less than significant impact on carbonate rock habitats.

**Potential Impact to Other Natural Communities before Mitigation:** Significant

**Mitigation Measure:** BIO-1

**Level of Significance after Mitigation:** Less than Significant

**Impact BIO-3: Would the Project have a substantial adverse effect on Federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or any other means? (CEQA Guidelines Threshold Criteria (c))**

As discussed above for Impact BIO-2, a JD was conducted and it was determined that the Project would not have a substantial adverse effect on Federally protected wetlands as defined by Section 404 of the Clean Water Act. In accordance with Mitigation Measure BIO-22, the agencies shall be consulted for concurrence with the findings of the JD.

**Potential Impact to Federally-Protected Wetlands before Mitigation:** Less than Significant

**Mitigation Measure:** None Required

**Impact BIO-4: Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? (CEQA Guidelines Threshold Criteria (d))**

Movement corridors are distinguished by “passage” species (large wide-ranging animals) and “dweller” species (smaller animals with smaller ranges). Long-term impediments to movement or fragmentation of habitat can result in isolation of populations, making them more susceptible to localized extirpation due to stochastic events or diminished resource availability. Habitat continuity and connectivity on the North Slope has already been adversely affected as a result of existing mine development and the existence of State Highway 18.

For the Cushenbury herd of Nelson’s Bighorn Sheep, the Project Site is situated in and above the highest use areas on the steep slopes below the Butterfield quarry. Increased activity from the BSQ expansion sites is likely to increase the amount of fragmentation and isolation of habitat patches to the north and west of the BSQ expansion.

Other than the potential effects on the Cushenbury herd of Nelson’s Bighorn Sheep, the Project would not interfere substantially with the movement of any other native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. For discussion of Nelson’s Bighorn Sheep movement impacts, see “Impact BIO-1f – Nelson’s Bighorn Sheep” above.

## 3.4 Biological Resources

**Potential Impact to Wildlife Movement (non-Bighorn Sheep) before Mitigation:** Less than Significant

**Mitigation Measure:** None Required

**Impact BIO-5: Would the Project conflict with any local policies or ordinances protecting biological resources such as a tree preservation policy or ordinance? (CEQA Guidelines Threshold Criteria (e))**

The Project would not conflict with any local Lucerne Valley or San Bernardino County policies or ordinances protecting biological resources such as a tree preservation policy or ordinance. The Project would be in compliance with SBNF policies and requirements as discussed throughout Section 3.4 and it would comply with applicable habitat conservation strategies as discussed in Impact BIO-6.

**Potential Impact to Local Policies/Ordinances for Protecting Biological Resources:** Less than Significant

**Mitigation Measure:** None Required

**Impact BIO-6: Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan. (CEQA Guidelines Threshold Criteria (f))**

The following three existing or pending habitat conservation plans/strategies apply to the Project. With the implementation of the mitigation measures discussed above in Impact BIO-1, the Project would not conflict with these habitat management and conservation plans/strategies:

***Carbonate Habitat Management Strategy (CHMS)***

As required in Mitigation Measure BIO-1, the Project shall follow the provisions under the CHMS for calculating the conservation value of habitat that would be lost as a result of the Project and the habitat reserve contributions required to offset those losses.

***Raptor Conservation Strategy***

As required in Mitigation Measures BIO-6 through BIO-10, the Project shall comply with the requirements set forth in the RCS.

***North Slope Bighorn Sheep Conservation Strategy***

As required in Mitigation Measures BIO-6 and BIO-16 through BIO-20, the Project shall comply with the requirements set forth in the strategy.

**Potential Impact to Conservation Plans before Mitigation:** Significant

**Mitigation Measures:**

*Carbonate Habitat Management Strategy:* BIO-1, PLANT-1 and PLANT-2; CARB-1 and CARB-2.

*Raptor Conservation Strategy:* BIO-6 through BIO-10.

*North Slope Bighorn Sheep Conservation Strategy:* BIO-6, BIO-16 through BIO-20.

**Level of Significance for Conservation Plans after Mitigation:** Less than Significant

#### **3.4.4 Cumulative Effects**

Cumulative effects/impacts consider the effects of other actions that may combine with the predicted effects of the Project. Cumulative effects/impacts result when the effects of an action are added to or interact with other effects in a particular place and within a particular time. The Analysis Area for cumulative effects on biological resources depends on the distribution of the species. The cumulative effects Analysis Area for some narrowly distributed species can be small, but analysis for some species where local effects can be extended to a broader scale through animal movement and population dynamics are done over a corresponding larger area. Therefore, the projects considered in this analysis of cumulative impacts on biological resources are somewhat different than those identified on Table 3.0-1.

In general, the continued development of the North Slope is expected to result in fragmentation of habitat, barriers to movement, and loss of habitat. Due to the duration of the mining operations located on the North Slope, the overall cumulative impacts of these projects on many species are considered to be significant. However, the continued development is also expected to result in further carbonate habitat reserve contributions under the CHMS, and management of these lands for carbonate species and the habitat upon which they depend, which is considered a beneficial effect. These reserve contributions are also expected to be habitat for many general and sensitive species that would be affected by cumulative effects. In addition, three of the mining companies on the North Slope are participating in the North Slope Bighorn Sheep Conservation Strategy and the Raptor Conservation Strategy. Both of which will minimize adverse effects on these species to a less than significant level.

The SBNF Biological Report provides a detailed analysis of past, current and foreseeable future effects on Threatened, Endangered, Sensitive, SBNF Watchlist and Management Indicator Species considering projects occurring within similar carbonate substrates and desert transition habitats and projects occurring within the local distribution of affected species and habitat types. The cumulative effects Analysis Area varies by species group, and focuses on the area of maximum reach of direct and indirect effects of the Project, including population-level effects to species.

The SBNF Biological Report contains discussions of various past influences on the SBNF; those discussions are incorporated by reference. Past activities and their effects on species/habitats are described in the "Baseline Condition" discussions for each species in the SBNF Biological Report. Past actions include: Partin limestone mine, Blackhawk Mountain gold mine, SMI's (formerly Pfizer) existing and past operations, Omya's (formerly Pleuss Staufer) existing and past operations, Mitsubishi's (formerly Kaiser Cement) existing and approved mines, Right Star limestone mine in Cactus Flat, Bertha Peak communications site, and Lakeview tract recreation residences.

### 3.4 Biological Resources

Ongoing activities addressed are recurring activities that have occurred over time and affected the species and habitats discussed in the SBNF Biological Report, and will continue to occur. These include: road use and maintenance, trail use and maintenance, recreational use of the SBNF, hazard tree removal along Southern California Edison (SCE) powerlines (Doble Circuit) along and State/County highways, SCE' periodic replacement of deteriorated poles, and use and maintenance of State Route 18 on NFS land. In terms of the species and habitats included in the Analysis Area, the effects of past and ongoing activities are included in the species-by-species discussion of existing conditions/ baseline.

There are several current activities/actions in the cumulative effects Analysis Area that are in the implementation phase. Current Forest Service projects (including Forest Service authorized actions) occurring on the North Slope and in the habitats of the species discussed include: reclamation at Omya's Cloudy and Claudia Quarries and associated haul roads; reclamation at SMI's Furnace Canyon Quarry and associated areas, and reclamation on Mitsubishi's Cushenbury 17a and 17b claims.

Non-Federal activities that are currently being implemented and may contribute to the cumulative effects of this project include: SMI's active mining operations on non-Federal land, Mitsubishi's Cushenbury East Quarry and West Quarry on non-Federal land, Omya's operations on non-Federal lands; sand and gravel operations on non-Federal land; SCE transmission lines on non-Federal lands in Cushenbury Canyon, Furnace Canyon and Lucerne Valley, State Highway 18 use and maintenance, use and maintenance of the railway serving Omya, SMI and Mitsubishi processing plants, and rural residential development in Lucerne Valley. Past mining projects on private land have also created conservation areas on private land for carbonate habitats and bighorn sheep. These areas are accounted for in the SBNF Biological Report baseline conditions.

There are a number of actions/activities in the foreseeable future. These are Federal and non-Federal projects that are in planning stages or will be soon but have not yet been approved. Currently, the SBNF is evaluating a proposal by Mitsubishi Cement Corporation (Mitsubishi) that entails development of a new limestone quarry and haul road. That Mitsubishi project is located several miles to the east of Omya's Butterfield Sentinel Project Area, near Cushenbury Canyon on the North Slope. The suite of species and the habitat conditions are similar to those known/expected at the Omya Project Site. The Mitsubishi proposal would result in 154 acres of habitat (including carbonate, desert transition, and pinyon/juniper woodlands) being developed into quarry and associated mining facilities. The Mitsubishi South Quarry operation would continue 40-120 years from approval, depending on alternative.

SCE has approached the SBNF about removing and replacing 300+ utility poles for their Doble 33 kV electrical transmission line. Part of that circuit is in Furnace Canyon on the North Slope. The SBNF's North Big Bear Fuels Reduction project is in the analysis phase. The Baldwin Fuels Reduction project is approved but not yet in implementation. Vegetation management activities are focused on fuels reduction and forest health projects. These two projects would affect Jeffrey pine forest and pinyon/juniper woodland habitats that are similar to that found at the Project Site.

The SBNF is working with CalTrans and Federal Highways Administration on a "perfection of title"

project that would grant easements on NFS lands to rights of way generally 100 feet on either side of the centerline of all State highways on the SBNF. Each State highway is being evaluated separately. It is likely that ownership along State Route 18, including the section that goes through pinyon/juniper and carbonate habitat (between Baldwin Lake and the Forest boundary near the Mitsubishi plant) will be evaluated for transfer of title within the next 5 years. As such, the Forest Service would likely lose some discretion over what occurs along the highway, and therefore may not provide CalTrans with project-level design features to protect rare species and the habitats in that area. Those authorities and responsibilities would fall to the Federal Highways Administration and CalTrans.

There are additional non-Forest Service actions that are in the foreseeable future in the cumulative effects Analysis Area. Omya has received approval for a 145 acre expansion of their White Knob Quarry. In addition, the White Knob operation will be extended from 2031 to 2055, with a 10-year reclamation period. As a result, any associated effects, including disturbance and risks of death/injury along haul and access roads, will be extended longer into the future. The White Knob Quarry expansion would not lead to new loss of threatened or endangered plant occurrences, but would cause loss of pinyon pine woodland, a small patch of montane riparian habitat, and steep limestone outcrops potentially suitable as habitat for special-status plants. Mitigation measures are incorporated to minimize impacts to these species from the White Knob expansion project. These include measures to minimize quarry operation disturbance to adjacent habitat and to reclaim the proposed expansion area at the completion of mining.

These projects either have been or will be evaluated in conjunction with their respective approval requirements and for consistency with habitat and wildlife conservation strategies.

#### **NEPA Cumulative Analysis Finding**

For the majority of the species addressed, the overall cumulative impacts for the proposed Project are therefore considered less than significant. The exception is the potential cumulative effects to the Cushenbury herd of Nelson's bighorn sheep. SBNF considers cumulative effects to the Cushenbury herd of Nelson's bighorn sheep to be even significant after implementation of the identified mitigation measures and Project design features.

#### **CEQA Cumulative Analysis Finding**

The Project would not make a cumulatively considerable contribution to biological resource impacts and the Project's cumulative impact would be less than significant.

#### **3.4.5 Alternatives**

Table 3.4-9 provides a comparison of the operating parameters associated with each of the alternatives that would have significant impacts on biological resources.

## 3.4 Biological Resources

**Table 3.4-9 Comparison of Alternatives for Biological Resource**

<b>Project Element</b>	<b>Alternative 1 No Action/No Project*</b>	<b>Alternative 2 Proposed Action</b>	<b>Alternative 3 Partial Implementation Butterfield Expansion Only</b>	<b>Alternative 4 Mixed Production to Meet Omya LVPP Capacity</b>
Proposed New Area of Disturbance (acres)	0	94.9	30.6	94.9
Total Area of Disturbance – Existing and Proposed (acres)	137.5	232.4	168.1	232.4
Life of Mine Extension (years)	NA	40	20	40
Years at Max. Production of 680,000 tpy	11	40	20	40
Final Reclamation Year	Year 30	Year 50	Year 30	Year 50

The Project (Alternative 2) and Alternative 4, would result in the removal of approximately 94.9 acres of habitat/vegetation and would allow mining to continue for 40 years past current approvals. Whereas Alternative 3 (Butterfield only) would result in the removal of approximately 30.6 acres of habitat/vegetation and would only be approved for an additional 20 years which would result in fewer impacts on biological resources. Alternative 3 would also not have the same impact on Drainage A (identified in the JD) as the Project and Alternative 4. Thus, the while the types of effects from Alternative 3 to biological resources would be similar to those described for the Project (Alternative 2), Alternative 3 would result in with less habitat lost and a shorter duration of disturbance. The same mitigation measures and Design Features would apply.

The Project and Alternative 4 would have the same effects on biological resources.

Under Alternative 1 (No Project), Omya would continue mining activities under the conditions of their existing approvals. The expansions of the Butterfield and Sentinel Quarries would not occur under Alternative 1. Alternative 1 would not result in the identified 375 acres of habitat/vegetation being removed from mining claims and protected from future mining under the CHMS. Omya would also not be required to participate in the Raptor Conservation Strategy or the North Slope Bighorn Sheep Conservation Strategy.

THIS PAGE IS INTENTIONALLY BLANK

### 3.5 Cultural Resources

The Initial Study and scoping process did not identify any potentially significant impacts to historical, archaeological or paleontological resources; therefore, this section only provides a brief discussion on the affected environment and impacts associated with cultural and heritage resources. Paleontological resources, for the purposes of NEPA and CEQA, are defined as remains or other indications of prehistoric organisms.

#### 3.5.1 Affected Environment

The earliest prehistoric period in the Mojave desert region is known as the Lake Mojave period, followed by the Pinto, Gypsum, Saratoga Springs and Shoshonean/Protohistoric periods. Land use during these periods included seasonal occupation sites, coinciding with hunting, gathering and food processing areas. Potential prehistoric cultural site types are seasonal habitations, lithic deposits, quarry sites, bedrock mortar processing locations and ceremonial activities related to rock art. The ethnographic inhabitants of the area were the Serrano Indians. The Serranos were hunters and gatherers. The settlement pattern of the Serranos consisted of permanent village sites located near reliable sources of water and seasonal hunting and gathering in the mountain oak groves and pinyon woodlands. Historic development in the area began in the 1860s following the discovery of gold in Holcomb Valley. Documented historic land use includes, but is not limited to, lumbering, mining, ranching, homesteading, Civilian Conservation Corps activities during the 1930s, tourism and recreation.

The Area of Potential Effect (APE) is the Omya quarry area, which includes the Butterfield and Sentinel Quarries. The area is highly disturbed by wildfire, wood cutting and mining activities. The following surveys have been conducted in the area:

- Michael K. Lerch & Associates, 1984: This survey was an intensive cultural resources inventory of the Claudia claims and a general reconnaissance of the surrounding 3,200 acres proposed for future mining. The survey covered the areas of the Butterfield and Sentinel Quarry expansions and did not identify any cultural resources in the Project Area.
- SBNF Archaeological Reconnaissance Report, 1972: No cultural/heritage resources were found in the area.
- SBNF Archaeological Reconnaissance Report, 1998: This survey covered 30.7 acres of the Sentinel Quarry area, including the B5 pad overburden site. An intuitive complete cultural resource survey, which included both a literature search and field work, was conducted of the area. No historic or prehistoric cultural remains were found.
- SBNF Archaeological Reconnaissance Report, 2000: No cultural/heritage resources were found in the area.
- SBNF Archaeological Reconnaissance Report, 2010: The survey covered the Butterfield 3 Quarry expansion area and included both a literature search and field work. No new cultural/heritage resources were recorded during this field investigation.

### 3.5 Cultural Resources

In addition, the study for the claim holding included an archeological records check for previously recorded resources within or immediately adjacent to the claim holdings, a review of relevant archeological and historical literature, and a field survey. Appendix G includes maps which show the areas which were field checked and the sites which were recorded (archeological site map is not available for public distribution). Field work was conducted under authorization of the Forest Service via a Special Use Permit. All prehistoric archeological resources were considered and historic cultural resources which are believed to be more than fifty years of age were also addressed.

The previously completed archeological and cultural resources inventories did not reveal any archeological, cultural, heritage, or historical sites in the Project Area. Copies of the reports are provided in Appendix G.

#### **3.5.2 Regulatory Framework**

##### **3.5.2.1 Federal**

Cultural resources on federally owned, leased or administered lands are regulated by a body of laws, regulations and policies as outlined in the Forest Service Manual 2300, Chapter 2360 (U.S. Forest Service 2008a, 2010a), the Forest Service Handbook Heritage Program (U.S. Forest Service 2007b), the Forest Service Tribal Relations Strategic Plan (Fiscal Years 2010 – 2013), the San Bernardino National Forest Service Land Management Plan and the Cultural Heritage Cooperation Authority (Public Law 110-234).

There are numerous pertinent Federal regulations and guidelines applicable to cultural resource management. Key regulations include the following.

##### **National Historic Preservation Act (NHPA) Section 106 (36 CFR 60.4)**

NHPA requires Federal agencies to take into account the effects of their undertakings on historic properties. The Section 106 process seeks to accommodate historic preservation concerns with the needs of federal undertakings through consultation among agency officials and other parties with an interest in the effects of the undertaking on historic properties. The goal of the consultation is to identify historic properties potentially affected by the undertaking, assess potential effects and seek ways to avoid, minimize or mitigate any adverse effects.

Procedures in 36 CFR 800 define how Federal agencies meet these responsibilities. 36 CFR 800.5(a) describes procedures for evaluating a project's adverse effects on cultural resources. An adverse effect is found when a federal undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion on the National Register of Historic Places (NRHP) in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

**Archeological Resources Protection Act of 1979 (ARPA)**

ARPA was enacted "... to secure, for the present and future benefit of the American people, the protection of archaeological resources and sites which are on public lands and Indian lands, and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community and private individuals." ARPA provides the requirements that must be met before federal authorities can issue a permit to excavate or remove any archeological resource on federal or Indian land.

**Antiquities Act of 1906**

The Antiquities Act of 1906 is used as the basis for federal protection of paleontological resources on federal lands. The act authorizes the government to regulate the disturbance of objects of antiquity on federal lands through the responsible managing agency.

**Paleontological Resource Preservation Act (PRPA)**

The PRPA specifically protects paleontological resources on federal lands.

**American Indian Religious Freedom Act of 1978 (AIRFA)**

The AIRFA establishes policy of respect and protection of Native American religious practices.

**Native American Graves Protection and Repatriation Act of 1990**

This act requires Federal agencies to consult with the appropriate Native American tribes prior to the intentional excavation of human remains and funerary objects.

**3.5.2.2 State**

CEQA offers directives regarding impacts on historical and archaeological resources. The CEQA Guidelines define a "historical resource" to include several categories of resources, one of which is if the "resources listed or eligible for listing on the California Register of Historical Resources (CRHR). In addition, a resource is presumed to constitute a historical resource if it is included in a local register of historical resources.

CEQA also requires consideration of unique archaeological sites which are defined as:

*"... an archaeological artifact, object or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:*

- *Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.*

### 3.5 Cultural Resources

- *Has a special and particular quality such as being the oldest of its type or the best available example of its type.*
- *Is directly associated with a scientifically recognized important prehistoric or historic event or person.”*

Impacts to non-unique archaeological resources and resources that do not qualify for listing on the CRHP receive no further consideration under CEQA

CEQA Guidelines Section 15064.5 requires that excavation activities be stopped whenever human remains are uncovered and that the county coroner be called in to assess the remains. If the county coroner determines that the remains are those of Native Americans, the NAHC must be contacted within 24 hours. The lead agency must consult with any appropriate Native Americans as identified by the NAHC to develop an agreement with the Native Americans for the treatment and disposition of the remains.

#### **AB 52 Tribal Cultural Resources**

In September 2014 Assembly Bill (AB) 52 was signed by the Governor. The law went into effect on July 1, 2015. CEQA Guidelines Checklist Appendix G was updated July 1, 2016.

AB 52 establishes a consultation process with all California Native American Tribes on the Native American Heritage Commission (NAHC) list (Federal and Non Federal recognized tribes). A new class of cultural resources was established, Tribal Cultural Resources, which takes into consideration Tribal cultural values in determination of project impacts and mitigations. It also requires meaningful Tribal consultation. A Tribal cultural resource includes:

- A site feature, place, cultural landscape, sacred place or object which is of cultural value to a Tribe; and
- Eligible for the California Historic Register or a local historic register or the lead agency, at its discretion, chooses to treat the resource as a Tribal cultural resource.

Within 14 days of a decision to undertake a project or determination that a project application is complete, the lead agency must provide written notification to the Tribes that requested placement on the Agency’s Notice List. The Tribes have 30 days to request consultation.

AB 52 does not apply to this Project because AB 52 requirements “*apply only to a project that has a notice of preparation ... filed on or after July 1, 2015.*” (AB 52 Section 11 (c)) The NOP for this Project was filed on February 28, 2013.

#### **3.5.2.3 Local**

San Bernardino County General Plan – Conservation Element

The General Plan has several goals that address historic, prehistoric, cultural and paleontological resources. Goals directly relevant to the Proposed Project include the following:

- Goal CO 3: The County will preserve and promote its historic and prehistoric cultural heritage.
- Goal D/CO 6: Protect cultural and paleontological resources within the desert range.

### **3.5.3 Environmental Consequences/Impacts and Mitigation Measures**

The evaluation conducted during the preparation of the Initial Study considered the following significance criteria from the CEQA Guidelines Appendix G in order to identify whether or not the Proposed Project would present a significant risk to cultural resources:

- a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?*
- b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?*
- c) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?*
- d) Disturb any human remains, including those interred outside of formal cemeteries?*

The evaluation concluded that the Project would have no impact; therefore, in accordance with CEQA Guidelines, further detailed evaluation is not provided in this Draft EIR/EIS. Substantiation for this conclusion is provided in the Initial Study (Appendix B) and is summarized below.

As described in Section 3.5.1 Affected Environment, archeological surveys of the Project Area have shown that there are no cultural or historical resources in the area; therefore, there is not the potential for a significant impact to cultural resources as the result of the Project. However, as discussed in the Initial Study, the expansion of the quarries would involve ground disturbances. In accordance with Federal, State and local regulations, rules and/or policies, and Omya's operating procedures; if a buried cultural resource is discovered during mining activities, the operations would cease in the immediate vicinity of the find and a qualified archaeologist would be consulted to determine whether the resource requires further study.

Although AB 52 was not law when the NOP for this Project was provided, a notification was provided to the NAHC. The lead agencies did not receive any requests for consultation from the NAHC or Native American Tribes.

### **3.6 Geology and Soils**

This section describes the local and regional geologic, soils, and seismic conditions that occur in the vicinity of the Project Site. These conditions are described and evaluated to ensure that the Project facilities or personnel would not be significantly affected by seismic hazards such as ground rupture or ground shaking due to seismic activity; and that quarry slopes would not present physical hazards as a result of slope failures. Much of the information in this section is derived from, Slope Stability Investigation, Proposed Amended Mine Plan of Operations for the Sentinel and Butterfield Quarries (Slope Stability Investigation) prepared by CHJ Consultants (CHJ, 2012). A copy of the report is included as Appendix H of this Draft EIR/EIS.

#### **3.6.1 Affected Environment**

##### **3.6.1.1 Regional Setting**

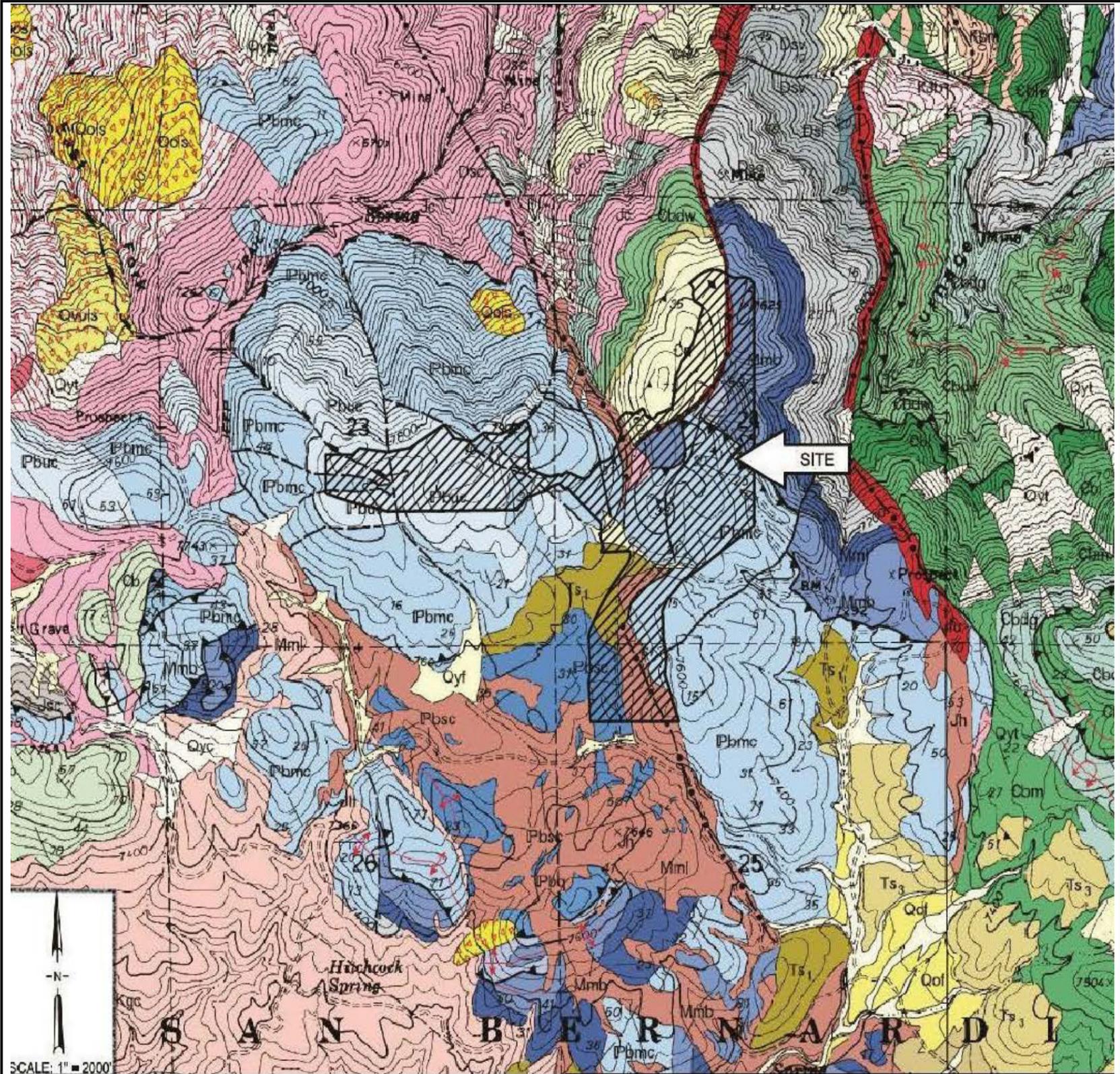
###### **Geology**

The Butterfield and Sentinel Quarries are located in the northern portion of the San Bernardino Mountains, an east-west-trending range within the Transverse Ranges of southern California (Figure 1-1). The north slope of the range rises abruptly from the desert floor in Lucerne Valley, with elevations along the north range crest reaching 8,400 feet.

Rocks exposed in the San Bernardino Mountains range from Precambrian to Quaternary in age and include igneous, sedimentary and metamorphic rocks (Figure 3.6-1). Extensive exposures of pre-Mesozoic metasedimentary rocks unconformably overlie Precambrian basement in the San Bernardino Mountains. The lower part of the section is clastic dominated, the middle part is dolomite-dominated, and the upper part is limestone dominated.

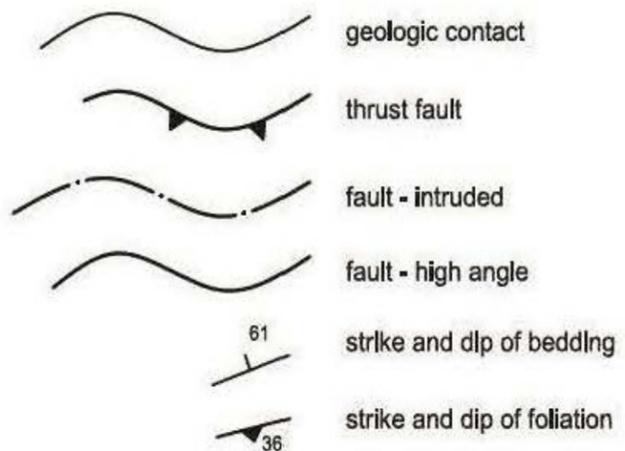
Most of the northern San Bernardino Mountains are underlain at a shallow depth by crystalline bedrock of plutonic composition. However, remnants of Paleozoic metamorphic rocks are present in the northern San Bernardino Mountains. These remnants consist of moderate- to high-grade metamorphosed sandstones, shales, limestones, and dolomites originally deposited in broad marine basins. The sequence of correlatable marine rocks has been identified throughout the western United States, extending to Utah through Nevada and eastern California.

THIS PAGE IS INTENTIONALLY BLANK



**GEOLOGIC UNITS IN MINE AREAS:**

- Qyt - talus deposits
- Ts - sedimentary rocks of Holcomb Valley
- Jc - quartz monzonite
- Pbuc, Pbmc, Pblc, Pbsc - carbonate members of Bird Spring Formation
- Mmy, Mmb, Mml - carbonate members of Monte Cristo Limestone
- Dsc, Dsv, Dsl - members of Sultan Limestone
- En - Nopah Formation
- En - Dunderburg Shale
- Ebdw, Ebdg - Bonanza King Formation



Base Map Source: Miller et. al., 2001

Source: CHJ Consultants (2012)

**Figure 3.6-1 Geologic Index Map - Lateral Expansions of Existing Quarry**

THIS PAGE IS INTENTIONALLY BLANK

### Seismicity and Faulting

The tectonics of the Southern California area are dominated by the interaction of the North American and Pacific tectonic plates, which are sliding past each other in a transform motion. Although some of the motion may be accommodated by rotation of crustal blocks such as the western Transverse Ranges (Dickinson, 1996), the San Andreas Fault zone is thought to represent the major surface expression of the tectonic boundary and to be accommodating most of the transform motion between the Pacific Plate and the North American Plate. However, some of the plate motion is apparently also accommodated by other northwest-trending strike-slip faults that are related to the San Andreas system, such as the San Jacinto fault and the Elsinore fault. Local compressional or extensional strain resulting from the transform motion along this boundary is accommodated by left-lateral, reverse, and normal faults such as the Cucamonga fault and the nearby North Frontal fault zone.

The fault having the most significance to the site from a ground shaking standpoint is the North Frontal Fault Zone, which is exposed approximately 2 miles north of the site along the range front of the San Bernardino Mountains. This fault actually consists of a complex zone of left-lateral, thrust, and reverse faults and forms the boundary between the Mojave Desert Geomorphic Province and the Transverse Ranges Geomorphic Province to the south. Since this fault dips at a moderate angle to the south, the fault plane is probably less than 2 miles beneath the site.

The Eastern California Shear Zone (ECSZ) is a zone of regional deformation traversing the Mojave Desert that includes a system of predominantly northwest-trending strike-slip faults. The ECSZ accommodates strain along the Pacific/North American Plate boundary across a zone approximately 65 miles wide and is thought to transfer as much as 15 percent of the total plate boundary shear into the Great Basin area (Shermer and others, 1996). A number of faults of this system ruptured in combination during the 1992 Landers earthquake east of the site. Rupture of that event extended within approximately 25 miles of the mine area and included several faults (Hauksson, 1992). An earthquake of M 6.4, known as the Big Bear earthquake, occurred a few hours later. The Big Bear quake and its aftershocks occurred along a northeast-trending alignment located approximately 12 miles southeast of the site. The Hector Mine earthquake of 1999 occurred on the Lavic Lake and Bullion faults of the ECSZ. The Helendale fault, Lenwood-Lockhart fault, and Johnson Valley fault of this system are located approximately 4.9 miles northeast, 15.5 miles northeast, and 19 miles east-northeast of the site, respectively. These faults are major components of the ECSZ and are considered Holocene active.

The northwest-trending San Andreas Fault is located approximately 18 miles southwest of the site. The toe of the mountain front in the San Bernardino area roughly demarcates the presently active trace of the San Bernardino Mountains segment (CHJ, 2012).

### 3.6 Geology & Soils

#### 3.6.1.2 Local Setting

##### Geology

The Butterfield and Sentinel quarries are located on a large roof pendant of Paleozoic marine rocks (Figure 3.6-2). The oldest unit in the Paleozoic sequence present in the Sentinel Quarry is the Cambrian Nopah Formation. The Nopah Formation consists of moderately to thickly bedded, fine- to coarse-grained dolomite and dolomitic marble. The Nopah Formation was observed in the west Sentinel Quarry area. Bedding is variable, but generally dips moderately toward the east. The Nopah Formation is not considered ore material.

The Mississippian Monte Cristo Limestone is the primary ore body of the Sentinel Quarry and is separated from the Nopah Formation by a well-exposed north-northeast trending west-dipping high-angle reverse fault. The Monte Cristo Limestone includes several members, with the 350-foot thick Bullion Member forming the majority of rock exposed in the Sentinel Quarry. The Bullion Member consists of a limestone that was metamorphosed into a light gray to white fine-grained calcite marble of very high purity. The Yellowpine Member comprises a small exposure in the southwest portion of Sentinel Quarry. The Monte Cristo Limestone consists of white to yellowish marble in thin to thick beds. Bedding is variable and exhibits little structural control relative to joints in the Monte Cristo units. Generally, bedding in the Monte Cristo Formation dips westward at moderate angles.

The Pennsylvanian Bird Spring Formation is exposed at the ground surface across most of the south Sentinel Quarry area and is shown to be in thrust fault contact with the Monte Cristo Limestone members to the north. Bird Spring Formation exposed at the Sentinel Quarry area is the lower part of the formation and generally consists of gray marble with chert nodules. Based on surface exposures, this unit is folded on a small and large scale. Variability in bedding orientation can be observed within individual outcrops. The Upper Bird Spring Formation comprises the white calcite marble ore of the Butterfield Quarry (CHJ, 2012).

##### Soils

Generally, soil or growth medium is rarely more than 6 to 12 inches thick but may reach 2 feet in thickness near or within ravines in the Project Area. This thin soil cover is due to the rugged mountainous nature of the Project Area and arid climate.

Forest Service studies (USFS, 1988) have determined that much of the soil found in the limestone mining area is classified as low to very low in productivity. The soils are predominantly shallow, moderate to excessively drained, coarse textured, with low moisture holding capacity. Bedrock outcroppings and substantial rock fragments are present throughout the soil in the areas of Butterfield and Sentinel quarries.

3.6 Geology & Soils

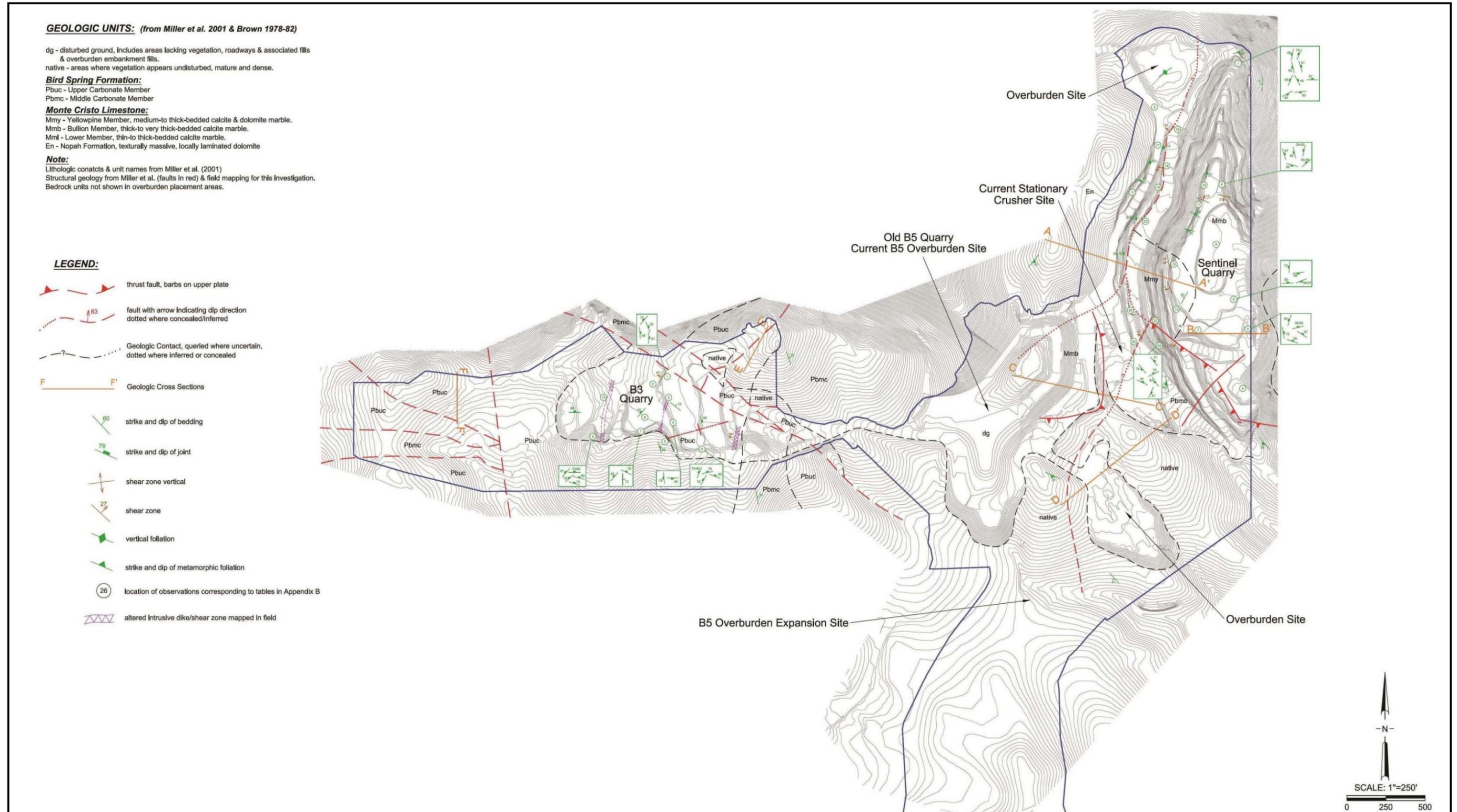


Figure 3.6-2 Geologic Map

THIS PAGE IS INTENTIONALLY BLANK

### **Groundwater Conditions**

Groundwater has not been encountered in the Project Area. The depth of groundwater in the Project Area has not been measured because no wells exist in the vicinity. As reported in Pluess-Stauffer (1994) in over 100 exploration core holes drilled to a depth of 100 ft below ground surface, groundwater was not encountered. Based on discussions with Omya's geologist Howard Brown, the current depth to groundwater in the Project Area is expected to be greater than 550 ft bgs.

### **Seismicity and Faulting**

According to the latest Alquist-Priolo Earthquake Fault Zone Maps, no known active or potentially active faults are located within the Project Area. Based on their review of published and unpublished literature and maps, stereoscopic aerial photographs, or during the field mapping, CHJ (2012) describes finding only inactive faults traversing the Project Area. Therefore, ground rupture due to primary fault slip in the Project Area is not anticipated.

CHJ (2012) reports observations of various faults in the quarries' walls. In the mapped areas, both high-angle and low-angle faults were observed. Such faulting is typical of the northern San Bernardino Mountains, and most or all of these are likely to predate or be associated with uplift of the San Bernardino Mountains. Quaternary activity along these faults is unlikely.

In the western portion of the Sentinel Quarry, the Cambrian Nopah Formation is in reverse fault contact with the ore (Mississippian Monte Cristo Limestone). This fault strikes about N30E and dips steeply (70 degrees) toward the northwest.

A thrust fault is exposed in the southern portion of the existing Sentinel Quarry. The thrust dips toward the south-southwest at a moderate angle (45 degrees) and places the Pennsylvanian Bird Spring Formation over the older Monte Cristo Limestone. In the south Sentinel Quarry, the dark gray limestone of the Bird Spring Formation represents a significant overburden on the ore body.

Various high-angle faults of limited continuity are exposed in the existing Butterfield Quarry walls. These faults include intruded fault zones that exhibit thick gouge zones and limited exposure (CHJ, 2012).

### **Ground Motion Parameters**

The 2010 California Building Code (CBC) Design Acceleration Parameters for structures were determined from latitude/longitude coordinates N34.3303, W116.9413 using the web-based U.S. Geological Survey Ground Motion Parameter Calculator.

### 3.6 Geology & Soils

The corresponding value of peak ground acceleration (PGA) from the design acceleration spectrum according to the 2010 CBC is 0.52g (CHJ, 2012). This PGA estimation means that the Project Area could experience heavy ground shaking in the event of an earthquake.

#### 3.6.2 Regulatory Framework

##### 3.6.2.1 Federal

The 1997 Uniform Building Code (UBC) was developed by the International Conference of Building Officials (ICBO) and is used by most states, including California, as well as local jurisdictions to set basic standards for acceptable design of structures and facilities. The UBC provides information on criteria for seismic design, construction, and load-bearing capacity associated with various buildings and other structures and features. Additionally, the UBC identifies design and construction requirements for addressing and mitigating potential geologic hazards. New construction generally must meet the requirements of the most recent version of the UBC.

##### 3.6.2.2 State

###### Alquist-Priolo Earthquake Fault Zone Act

The State Alquist-Priolo Earthquake Fault Zoning Act (A-P Act) of 1972 was passed to mitigate the hazards associated with surface faulting in California. Administered by the California Department of Conservation (DOC), the A-P Act prevents construction of buildings used for human occupancy on the surface traces of active faults. Before a project can be permitted, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults.

###### Seismic Hazards Mapping Act

The 1990 Seismic Hazards Mapping Act and related regulations establish a statewide minimum public safety standard for mitigation of earthquake hazards. The purpose of this Act is to protect the public from the effects of strong ground shaking, liquefaction, landslides, or other ground failure as well as other hazards caused by earthquakes. The Act provides the minimum level of mitigation needed to reduce the risk of a building collapse. Under this Act, the lead agency can withhold permits until geologic investigations are conducted and mitigation measures are incorporated into building plans. In addition, the Act addresses not only seismically induced hazards but also expansive soils, settlement, and slope stability. The program and actions mandated by this Act closely resemble those of the A-P Act by requiring the State Geologist to delineate various “seismic hazard zones”; and Cities, counties, and/or other local permitting authority to regulate certain development “projects” within these zones by withholding the development permits for a site until the geologic and soil conditions are investigated and appropriate mitigation measures (if required) are incorporated into development plans.

### California Building Code

The California Building Code (CBC), known as Title 24, CCR, Part 2, specifies the acceptable design and construction requirements associated with various facilities or structures. These codes are administered and updated by the California Building Standards Commission. This Code specifies criteria for open excavation, seismic design, and load-bearing capacity directly related to construction in the State. The CBC augments the UBC and provides information for specific changes to various sections in it. The seismic building requirements under the CBC are more stringent than the UBC.

### Surface Mining and Reclamation Act

With respect to addressing geotechnical slope stability for final reclaimed slopes, SMARA does not specify a minimum factor of safety for slope stability. However, Section 3502(b)(3) indicates that final reclaimed slopes shall be flatter than the critical gradient, which implies that static factors of safety should be greater than 1.0. The section further states:

*“Wherever final slopes approach the critical gradient for the type of material involved, regulatory agencies shall require an engineering analysis of slope stability. Special emphasis on slope stability and design shall be taken when public safety or adjacent property are affected.”*

Section 3704(f) states that,

*“Cut slopes, including final highwalls and quarry faces, shall have a minimum slope stability factor of safety that is suitable for the proposed end use and conform with the surrounding topography and/or approved end use.”*

#### 3.6.2.3 Local

#### The San Bernardino General Plan – Safety Element

The Safety Element of the General Plan addresses issues related to protecting the community from any unreasonable risks associated with seismically induced surface rupture, ground shaking, ground failure, seiche and dam failure; slope instability leading to mudslides and landslides; subsidence, liquefaction and other seismic hazards; other known geologic hazards; flooding; and wildland and urban fires.

Goal S4: The County will minimize damage due to wind and water erosion where possible.

- *Policy S4.2: Apply the provisions of the Revised Erosion and Sediment Control Ordinance countywide.*
- *Policy S4.3: Tailor grading, land clearance, and grazing to prevent unnatural erosion in erosion susceptible areas.*

Goal S7: The County will minimize exposure to hazards and structural damage from geological and seismic conditions.

### 3.6 Geology & Soils

- *Policy S7.1: Strive to mitigate the risks from geologic hazards through a combination of engineering, construction, land use and development standards.*
- *Policy S7.2: Minimize the risk of potential seismic disaster in areas where inadequate structures exist.*
- *Policy S7.6: Protect life and property from risks resulting from landslide, especially in San Bernardino and San Gabriel Mountains that have high landslide potential.*

#### 3.6.3 Environmental Consequences/Impacts and Mitigation Measures

##### 3.6.3.1 Methodology

The potential geologic, soils and seismic effects of the Project were evaluated in regards to impacts on mining operations and geologic hazards to people. The basic criterion applied to the analysis of mining operations is whether the mining process would create unstable geologic conditions that would last beyond the short-term mining operation period. The analysis of geological hazards is based on the degree that the Project Area geology could produce hazards to people from earthquakes, ground shaking, ground movement, fault rupture or other geologic hazards. The analysis was based on site visits, and reviews of technical documents including the Plan of Operations, Reclamation Plan, Geology and Soils Memorandum by SLR (SLR, June 5, 2013) and the slope stability investigation report prepared by CHJ (CHJ, 2012). Copies of these documents are provided in Appendices H.

##### 3.6.3.2 Significance Criteria

The significance thresholds for evaluating potential impacts on Geology and Soils associated with the Project were developed from the CEQA Guidelines Environmental Checklist Appendix G and the County General Plan

Per the CEQA Checklist Appendix G, the Project would have a significant impact if it would:

- Expose people or structures to potential substantial adverse effects, involving the risk of loss, injury, or death involving:*
  - *Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zone Map issued by the State Geologist for the area or based on other substantial evidence of known fault;*
  - *Strong seismic ground shaking;*
  - *Seismic-related ground failure, including liquefaction; or*
  - *Landslides;*
- Result in substantial soil erosion or the loss of topsoil.*
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.*

- d) *Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to the life or property.*
- e) *Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.*

Criteria (a), (b), and (c) are discussed below. The Project Area does not contain expansive soils, and no septic systems are proposed to be added by the Project. Therefore, no impacts would occur under criteria (d) and (e) above, and those criteria are not considered further.

### **3.6.3.3 Impact Analysis**

#### **Impact Analysis**

##### ***Slope Stability***

The Project involves lateral expansion of the existing Sentinel and Butterfield quarries. Rock (limestone) slopes in the quarries would be up to a maximum of approximately 625 feet high and inclined with an overall slope of approximately 48 degrees to 50 degrees. Mining would be conducted with approximately 60-foot high inter-bench slope faces inclined at 70 degrees in the Sentinel Quarry and approximately 50-foot high inter-bench slope faces inclined at 70 degrees in the Butterfield Quarry. An intervening bench approximately 30 feet wide and 25 feet wide for the Sentinel and Butterfield quarries, respectively, would be created. The placement of haul roads across some slopes and the proposed benching plan would result in the approximate 48 to 50-degree overall slope angle of quarry walls.

The B5 Pad, which is used to store overburden and waste materials, would be expanded to accommodate the additional materials that would be generated by excavation of the expanded quarries. The B5 Pad would have maximum elevations of 150 to 200 feet above adjacent grade. Slopes of the expanded B5 Pad were also evaluated with regard to stability for several heights and bench configurations, yielding overall reclaimed slope gradients of 2(h) to 1(v).

##### ***Strength Parameters***

Kinematic and global slope stability of the proposed reclaimed slopes for Butterfield and Sentinel quarries were performed by Pluess-Staufner (1992a, and 1992b) and by CHJ (2012) to ascertain the long term stability of the rock slopes. In addition, CHJ (2012) evaluated the stability of the slopes of the proposed overburden and waste materials that would be stockpiled in the B5 Pad.

Rock strength properties for global stability calculations were modeled using Hoek Brown criteria and the ultimate mining depths (highest slopes) anticipated in each quarry. The shear strength properties of the overburden stockpile were modeled using the Mohr-Coulomb (i.e. cohesion and friction angle) criterion. Final quarry bottom elevations in the Sentinel Quarry and eastern portion of the Butterfield Quarry include backfill that would result in shorter overall slope heights. A discussion and summary of

### 3.6 Geology & Soils

these analyses is presented below. Slope stability analyses performed are discussed in following sections and the calculations are presented in the Slope Stability Investigation (CHJ, 2012) located in Appendix J of this document.

#### ***Kinematic Analysis***

Kinematic analysis involves the evaluation of bedrock stability based on the presence of structural discontinuities including joints, faults, shear zones, bedding and foliations. Kinematic analysis addresses only the potential failure mode(s) and does not consider mass or force in a limit-equilibrium analysis. Structurally-controlled kinematic failure modes include planar, wedge, and topple failures. Circular failure of highly fractured rock masses is also feasible and is considered in a global stability analysis (as presented previously).

Stereonet analyses performed by CHJ Consultant for selected representative rock slopes utilizing the data from mapped geologic structures within the site. Rock slopes in the Sentinel Quarry were evaluated for slopes with dip azimuths oriented at 45°, 90°, 110°, 130°, 225°, 270° and 315° and for Butterfield Quarry at 90°, 180°, 270°, and 360° representing the suite of proposed slope aspects. The stereonet data are included in the Slope Stability Investigation (Appendix J).

The proposed 70-degree intra-bench rock slopes were analyzed for wedge and plane failure modes where kinematic evaluation using Markland's Test indicated a potential failure mode. The results of the planar and wedge failure mode analysis for individual structures indicate overall suitable intra-bench stability (factors of safety) for the proposed mining and reclamation slopes in all domains and aspects (CHJ, 2012).

#### ***Global Stability Analysis***

The mining rock slopes for the Butterfield and Sentinel quarries for native-over-cut and overburden-over-cut rock slopes were evaluated for several configurations of proposed overburden stockpile (fill) slopes, including heights of 250 feet, 400 feet and 560 feet.

The global (rotational) stability of proposed mining slopes as depicted in the Amended Plan of Operations and proposed reclaimed B5 Pad as depicted in the Reclamation Plan was analyzed using Spencer's method under both static and seismic conditions for rotational failures utilizing the SLIDE computer program, version 6.0 (Rocscience, Inc., 2011). Selection of the Plan of Operations slope configurations for the analysis of excavated slopes, which depicts the tallest anticipated excavated/native slopes proposed for mining at the Butterfield and Sentinel quarries, is based on a most-conservative analysis approach. Reclamation is planned to fill portions of the quarry bottoms so that ultimate reclaimed slope heights would be shorter and the fill would be confined within the enclosed quarry pit.

Representative slope sections of the excavated rock slopes and overburden stockpiles derived from the

Plan of Operations were modeled. The seismic stability calculations were performed using a lateral pseudostatic coefficient "k" of 0.20 due to the proximity of the North Frontal fault zone. Groundwater was not considered in the global stability evaluation due to the lack of seepage or groundwater anticipated in the generally arid site environment.

The calculated static and pseudo-static factors of safety are in excess of 1.5 and 1.1 respectively for the modeled proposed rock and overburden slope configurations. These results satisfy SMARA guidelines and standard of practice for slope stability, based on the intended open space and habitat end uses of the reclaimed Project Area.

### ***Evaluation of Other Geologic Hazards***

In addition to ground shaking due to earthquakes, effects of seismic activity could include surface fault rupture, soil liquefaction, seismically-induced differential settlement, ground lurching, seismically induced landsliding, lateral spreading, earthquake-induced flooding, seiches, and tsunamis. How these secondary effects may apply to the Project Site is discussed below.

### ***Liquefaction Potential and Groundwater Conditions***

Liquefaction occurs when saturated sediments temporarily lose strength during an earthquake and act like a liquid rather than a solid. Liquefaction potential is a function of three factors: soil type, depth to groundwater, and seismic induced ground shaking potential. The potential for liquefaction within the Butterfield and Sentinel quarries property boundaries is low due to the lack near-surface groundwater.

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

According to the Alquist Priolo Fault Zone Map depicting the Project Area, no mapped surface fault crosses through or extends towards the Project Site. Therefore, the Project Area is not located within a designated active fault zone. Based on available data reviewed by CHJ, including site specific geologic mapping, the potential for surface rupture resulting from the movement of a previously unrecognized fault is not known with certainty but is considered low.

### ***Seismically-Induced Settlement***

Earthquake induced settlement is compression of the underlying loose soils due to liquefaction or densification that occur during strong ground shaking and causes uneven settlement of the ground surface. The potential for soil liquefaction is considered low and accordingly the potential for liquefaction-induced settlement is low. This would not be a concern for the predominantly hard rock conditions at this site.

---

### 3.6 Geology & Soils

#### ***Ground Lurching and Seismically-Induced Landsliding***

Ground lurching is the horizontal movement of ground located adjacent to slope faces caused by seismic forces exerted during an earthquake. It can occur in areas underlain by soft or weak deposits and often results in permanent displacement and longitudinal cracking parallel to the slope face at some distance setback from the top of the slope. In steep slope areas, significant ground shaking may cause landslides or rock slope failures.

The Project Area could experience heavy ground shaking in the event of an earthquake, but bedrock is generally competent. Ground acceleration was integrated into the slope stability evaluation described above, which concluded that factors of safety for the proposed slopes in the expanded quarries and the B5 Pad are acceptable.

#### ***Lateral Spreading***

Seismically induced lateral spreading involves lateral movement of earth materials due to ground shaking. Lateral spreading is characterized by near-vertical cracks with predominantly horizontal movement of the soil mass involved along potentially liquefiable layers. Because the site liquefaction potential is low, the potential for lateral spreading is considered low.

#### ***Earthquake-Induced Flooding***

Flooding may be caused by failure of dams or other water retaining structures due to an earthquake. There are no major water storage facilities or dams in the immediate vicinity of the site.

#### ***Tsunamis and Seiches***

Tsunamis are generated in large bodies of water by fault displacement or major ground movement. A seiche is an earthquake-induced wave in a confined body of water such as a lake, reservoir, or bay. Based on the location and the elevation of the site, there is no risk of tsunamis or seiches affecting the Project Area.

#### ***Project Design Features***

As described in Section 2.3.17, the Project has incorporated design features and environmental protection measures that minimize the potential for significant impacts. Table 3.6-1 provides a summary of the key design features considered in the geology and soils assessment:

**Table 3.6-1 Summary of Geology and Soils Project Design Features**

<b>Geology and Soils</b>	
GEO-1.	Control of surface drainage, erosion, and sedimentation of the proposed haul road and quarry operations would involve the following primary components currently being implemented for existing operations: <ol style="list-style-type: none"> <li>a) Limiting surface disturbance to the minimum area required for active operations</li> <li>b) Diverting runoff, where operationally feasible, such that runoff from undisturbed areas does not enter the area of active operations.</li> <li>c) Using ditches, sediment basins and localized control and maintenance measures to intercept and control runoff along the haul road.</li> <li>d) Stabilizing disturbed areas through regarding, revegetation and other restoration practices.</li> <li>e) Direct runoff into the quarries, sediment catchment basins, sumps and culverts.</li> </ol>
GEO-2.	Dispose of sediment from runoff control basins to pre-approved sites rather than side cast.
GEO-3.	Control runoff, drainage, off-site transport and erosion at fill and overburden pads by: <ol style="list-style-type: none"> <li>a) Constructing berms near the crest of the pads.</li> <li>b) Placing rip rap, catchment basins and/or energy dissipaters along the toe of the fill and in the drainage below the fill slope.</li> </ol>
GEO-4.	Inspect slope conditions in quarries after a significant seismic event. Quarry operations will be stopped until a qualified geotechnical engineer inspects slopes for unsafe or unstable conditions.
GEO-5.	Routinely inspect quarries for unsafe and unstable conditions.
GEO-6.	Implement quarry design and procedures recommendations identified in approved slope stability investigations and per SMARA requirements.
GEO-7.	Implement BMPs in accordance with the most current Industrial General Stormwater Permit and per the Omya's SWPP Plan.
GEO-8.	Minimize ground disturbance to the minimum that is required to construct and operate the quarry.

In addition, the following recommendations from the Slope Stability Investigation Report (CHJ, 2012) were considered in this analysis:

- Overall final cut slopes in the rock materials would be no steeper than approximately 1H:1V up to a maximum height of approximately 625 feet.
- Large, unstable rounded boulders on slopes steeper than approximately 2H:1V would be removed or stabilized where accessible. Areas below loose rock would be restricted and indicated by means of signage or fencing.
- Geotechnical evaluation and design, management of mine bench geometry based on encountered conditions, or use of mechanical support systems would be implemented as necessary.

### 3.6 Geology & Soils

- Continued inspection and monitoring of mine benches and slope conditions for indications of potential instability and failure warning signs would be implemented.
- Final reclaimed fill slopes composed of overburden materials would be no steeper than 2H:1V to the maximum proposed heights.
- Slopes would be protected with berms and/or levees as necessary to prevent slope erosion in the areas where natural slopes drain onto the reclaimed slopes.

#### Project Impacts

**Impact GS-1: *Expose people or structures to potential substantial adverse effects, involving the risk of loss, injury, or death involving (CEQA Guidelines Threshold Criteria (a)):***

- ***Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zone Map issued by the State Geologist for the area or based on other substantial evidence of known fault;***
- ***Strong seismic ground shaking;***
- ***Seismic-related ground failure, including liquefaction; or landslides.***

#### ***Rupture of a Known Earthquake Fault***

The Project Area is not located within a currently designated State of California Earthquake Fault Zone (Alquist Priolo Zone, known as Special Studies Zones prior to January 1, 1994). However, there are active faults in the region, from which ground shaking can be anticipated to occur over the life of the Project. In most of California, ground-shaking caused by earthquakes associated with rupturing faults is likely to occur. Earthquake intensities vary throughout the region, depending upon the magnitude of the earthquake, the distance from the causative fault, and the type of geologic material underlying a given location.

Peak ground acceleration of 0.52 g was calculated for the Project Area (CHJ, 2012). This means that the Project Area could experience a relatively high degree of ground acceleration (shaking) during an earthquake. The potential hazard to humans associated with such shaking would be failure of structures and resulting falling objects. However, no inhabited structures are anticipated in the Project Area. Therefore, the Project would not expose people or structures to potential substantial adverse effects, involving the risk of loss, injury, or death involving the risk of loss, injury, or death. As a result, this impact is considered less than significant under criterion (a) above and no mitigation is required.

**Level of Significance:** Less than significant

**Mitigation Measure:** None Required

***Strong Ground Shaking, Ground Failure, Liquefaction, and/or Landslides***

The Project Area may experience heavy ground shaking if an earthquake occurs. In addition, under certain circumstances, strong ground shaking may cause surface fault rupture, soil liquefaction, seismically induced differential settlement, ground lurching, lateral spreading, earthquake-induced flooding, seiches, and tsunamis. As described above, none of these geologic hazards is expected to occur at the Project Area.

In steep slope areas, such as the quarries' walls that would be extended by the Project, heavy ground shaking can cause slope failures. Ground shaking at the Project Area could be heavy in the event of an earthquake. Based on factors of safety calculated for the proposed slopes in the Slope Stability Investigation (CHJ, 2012) concluded that the proposed slopes would be suitably stable against gross failure for the anticipated long term conditions, including the effects of seismic shaking. However, a future earthquake could change the existing slope conditions and cause localized weak zones, possibly causing unanticipated slope failures. Implementation of Mitigation Measure GS-1 would reduce this potential impact to less than significant.

**Potential Impact:** Significant

**Mitigation Measure:**

**Mitigation Measure GS-1:** Inspect slope conditions after seismic events and remove precarious rocks from slopes.

This mitigation measure requires that slope conditions in the Project Area be inspected after a seismic event exceeding 5.5 magnitude on the Richter Scale originating from an epicenter located within 100 miles of the Project Area. Quarry operations will be halted until a qualified geotechnical engineer is retained to inspect slope conditions for potential loose blocks or other unsafe or unstable conditions. Any required slope stabilization measures must lead to achievement of a minimum factor of safety of 1.5 before quarry operations continue.

Under this mitigation measure, the Project Area also must be inspected for precarious rocks. Natural weathering processes would result in accumulation of talus on excavated benches. The talus can be left on the slopes to facilitate revegetation and to give reclaimed slopes a relatively natural appearance. It is anticipated that any boulders resulting from weathering processes would be angular and would therefore be less likely to roll downhill. Any large unstable rounded boulders on slopes steeper than 2:1 must be removed or stabilized where accessible. Areas below loose rocks must be restricted from entry and identified with proper signage.

**Level of Significance after Mitigation:** Less than Significant

---

3.6 Geology & Soils**Impact GS-2: Result in substantial soil erosion or the loss of topsoil.**

Expanding the existing quarries and B5 Pad would involve grubbing and removal of topsoil and overburden removal. Such activities would result in surface disturbance and removal of vegetation, leading to increased soil exposure and the potential for increased soil erosion. However, according to the proposed Amended Plan of Operations, topsoils removed during the Project would be stored on-site in designated areas for later use in reclamation.

The Project has been designed to convey stormwater runoff to on-site drainage basins. Temporary diversion ditches, berms, catchment basins, and use of erosion control materials would be employed for sediment control. Soil erosion would represent a potentially significant impact; however, implementation of the following BMPs identified in the SWPPP and design features/preventative measures incorporated into existing mining operations would reduce impacts associated with erosion to a less than significant level:

- Surface disturbance shall be kept to the minimum that is required to construct and operate the Project.
- The Project shall be designed and constructed with erosion control features (e.g., berms, retention ponds, and vegetation cover) to minimize runoff and to protect on-site areas susceptible to erosion from surface flow or wind and to protect off-site receiving waters from being affected by pollutants.
- Areas of exposed soils resulting from excavation and grading work shall be weatherized by covering with materials such as rocks, vegetation, asphalt, or concrete, or through use of soil stabilization chemicals, watering, or other means to withstand and avoid erosion.
- Drainage control structures shall be used where necessary to direct surface drainage away from disturbed areas and to minimize runoff and sediment disposition down-slope from all disturbed areas. These structures shall include culverts, ditches, water bars (berms and cross ditches), and/or sediment traps. Polluted discharge from disturbed on-site areas shall be inhibited through implementation of appropriate storm water best management practices.
- Reclamation of disturbed areas shall occur concurrently with mining when and where practical.

**Level of Significance:** Less than Significant

**Mitigation Measures:** None Required

**Impact GS-3: Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.**

As discussed above in the Impact Analysis, kinematic and global slope stability modeling of the proposed reclaimed slopes for the Butterfield and Sentinel Quarries was performed by Pluess-Staufner (1992a, and 1992b) and by CHJ (2012) to ascertain the long term stability of the rock slopes. In addition, CHJ (2012)

evaluated the stability of the slopes of the proposed overburden that would be stockpiled in the B5 Pad.

In addition to ground shaking due to earthquakes, effects of seismic activity could include surface fault rupture, soil liquefaction, seismically-induced differential settlement, ground lurching, seismically induced landsliding, lateral spreading, earthquake-induced flooding, seiches, and tsunamis. These potential impacts have been discussed in detail above.

The Project design features, SWPPP BMPs, compliance with SMARA requirements and other regulatory requirements would minimize the potential that a geological unit or soil becomes unstable and result in an on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse to a less than significant impact.

**Level of Significance:** Less than Significant

**Mitigation Measures:** None Required

#### **3.6.4 Cumulative Effects**

No significant geologic impacts are expected to result from the Project. None of the mining or reclamation activities in the Project Area would produce steep slopes, unstable conditions or related geological impacts that would be cumulatively significant. The Project would not make a cumulatively considerable contribution to impacts in regards to geology or soils and the Project's cumulative impact is considered to be less than significant.

The existing and foreseeable projects identified in Table 3.0-1 have also been or will be evaluated for potential cumulative impacts associated with geology and soils. The overall cumulative impacts of these projects operating within their conditions of approval combined with the Project is considered to be less than significant.

#### **3.6.5 Alternatives**

The geologic conditions would be the same in all alternatives and the potential impacts associated with the mining operations and bench/slope design would not significantly differ between alternatives.

THIS PAGE IS INTENTIONALLY BLANK

### 3.7 Hazards and Hazardous Materials

The Initial Study and scoping process did not identify any potentially significant impacts related to hazards and hazardous materials; therefore, this section provides only a brief discussion on the affected environment and impacts for hazards and hazardous materials.

#### 3.7.1 Affected Environment

The Project Site is located in the San Bernardino Mountains within the SBNF. The existing mine and planned expansions are bounded on the south, west and north by mountainous undeveloped SBNF lands and to the east by patented open space with an active limestone mine. Other than mining, which has historically been active in the area since the 19<sup>th</sup> century, land use in the rugged mountainous area has been limited to occasional use by hikers and hunters. OHV use and fuel wood cutting have increased as more access roads were built. The closest residences are more than 2 miles away.

The area south of the Project can be characterized as a pinyon-juniper-mountain mahogany-rabbit brush woodland. According to the San Bernardino County General Plan Map F109B, the Project Site is located in a Fire Safety Review Area (FS-1). It also includes areas with moderate and steep terrain and moderate to heavy fuel loading contributing to high fire hazard conditions. The Project Site includes internal haul roads to allow for emergency egress and safe zones in the event of a wildfire.

The current mining operations at the existing Butterfield and Sentinel quarries include the transport, storage and use of hazardous materials common to the mining industry. Hazardous materials used as part of daily operations of onsite equipment and vehicles would primarily include:

- Diesel and gasoline motor fuels;
- Motor oils;
- Automatic transmission fluids;
- Hydraulic fluids;
- Lubricating grease;
- Brake fluids; and
- Antifreeze coolant.

Except for the fluids stored in or on the vehicles and equipment, and one AST containing diesel fuel, these materials are not stored within the existing quarry areas nor are they proposed to be stored in the quarry areas. Hazardous materials are stored in the maintenance shop located in the LVPP area, in accordance with State and local regulations. In addition, routine vehicle and equipment maintenance is conducted in the maintenance shop located in the LVPP area. These practices would not change with the implementation of the Project.

Blasting operations for the existing and proposed operations would require approximately one blast per week at each quarry during daylight hours. Blasting operations involve drilling, placement of charges

### 3.7 Hazards and Hazardous Materials

and detonation of charges. The blasting agent used at the quarries, ANFO, is currently stored separately in magazines at designated locations at the Omya Lucerne Valley operations. Explosives are only transported to the site by a licensed contractor as necessary.

#### 3.7.2 Regulatory Framework

##### 3.7.2.1 Federal

###### **Resource Conservation and Recovery Act (RCRA) - 40 CFR 261 et seq.**

RCRA regulates hazardous waste from the time that the waste is generated through its management, storage, transport, and treatment until its final disposal. RCRA regulations address numerous aspects of hazardous waste management including determination of hazardous waste, containment requirements, inspections, training, spill response, contingency plans, treatment and disposal, recycling, reporting and other areas of hazardous waste management. USEPA has authorized the California DTSC to administer the RCRA program in the State.

###### **Oil Pollution Prevention – 40 CFR 112 et seq.**

This regulation establishes procedures, methods, equipment and other requirements to prevent the discharge of oil and oil products from non-transportation related facilities into the waters of the United States. The regulation applies to facilities engaged in, among other activities, storing, processing, using or consuming oil and oil products. If specified storage thresholds are triggered (i.e., 1320 gallons in bulk containers), a Spill Prevention, Control and Countermeasure (SPCC) Plan must be prepared and implemented.

###### **Emergency Planning and Community Right-to-Know Act (EPCRA) - 42 USC 1101 et seq.**

EPCRA is also known as Title III of the Superfund Amendments and Reauthorization Act (SARA). This law helps communities protect public health, safety and the environment from chemical hazards. EPCRA provides the requirements for emergency release notification, chemical inventory reporting and toxic release inventories for facilities that handle chemicals in amounts greater than certain thresholds.

###### **Mine Safety and Health Administration (MSHA) – Public Law 91-173**

MSHA requires that the Mine Safety and Health Administration inspect each surface mine at least two times a year to determine compliance with health and safety standards and whether an imminent danger exists. MSHA also requires rigorous training and education programs for employers and employees in the mining industry.

**Occupational Safety and Health Act (OSHA) – 29 CFR 1910 et seq.**

Federal occupational safety and health regulations contain provisions for managing hazardous materials. OSHA promotes worker safety, worker training, and worker right-to-know. Hazardous Waste Operations and Emergency Response (HAZWOPER) training is required for workers who handle hazardous materials, as appropriate for their job description and responsibilities. In the State of California, CalOSHA (California Department of Occupational Safety and Health Administration) implements OSHA requirements.

**Safe Explosives Act**

The Safe Explosives Act of March 2003 requires background checks for all persons that handle, use, or have access to explosive materials. The Act also requires all persons who use explosives to obtain a Federal blasting license issued by the Bureau of Alcohol, Tobacco and Firearms (ATF).

**Department of Transportation (DOT) – CFR Title 49**

DOT regulates the transportation of hazardous materials, including explosive materials. The regulations include requirements that companies transporting hazardous materials maintain a current DOT HAZMAT Certification Registration and maintain current enrollment in a drug screening program. DOT also has stringent standards for all vehicles and containers used in the transport hazardous materials.

**3.7.2.2 State****Surface Mining and Reclamation Act (SMARA) – PRC Chapter 9, Sections 2710 – 2796**

SMARA provides a comprehensive set of regulations for surface mining and reclamation to ensure that adverse environmental and safety impacts are minimized and that mined lands are reclaimed to a usable condition. SMARA requires the preparation, submittal and approval of a Reclamation Plan that demonstrates compliance with the regulations. Critical elements of the Reclamation Plan are the quarry design and slope stability. The Reclamation Plan is reviewed by the DMR and approved by the County.

**California Occupational Safety and Health (CalOSHA) Mine Safety Orders – CCR Title 8, Subchapter 17 Sections 6950 – 7283**

The CalOSHA Mine Safety Orders regulate the safe operation of mining activities including:

- Article 4: Accident Prevention Program
- Article 6: General Safety Precautions
- Article 11: Materials – Storage and Handling
- Article 12: Ground Control
- Article 15: Mining Equipment and Practices
- Article 17: Loading, Hauling, and Dumping

---

### 3.7 Hazards and Hazardous Materials

- Article 22: Fire Prevention and Control
- Article 40: Inspections
- Article 50: Explosives
- Article 51: Storage of Explosives
- Article 52: Transportation of Explosives
- Article 53: Handling and Use of Explosives
- Article 54: Mixing Blasting Agents
- Article 55: Licensing of Blasters

#### **CalOSHA General Industry Safety Order Explosives and Pyrotechnics – CCR Title 8, Subchapter 7, Sections 5236 – 5374**

The CalOSHA regulations regarding the safe management, handling, storage and transportation of explosive materials include:

- Article 113: Explosives and Pyrotechnics – Competency and Qualification of Blasters
- Article 115: Transportation of Explosives
- Article 116: Handling and Use of Explosives – Blasting Operations

#### **Certified Unified Program Agency (CUPA) – California HSC Chapter 6.11 Sections 25404 et seq.; CCR Title 27 Sections 15100 et seq.**

The Unified Program allows certain State laws and regulation to be implemented by local governmental agencies that are certified by the California EPA. The Unified Program consolidates, coordinates, and makes consistent the requirements, permits, inspections and enforcement activities of the State's environmental and emergency response programs summarized below. The County of San Bernardino Fire Department, Hazardous Materials Division is the CUPA for the Project.

- **Hazardous Materials Release Response Plans and Inventories (Business Plans):** The California Office of Emergency Services (OES), which is now superseded by the California Emergency Management Agency (CalEMA) established the Business Plan Program (CCR Title 19, Sections 2620 et seq.) to prevent or minimize the damage to public health and safety and the environment from a release or threatened release of hazardous materials, and to satisfy community right-to-know laws. This is accomplished by requiring businesses that handle hazardous materials over threshold quantities to prepare a Hazardous Materials Business Plan that includes a hazardous materials inventory, site map, emergency plan, and a training program. The Business Plan must be submitted to the CUPA/emergency responders.
- **California Accidental Release Prevention (CalARP) Program:** The CalARP Program (CCR Title 19, Sections 2735 et seq.) was established to prevent accidental releases of those substances determined to potentially pose the greatest risk of immediate harm to the public and environment. The CalARP Program requires businesses that store or use certain hazardous materials over

threshold quantities to prepare a risk management plan, an assessment of the offsite hazard potential and the implementation of a program to minimize the risk of a release.

- **Aboveground Petroleum Storage Act (APSA) Program:** The APSA Program (HSC Section 25404 et seq.) requires that the owner/operator of aboveground petroleum/oil storage tanks with cumulative capacities over 1,320 gallons prepare a Spill Prevention, Control and Countermeasure (SPCC) Plan, conduct inspections, and implement the SPCC.
- **Hazardous Waste Generator, On-site Hazardous Waste Management and Treatment Permitting Programs:** These programs regulate the generation, management, treatment and disposal of hazardous waste (CCR title 22; HSC Sections 25100 et seq.). DTSC implements these programs through the State's hazardous waste generator regulations, Tiered Permitting program and the Unified Program. These programs apply to facilities that generate, treat, store, accumulate, handle, recycle, reuse and/or dispose of hazardous waste.
- **California Fire Code:** The Office of the State Fire Marshal is responsible for ensuring the implementation of the Hazardous Materials Management Plans and Hazardous Materials Inventory Statements Programs (CCR Title 27, Sections 15100 et seq.) The California Fire Code (CFC) also requires that a business that handles hazardous materials prepare a Business Plan.

### 3.7.2.3 Local

#### San Bernardino County Fire Department – CUPA

As discussed above, the State has delegated the following regulations to the local CUPA:

- Hazardous Materials Release Response Plans and Inventories (CCR Title 19, Sections 2620 et seq.)
- APSA Program (HSC Section 25404 et seq.);
- Hazardous Waste Generator and Onsite Hazardous Waste Management Programs (CCR title 22; HSC Sections 25100 et seq.);
- California Accidental Release Prevention (CalARP) Program (CCR Title 19, Sections 2735 et seq.);
- California Fire Code (CCR Title 27, Sections 15100 et seq.);

#### San Bernardino County Land Use Services Department

- Lead Agency: Surface Mining and Reclamation Act (PRC Chapter 9, Sections 2710 – 2796);
- Fire Hazard Abatement (FHA) (San Bernardino County Code 23.0301-23.0319);
- Fire Safety (FS) Overlay (San Bernardino County Development Code Chapter 82.13);
- Hazardous Waste (HW) Overlay (San Bernardino County Development Code Chapter 82.16);

### 3.7.3 Environmental Consequences/Impacts and Mitigation Measures

The evaluation conducted during the preparation of the Initial Study considered the following significance criteria from the CEQA Guidelines Appendix G in order to identify whether or not the Project would present a significant risk due to hazards or hazardous materials:

## 3.7 Hazards and Hazardous Materials

- a) *Create a significant hazard to the public or the environment through routine transport, use or disposal of hazardous materials?*
- b) *Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*
- c) *Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing school?*
- d) *Be located on a site which is included on a list of hazardous materials sites compiled pursuant Government Code Section 65962.5 and as a result, would it present a significant hazard to the public or the environment?*
- e) *For a project located within an airport land use plan or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the Project Area?*
- f) *For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the Project Area?*
- g) *Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*
- h) *Expose people or structures to a significant risk or loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.*

The evaluation concluded that the Project would either have no impact or a less than significant impact associated with the above criteria; therefore, in accordance with CEQA guidelines, further detailed evaluation is not provided in this Draft EIR/EIS. Substantiation for this conclusion is provided in the Initial Study (Appendix B) and is summarized below.

The use of hazardous materials would not change from the current hazardous material/waste practices that are currently being implemented at the existing quarries. No hazardous materials would be used or generated from the Project except for the use of diesel fuel, lubricants and other maintenance materials for mining equipment and blasting agents. The transport, storage, use and disposal of hazardous materials would be conducted in accordance with the Federal, State and local rules and regulations presented in Section 3.7.2. Project design features which minimize potential impacts have been incorporated into the Project (See Section 2.3.17). These include BMPs identified in the site SWPPP which are implemented during hazardous materials management as well as during specific mining operations such as re-fueling and maintenance of mine equipment. The existing diesel AST would continue to be used. It is double walled and in compliance with the APSA and fire code requirements as well as other applicable regulations. The current Hazardous Materials Business Plan on file with the San Bernardino CUPA includes a Hazardous Materials Inventory (updated annually), Hazardous Materials Training Plan and an Emergency Response and Contingency Plan. Blasting operations would continue to be relatively small to maximize selectivity and only occur approximately once per week per quarry and during daylight hours. The transportation, storage and handling of explosives would continue to be conducted per the regulatory requirements and only with licensed, trained and qualified professionals.

The management of hazardous materials as it relates to water quality is further discussed in Section 3.8.3.3.

The Project Site is not located on the list of hazardous materials site per Government Code Section 6596.25 and it is more than two miles from a public or private airport or air strip. The activities associated with the Project would not impede existing emergency response plans or services. All project vehicles and equipment would continue to be staged off public roads and would not block emergency access routes. The Project Site includes haul roads that allow for emergency egress and safe zones in the event of a wildfire.

No mitigation measures beyond the management practices and safety measures already in place as part of the existing Project design features and BMPs included in current mining operations are deemed necessary.

THIS PAGE IS INTENTIONALLY BLANK

### 3.8 Hydrology and Water Quality

This Section addresses potential impacts which could occur as a result of the Project on hydrology and water quality in the Project Area. Issues addressed include impacts on potential flooding, surface water drainage, groundwater flow, groundwater supply, water quality, and anticipated changes to the baseline conditions as a result of the Project. This evaluation is primarily based on the results of the Hydrology Technical Study (SLR, 5/2013), the Water Supply Assessment (WSA) (Lilburn Corporation, 6/2013) and the Jurisdictional Delineation (JD) (Tetra Tech, 11/2013). Copies of these reports are provided in Appendix I.

#### 3.8.1 Affected Environment

##### 3.8.1.1 Regional Setting

The Project consists of a mining operation located in the San Bernardino Mountains, one of the major ranges in the east-west-trending Transverse Ranges province of southern California (Figure 3.8-1 and Figure-3.8-2). These mountains form the southern boundary of the Mojave Desert geomorphic province. The north slope of the range rises abruptly from the desert floor in Lucerne Valley, with elevations along the north range crest reaching 8,400 feet amsl.

Rocks exposed in the San Bernardino Mountains range from Precambrian to Quaternary in age and include igneous, sedimentary and metamorphic rocks. The Mississippian Monte Cristo Limestone is the primary formation of economic interest in the Project Area. Limestone formations in the Project Area are over 1,000 to 2,000 feet thick and generally highly fractured.

#### Climate

The Project is located along the rugged semi-arid north range crest of the San Bernardino Mountains and extends south to the Holcomb Valley area. Climate in the Project Area is characterized by warm summers and cold winters. Climate data from National Climate Data Center (NCDC) Cooperative Observer Network (COOP) Station Number 040741 located approximately 10 miles southeast the Project in the town of Big Bear (elevation 6,757 ft amsl) is provided in (SLR, 5/2013). The greatest amounts of precipitation tend to occur in the winter months in the form of snow. Occasional thunderstorms occur during the summer months.

**Table 3.8-1 Climate data for Big Bear Lake, California (1960–2012)**

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
<b>Average high °F (°C)</b>	47 (8)	48 (9)	51 (11)	57 (14)	67 (19)	76 (24)	81 (27)	80 (27)	74 (23)	65 (18)	54 (12)	47 (8)	62.3 (16.7)

## 3.8 Hydrology

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
<b>Average low °F (°C)</b>	20 (-7)	22 (-6)	24 (-4)	28 (-2)	35 (2)	41 (5)	47 (8)	47 (8)	41 (5)	32 (0)	25 (-4)	20 (-7)	31.8 (-0.2)
<b>Precipitation inches (mm)</b>	4.56 (115.8)	4.16 (105.7)	3.10 (78.7)	1.30 (33)	0.49 (12.4)	0.14 (3.6)	0.72 (18.3)	0.94 (23.9)	0.54 (13.7)	0.82 (20.8)	2.00 (50.8)	3.21 (81.5)	21.98 (558.2)
<b>Snowfall inches (cm)</b>	14.8 (37.6)	15.3 (38.9)	13.0 (33)	3.3 (8.4)	0.6 (1.5)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.7 (1.8)	5.6 (14.2)	9.3 (23.6)	62.6 (159)

Source: Page 4 of Hydrology Technical Study (SLR Consulting USA Pty Ltd, 5/2013) which is based on data hosted on the Desert Research Institute Western Regional Climate Center website at the time the Hydrology Technical Study was prepared (<http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca0741>).

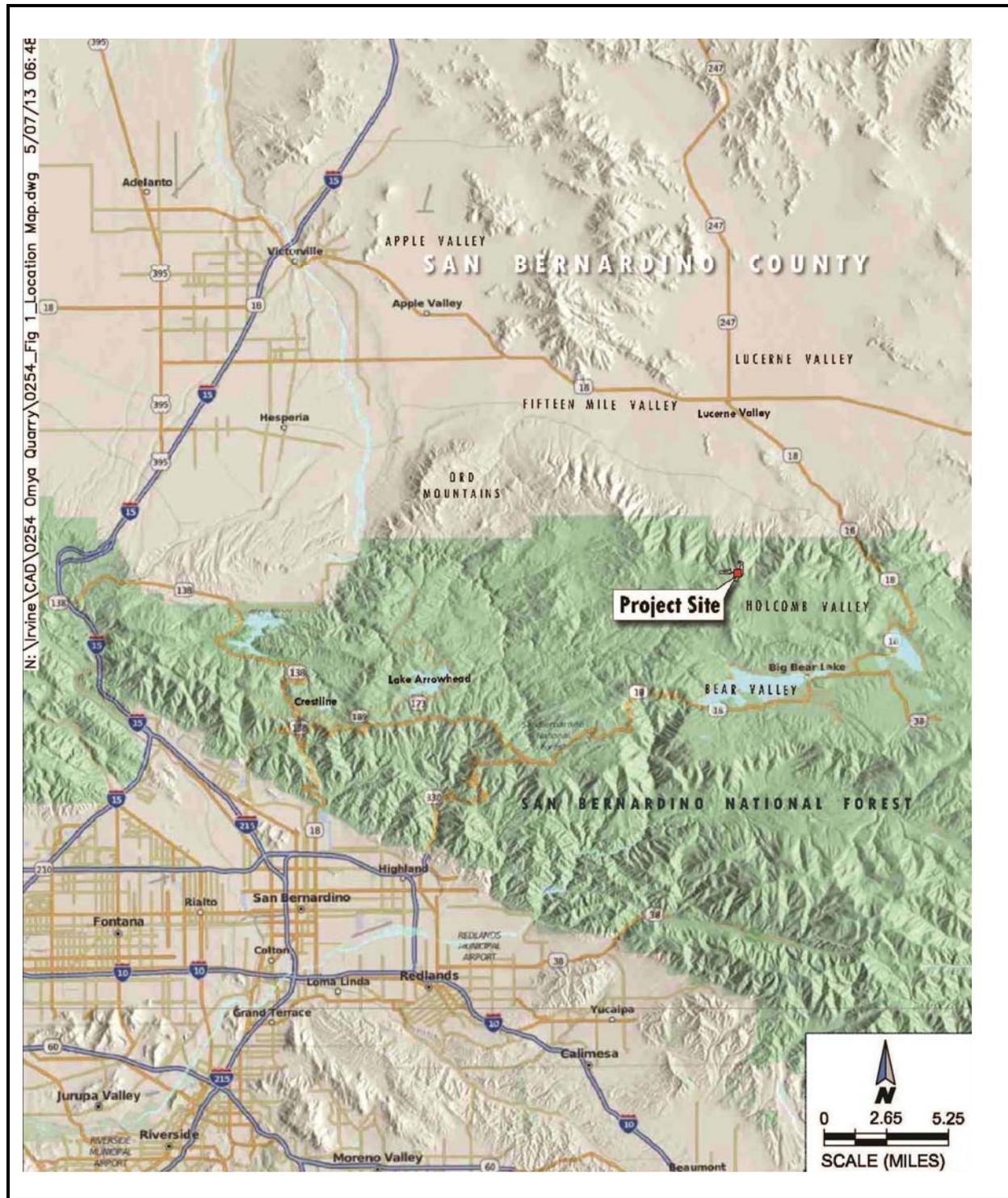
### Regional Surface Water Hydrology

Primary surface water bodies in the Project region include the Mojave River and Big Bear Lake. The Mojave River flows northward from its headwaters in the San Bernardino Mountains and is located approximately 15 miles west of the Project. Big Bear Lake is located approximately 5 miles south of the Project. Numerous watercourses flowing into Lucerne Valley from the surrounding mountain ranges terminate at a series of dry lakebeds located north of the Project.

The Federal Emergency Management Agency has not prepared flood insurance maps for the Project Area. The Project is located at a high elevation (approximately 7,500 feet) and is therefore presumed to be outside of the 100-year floodplain.

According to the Lahontan Basin Water Quality Control Plan, beneficial uses of Holcomb Creek include municipal supply, agricultural supply, recreational, cold freshwater habitat, and wildlife habitat.

According to the Colorado River Basin Water Quality Control Plan, beneficial uses designated for Crystal Creek include municipal, agricultural, groundwater recharge, recreation, warm freshwater habitat, and wildlife habitat. Water bodies near the Project Area not specifically listed (“Unlisted”) in the Water Quality Control Plan are by default designated as municipal supply, freshwater replenishment, groundwater recharge, recreation, warm freshwater habitat, wildlife habitat, and for rare species habitat. Groundwater in the region is mainly stored in, and produced from, alluvial deposits located in the low lying areas north of the Project in Lucerne Valley. Groundwater in the Lucerne Valley Planning Area is designated with municipal, industrial, and agricultural supply beneficial uses.



■ Project Site Location (Geographic Location)  
 California Zone 5 (FIPS 405); 6881064.78 1943854.58  
 Lat/Lon: 34° 19' 45.0165" N, 116° 56' 31.3945"  
  
 Source: SLR Consulting USA Pty Ltd, 5/2013

**Figure 3.8-1 Location Map - Transverse Ranges Province**

THIS PAGE IS INTENTIONALLY BLANK

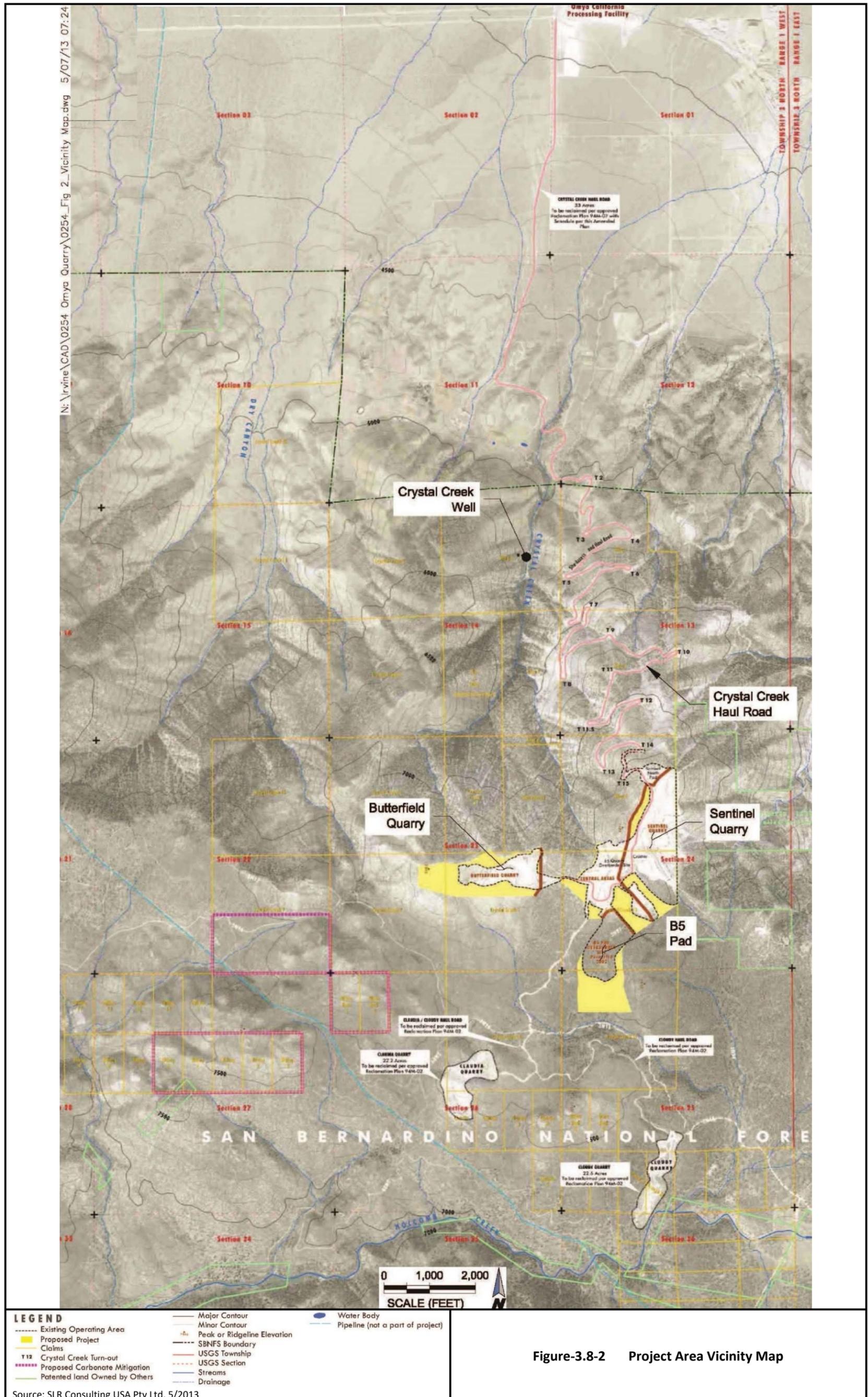


Figure-3.8-2 Project Area Vicinity Map

THIS PAGE IS INTENTIONALLY BLANK

### 3.8.1.2 Local Setting

#### Local Surface Water Hydrology

Figure-3.8-3 shows Omya's current mining operations relative to local surface watershed boundaries that exist within and near the mining operations. For the purposes of this evaluation, watersheds shown in the figures were delineated to the convergence points shown. The full aerial extent of each watershed is actually larger than depicted.

The Project is located on the crest of the San Bernardino Mountains, along the divides of multiple watersheds. Drainage generally flows away from the Project Site. The Project Area is located within the Crystal Creek, Furnace Canyon Creek, and Holcomb Creek watersheds.

Crystal Creek, Furnace Canyon Creek, and all other watercourses near the Project Site generally flow only as a result of storm events. Crystal Creek terminates in a dry lakebed in the Lucerne Valley several miles north of the Project. Furnace Canyon Creek terminates several miles northeast of the Project in Lucerne Valley. Drainages flowing south toward Holcomb Creek from the Project are unnamed and flow rarely as a result of storm events. Holcomb Creek is tributary to Deep Creek, which ultimately flows into the Mojave River.

Omya staff indicated that the Crystal Creek Canyon contains several small seeps or springs that flow intermittently in response to storm events. Certain reaches of lower Crystal Creek contain intermittent flow as a result of these springs.

Most of the Project Area is graded to drain into the Sentinel and Butterfield Quarries to avoid discharges to the surrounding natural drainages. As a result, the Quarries have created their own watersheds.

The Crystal Creek Haul Road provides a means of transportation between the Project Site at elevations around 7,500 feet, and the LVPP area at approximately 3,900 feet amsl. The haul road contains grades up to 20% and a series of switchbacks. The haul road drains to Crystal Creek or an unnamed tributary of Crystal Creek. A very small portion of the haul road may drain toward the Furnace Creek watershed.

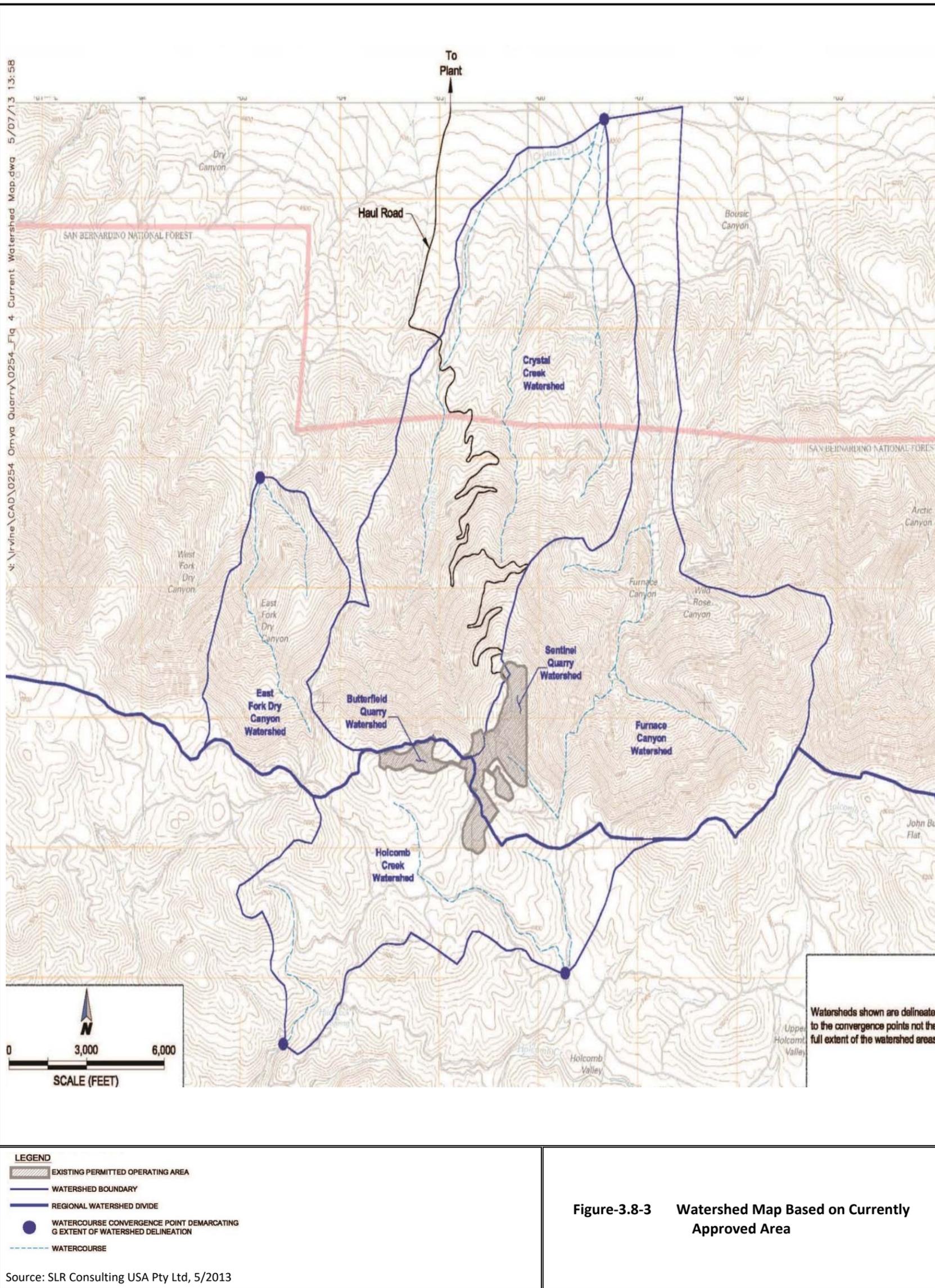
No water quality data were found for Crystal Creek or Furnace Canyon Creek. No water quality samples were obtained due to lack of flow during the site visits conducted by SLR.

A Jurisdictional Delineation (JD) survey was conducted for unnamed and named drainages associated with a 214.8 acre survey area in and around the Project Site. The survey included areas currently being mined and portions of the Project Site that are undisturbed and part of the proposed expansion areas. The purpose of the JD was to determine the limits of waters subject to regulatory authority under Section 404 and 401 of the CWA and waters regulated under California Fish and Game Code 1600 et seq.

---

### 3.8 Hydrology

Four drainages with signs of ordinary high water mark (OHWM) features were delineated. Three of these drainages have clear connections to the Mojave River and were determined to be jurisdictional Waters of the U.S. and the State. However, only one of them was found to be within the limits of planned disturbances associated with the Project. A total of 0.089 acres of this drainage would be impacted by the Project. The fourth drainage terminates in Lucerne Dry Lake, and was determined not to be a jurisdictional Water of the U.S. or State. Section 3.4.3.1 of the Biological Resources evaluation provides a detailed discussion of the JD and the specific drainages are identified on Figure 3.4-3 of Section 3.4.



**Figure-3.8-3 Watershed Map Based on Currently Approved Area**

THIS PAGE IS INTENTIONALLY BLANK

### **Groundwater Conditions and Water Supply**

Little or no groundwater production is conducted in the mountainous vicinity of the Project Area. As a result, groundwater conditions in and around the Project Site are poorly characterized. Omya has drilled more than 100 exploration core holes within the Project Area near the Butterfield and Sentinel Quarries, and groundwater has not been observed in any of these core holes. Exploration drilling 100 feet below the proposed final quarry floor did not penetrate any water sources or aquifers. Similarly, SLR did not observe springs or seeps in or near the Project Area during the site visits conducted for the Hydrology Study.

Water used by Omya's LVPP and mining operations is obtained from two production wells. One of these wells is located near the LVPP in the Lucerne Valley. The second well is located in Crystal Creek Canyon near Turn 5 on the Crystal Creek Haul Road at an elevation of about 5,360 feet amsl.

The Crystal Creek well was installed in 1990. Depth to groundwater at the time of well installation was recorded to be 85 feet below ground surface. Water pumped from this well is conveyed via pipeline to the Project Area for dust suppression at the quarries, overburden placement areas, haul roads, and primary crusher site. This water is also used for irrigation at areas undergoing reclamation.

The LVPP well was installed in 1987. The well consists of an 18-inch casing, and is screened between 633 to 1,258 feet amsl, with several relatively short blank intervals within the screened interval. Depth to groundwater at the time of well installation was recorded at 867 feet bgs.

Water supply in the Lucerne Valley is administered by the Mojave Water Agency (MWA). Local aquifers within the MWA jurisdiction have been in overdraft since the early 1950s. MWA was formed in 1960 to manage groundwater resources in the Mojave River Basin and Morongo Basin, to provide alternative water as needed, and to mitigate overdraft conditions. MWA is one of 29 State Water Project contractors permitted to deliver water from the California Aqueduct. MWA administers the adjudication of groundwater resources within its 3,400 square-mile area. The court-sanctioned adjudication grants groundwater rights to users based upon the maximum amount they pumped between 1986 and 1990. Most wells in the Lucerne Valley located near the Project are used for residential and domestic water supply purposes.

The MWA jurisdiction is subdivided into five subareas. To maintain proper water balances within each subarea, the MWA administered a decreasing Free Production Allowance (FPA) in each subarea during the first five years (i.e., during the 1990s). Producers are allowed to extract as much water as they need annually to meet their requirements, as long as their FPA share is not exceeded. Omya has a FPA share of 19 AF/yr of groundwater. Omya's water production between 2007 and 2011 averaged approximately 13.8 AF/yr (18th Annual Report, MWA 2012).

---

### 3.8 Hydrology

#### 3.8.2 Regulatory Framework

##### 3.8.2.1 Federal

###### **Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.)**

The Federal Water Pollution Control Act, commonly known as the Federal Clean Water Act (CWA), establishes the basic structure for regulating discharges of pollutants into the surface waters of the United States. The CWA gives US EPA authority to implement pollution control programs such as setting water quality standards and criteria for contaminants in surface waters. The CWA does not deal directly with groundwater or with water quantity issues. Section 208 requires the use of BMPs to control releases of pollutants in storm water at construction sites. Section 303(d) requires states to identify waters for which effluent limits are insufficient to achieve applicable water quality standards and to prepare plans for improving the quality of those water bodies. Section 401 requires the federal government to obtain certification from states that projects are consistent with water quality standards. Section 402(p)(3)(B)(iii) authorizes the National Pollutant Discharge Elimination System (NPDES) permit program to control water pollution by regulating point sources that discharge pollutants into Waters of the United States. Point sources are discrete conveyances such as pipes or man-made ditches. Section 404 authorizes the Army Corps of Engineers (USACE) to regulate projects that will dredge or fill Waters of the U.S.

Construction projects and many industrial facilities must comply with NPDES Stormwater permits issued by US EPA to the state for categories of discharges in order to control the release of industrial chemicals in stormwater runoff. These stated held permits are called general permits under which construction projects and industrial facilities must apply for coverage and then comply with provisions therein. Also, polluted storm water runoff is often transported to municipal separate storm sewer systems (MS4s) and ultimately discharged into local rivers and streams without treatment. U.S. EPA issues MS4 permits to local governments under the NPDES program. Stormwater discharges are generated by runoff from land and impervious areas such as paved streets, parking lots, building rooftops during rainfall events, and often contain pollutants in quantities that could adversely affect water quality. The primary method to control storm water discharges is through the use of BMPs.

###### **Federal Safe Drinking Water Act of 1974**

First enacted in 1974 and substantively amended in 1986 and 1996, the Federal Safe Drinking Water Act authorizes the U.S. EPA to set national health-based standards for drinking water to protect against both naturally occurring and manmade contaminants that may be found in drinking water.

### 3.8.2.2 State

#### **Porter-Cologne Water Quality Control Act**

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) [§13000 et seq.] was enacted to establish a regulatory program to protect water quality and beneficial uses of waters of the state of California. It created the State Water Resources Control Board (SWRCB) and RWQCB to plan, implement, manage and enforce water quality protection and management requirements. The RWQCBs are empowered by the Porter-Cologne Water Quality Control Act to require compliance with State and local water quality standards.

The Project Area is located within both the Colorado River and Lahontan RWQCB geographic areas. The NPDES Permitting program is administered by the SWRCB. To obtain coverage under a General Stormwater permit, applicants must prepare and submit a NOI to the SWRCB, develop a SWPPP, collect stormwater samples pursuant to the General Permit monitoring program, and implement appropriate BMPs.

#### **Senate Bill 610 Water Supply Assessment**

Water Code §§10910 through 10915 were amended by Senate Bill 610 (SB 610) in 2002. SB 610 requires project to perform an assessment of available water supplies called a Water Supply Assessment (WSA). WSAs determine if there are sufficient water resources available to serve the demand generated by the project, as well as the reasonably foreseeable demand in the region over the next 20 years under average normal year, single dry year, and multiple dry year conditions.

#### **Sustainable Groundwater Management Act**

The California Department of Water Resources (DWR) has implemented the California Statewide Groundwater Elevation Monitoring (CASGEM) Program in response to legislation enacted in California's 2009 Comprehensive Water package. As part of the CASGEM Program and pursuant to the California Water Code Section 10933, DWR is required to prioritize California groundwater basins, so as to help identify, evaluate, and determine the need for additional ground water level monitoring. The project site is within the Upper Mojave River Valley hydrologic Subarea, which is listed by DWR as a "high-priority" subbasin.

The Sustainable Groundwater Management Act (SGMA) established a process for adjudicated basin watermasters or local agencies to report information according to [Water Code Section 10720.8](#). The Mojave Water Agency has been granted authority to regulate groundwater withdrawal and charge for replenishment water. The Adjudication established a "physical solution" for the Mojave Basin Area Judgment, wherein, limits were set on the amount of groundwater production that can occur in each subarea without incurring an obligation to buy imported water.

### 3.8 Hydrology

The applicant is allowed to produce as much water as needed to meet the project's demand as long as the operation is subjected to compliance with the "Physical Solution" set forth in the Mojave Basin Area Judgment (Final Judgment after trial in the Riverside County Superior Court (Case No. 208568, January 10 1996). The underlying assumption of the Adjudication was that sufficient water will be made available to meet the needs of the Mojave Basin producers in the future from a combination of natural supply, imported water, water conservation, water reuse and transfers of Free Production Allowance (FPA) among parties. If a project applicant stipulates to the Adjudication, the resulting impact of increased pumping to meet the proposed project's demand is legally considered a "net zero impact" on the available water supplies. The Physical Solution defines individual rights of all water producers with the adjudicated Basin area in a manner which will equitably allocate the natural water supplies and which will provide for equitable sharing of costs for Supplemental Water. The Judgment provided sufficient information and data to formulate a reasonable and just allocation of existing water supplies as between the individual hydrologic Subareas within the Basin Area and as among the water users within each Subarea to proceed with orderly water resource planning and development.

#### 3.8.2.3 Local

##### County of San Bernardino General Plan (2012)

The County of San Bernardino General Plan includes goals and policies directed toward protecting and maintaining water supply and water quality within the County. Select goals and policies relevant to analysis of the Project are listed below.

***GOAL CI 11.*** *The County will coordinate and cooperate with governmental agencies at all levels to ensure safe, reliable, and high quality water supply for all residents and ensure prevention of surface and ground water pollution.*

***Policy CI 11.1*** *Apply federal and state water quality standards for surface and groundwater and wastewater discharge requirements in the review of development proposals that relate to type, location and size of the proposed project to safeguard public health.*

***Policy CI 11.2*** *Support the safe management of hazardous materials to avoid the pollution of both surface and groundwaters. Prohibit hazardous waste disposal facilities within any area known to be or suspected of supplying principal recharge to a regional aquifer.*

***Program CI 11.12*** *Prior to approval of new development, ensure that adequate and reliable water supplies and conveyance systems will be available to support the development, consistent with coordination between land use planning and water system planning.*

***Program CI 11.13*** *Prevent surface and groundwater pollution and continue the cleanup of contaminated waters and watersheds.*

**GOAL CI 13.** *The County will minimize impacts to stormwater quality in a manner that contributes to improvement of water quality and enhances environmental quality.*

**Policy CI 13.1** *Utilize site-design, source-control, and treatment control BMPs on applicable projects, to achieve compliance with the County Municipal Stormwater NPDES Permit.*

**Policy CI 13.2** *Promote the implementation of low impact design principles to help control the quantity and improve the quality of urban runoff. These principles include:*

- a) *Minimize changes in hydrology and pollutant loading; ensure that post development runoff rates and velocities from a site do not adversely impact downstream erosion, and stream habitat; minimize the quantity of stormwater directed to impermeable surfaces; and maximize percolation of stormwater into the ground where appropriate.*
- b) *Limit disturbance of natural water bodies and drainage systems; conserve natural areas; protect slopes and channels;*
- c) *Preserve wetlands, riparian corridors, and buffer zones; establish reasonable limits on the clearing of vegetation from the Project Site;*
  - a. *Establish development guidelines for areas particularly susceptible to erosion and sediment loss; and*
  - b. *Require incorporation of structural and non-structural BMPs to mitigate projected increases in pollutant loads and flows.*

**GOAL CO 5.** *The County will protect and preserve water resources for the maintenance, enhancement, and restoration of environmental resources.*

**Program CO 5.4** *Drainage courses will be kept in their natural condition to the greatest extent feasible to retain habitat, allow some recharge of groundwater basins and resultant savings. The feasibility of retaining features of existing drainage courses will be determined by evaluating the engineering feasibility and overall costs of the improvements to the drainage courses balanced with the extent of the retention of existing habitat and recharge potential.*

- a) *Seek to retain all natural drainage courses in accordance with the Flood Control Design Policies and Standards where health and safety is not jeopardized.*
- b) *Prohibit the conversion of natural watercourses to culverts, storm drains, or other underground structures except where required to protect public health and safety.*
- c) *Where technically feasible as part of its efforts to protect residents from flood hazards, require naturalistic drainage improvement where modifications to the natural drainage course are necessary. As an example, channel linings that will allow the re-establishment of vegetation within the channel may be considered over impervious linings (such as concrete). Where revegetation is anticipated, this must be addressed in the channel's hydraulic analysis and the design of downstream culverts.*

### 3.8 Hydrology

- d) *Establish an economically viable flood control system by utilizing channel designs including combinations of earthen landscaped swales, rock rip-rap-lined channels, or rock-lined concrete channels. Where adjacent to development, said drainage will be covered by an adequate County drainage easement with appropriate building setbacks established there from.*

#### 3.8.3 Environmental Consequences/Impacts and Mitigation Measures

##### 3.8.3.2 Methodology

Hydrology and water quality impacts were determined based on an evaluation of existing Project Area surface and groundwater hydrology and water quality conditions including consideration of the Project water consumption and potential changes to surface and groundwater hydrology and quality due to the Project ground disturbance and land uses. Reports used in this evaluation include:

- Hydrology Technical Study (SLR, updated 2017);
- Field reconnaissance July 2012 and April 2013;
- Water Supply Assessment (Lilburn, June 2013);
- Jurisdictional Delineation of Wetlands and Waters Subject to Regulatory Authority (Tetra Tech, November 2013); and
- Stormwater Pollution Prevention Plan (Sespe, 2017).

Scoping letters that contained specific concerns regarding hydrology and water quality included, but were not limited to, the following:

- Letter from U.S. EPA, Region 9 (March 26, 2013);
- Letter from Lahontan RWQCB (June 7, 2013); and
- Letter from the Center for Biological Diversity (June 4, 2013).

A copy of the Scoping Report which includes all comment letters is provided in Appendix B.

##### **Hydrology Technical Report**

The objectives of the SLR Hydrology Technical Report (provided in Appendix I) were to:

- Describe the existing hydrologic conditions at the Project Site;
- Evaluate potential direct and indirect impacts to water quality associated with the Project and the surrounding Project Area (i.e. Crystal Creek Haul Road); and
- Evaluate potential direct or indirect impacts to surface water and/or groundwater flow associated with the Project and the surrounding Project Area (i.e. Crystal Creek Haul Road).

Figure-3.8-3 and Figure 3.8-4 provide watershed maps based on the currently approved area and on the Project's Amended Plan of Operation and Reclamation Plan. SLR conducted inspections of the Project Area in July 2012 and April 2013 during dry weather conditions. No discharges or obvious evidence of

extraordinary erosion or previous problematic discharges from the Project Area were observed. Based on field observations and review of Project Area topography, discharges could potentially occur from the Project Area at the following locations:

- The northwest-facing non-vegetated slope of the B5 pad is graded toward a tributary of Crystal Creek. The crown of this slope has been bermed so that the drainage area contributing to this possible discharge would be the slope itself. According to Omya, historic sediment releases may have occurred at this location, but none within the last 20 years through the implementation of grading and other control measures.
- The southern slope of the B5 Pad is graded to drain toward the Holcomb Creek watershed. However, this potential discharge is mitigated or precluded by sediment and erosion control measures. Areas along the base of the pad will convey runoff toward retention areas.

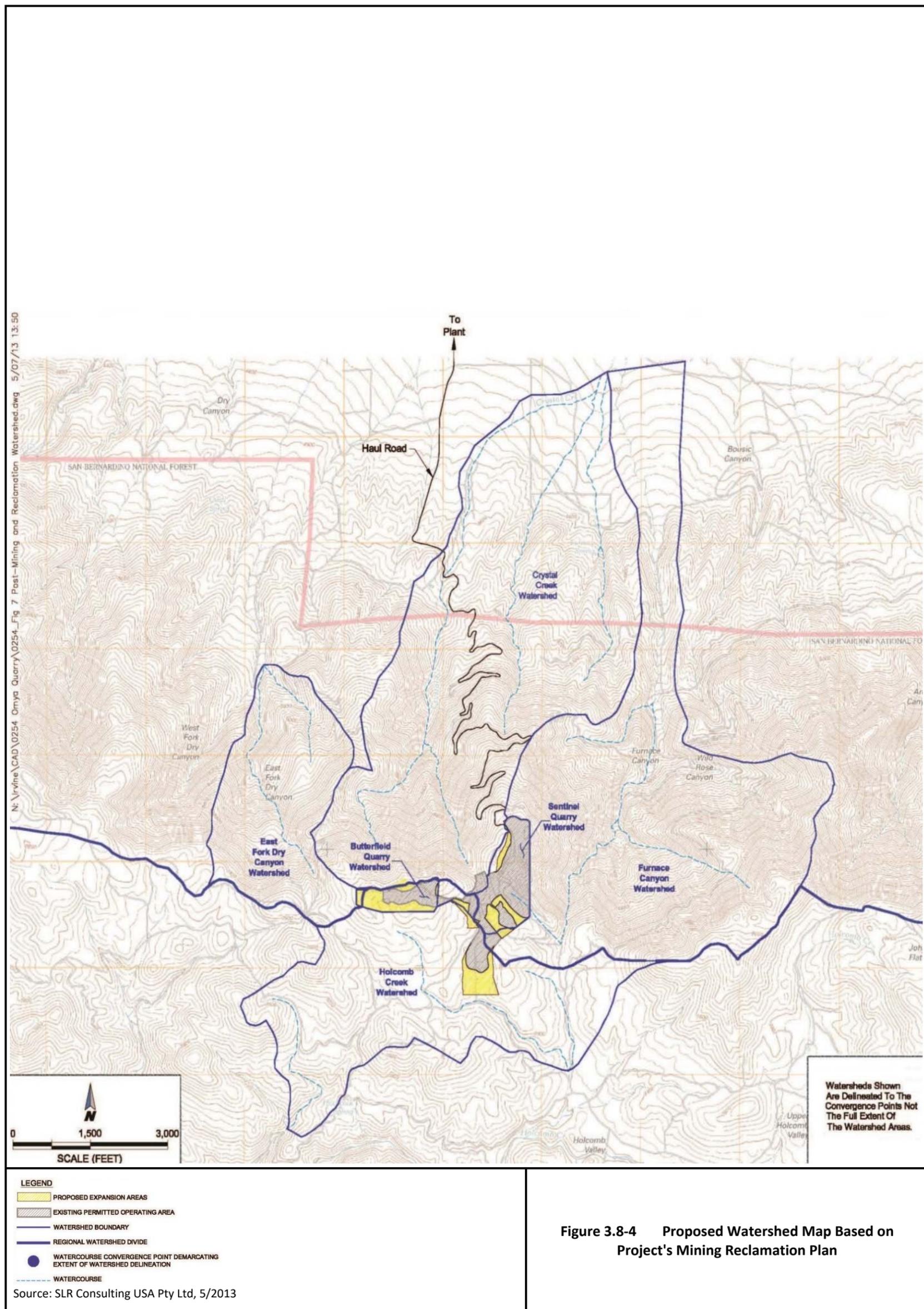
SLR observed evidence of erosion on the Crystal Creek Haul Road, such as development of rills. Such erosion is considered typical for dirt roads in mountainous areas, and not considered to be problematic warranting further study. SLR also observed evidence of discharges from the haul road sedimentation basins located at Turns 4 and 6 (Figure-3.8-2). These basins showed evidence of detaining runoff recently. Both basins were fitted with spillways to convey overflow into the unnamed Crystal Creek tributary east of the haul road. SLR observed formation of rills in areas downgradient of the spillway, suggesting previous discharges from the spillways have occurred.

Omya has deployed structural control measures to minimize or eliminate erosion and releases of sediment from the Project Area during mining operations. Omya would continue to use these control measures throughout the Project and after reclamation. These controls are shown on Figure 3.8-5 and Figure 3.8-6, and generally include the following:

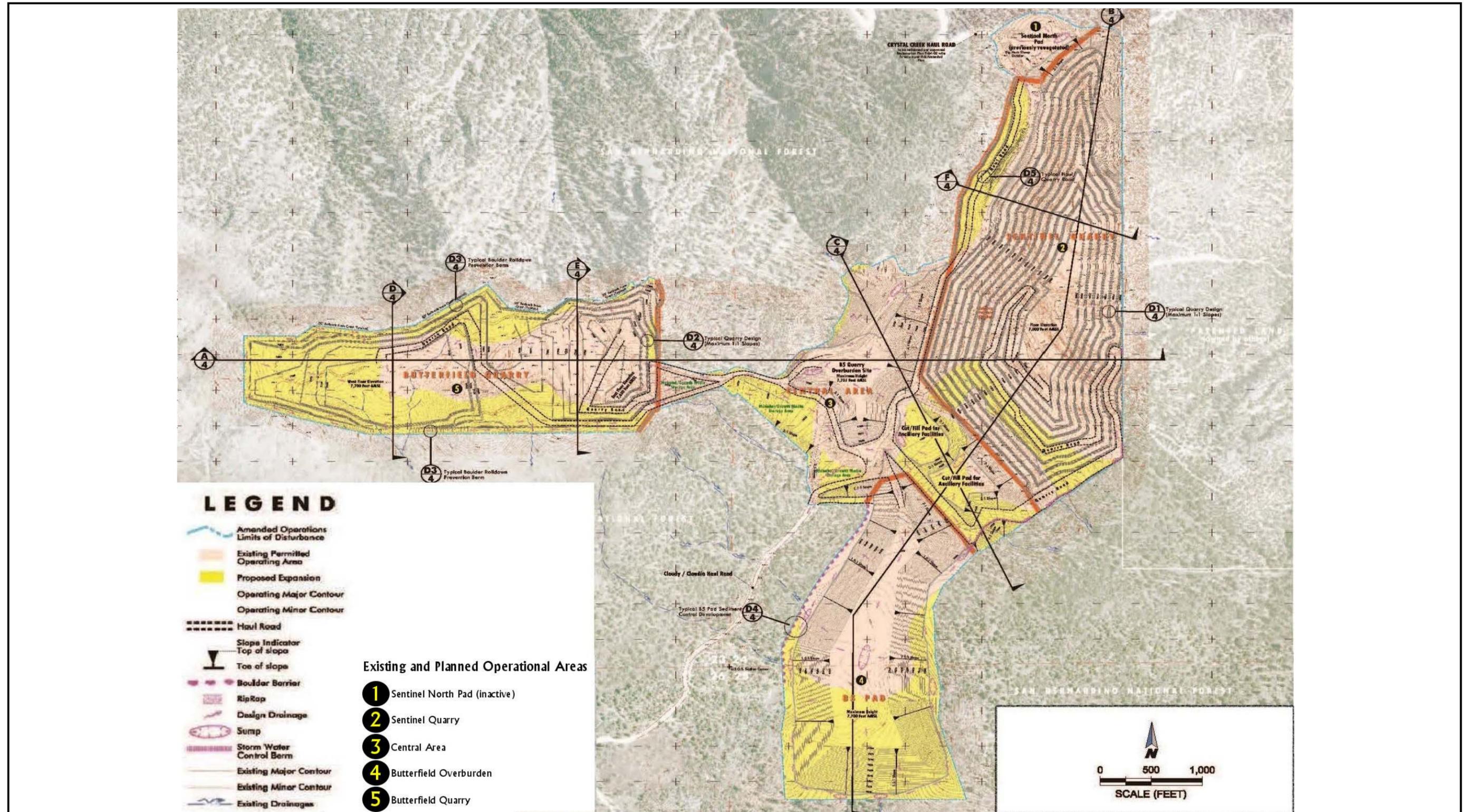
- Where possible, the Project Area has been graded to direct runoff into the quarries, and to avoid offsite discharges.
- Haul roads within the Project Area are graded to direct runoff toward retention areas within the Project Area, such as the quarries, and to avoid offsite discharges. Omya has installed sedimentation detention basins along the Crystal Creek Haul Road between the quarries to the LVPP at Turns 1, 2, 4, 6, 7, 10, 12, 13, and 14 (haul road turns are depicted in Figure-3.8-2).
- Rock dams have been installed at the toe of the B5 Pad slopes to detain runoff and avoid discharges.

These controls (i.e., BMPs) are documented in the USFS approved Drainage Control Program for the Crystal Creek Haul Road (Pluess-Staufer (California), Inc., 1992) and the Omya SWPPP (Appendix I). Omya inspects these control measures after each major storm event. Maintenance is then conducted as appropriate based on the results of the inspections.

THIS PAGE IS INTENTIONALLY BLANK



THIS PAGE IS INTENTIONALLY BLANK



Site Reference: Amended Plan of Operations for Omya, California Butterfield and Sentinel Quarries, September 2012  
 Source: SLR Consulting USA Pty Ltd, 5/2013

**Figure 3.8-5 Project Mine Plan with Erosion and Sediment Control Measures**

THIS PAGE IS INTENTIONALLY BLANK



Site Reference: Amended Plan of Operations for Omya, California Butterfield and Sentinel Quarries, September 2012

Source: SLR Consulting USA Pty Ltd, 5/2013

Figure 3.8-6 Reclamation Plan with Sediment and Erosion Control Measures

THIS PAGE IS INTENTIONALLY BLANK

### Water Supply Assessment

A WSA (Lilburn, June 2013) is provided in Appendix I.

The existing Omya mining and LVPP operations utilize groundwater from two production wells for dust control and revegetation of areas that are inactive and/or being reclaimed. The average annual production from the two wells, verified by the Watermaster during the 5-year period of 2007/2008 to 2011/2012, was 13.8 acre-feet/year.

Omya intends to increase production from active quarries (Butterfield, Sentinel and White Knob) to a combined total of 680,000 tpy. For evaluation purposes in this Draft EIR/EIS, it is assumed that the Project would allow the maximum production of 680,000 tpy to be extracted exclusively from the Butterfield and Sentinel Quarries. An increase in water consumption of 3.75 acre-feet/year for dust control is expected concurrent with the increase in production rates and represents an increase of 27% over the verified 5-year average water production. (If the Butterfield, Sentinel and White Knob Quarries were all in operation, then it is estimated that an additional 1.5 acre-feet/year would be required for the Butterfield and Sentinel Quarries, and 2.25 acre-feet/year for the White Knob Quarry, for a total increase in water production of 3.75 acre-feet/year.) The water supply would continue to be the existing Omya wells which use groundwater pumped from the Este Subarea of the adjudicated Mojave Basin.

The Project's net increase in demand of 3.75 acre-feet/year represents 0.25% of the minimum Este Subarea groundwater deficit (1,500 acre-feet) projected to occur during a single dry year event, and 0.12% of the maximum deficit (3,050 acre-feet). The single dry year event is based on the Agriculture 2 Scenario which was adopted as part of the Mojave Water Agency 2004 Regional Water Management Plan as the basis for future planning. Under this scenario, there are assumed significant decreases in agricultural consumptive use based on voluntary transfers of FPA from agricultural to non-agricultural uses. Existing water uses in the Este Subarea are primarily agricultural followed by industrial.

As previously discussed, Omya has a FPA that was allocated as part of the Basin Adjudication. Omya's original (1993) base annual production (BAP) was set at 23 acre-feet per year. This has been ramped down annually to a FPA that is currently 19 acre-feet per year (82.6% of BAP). Any groundwater that Omya pumps over and above the FPA amount is subject to replacement. Replacement can occur either by paying the Watermaster to purchase supplemental water from MWA or by acquiring/transferring unused FPA within the subarea from another party to the Judgment. Historically, Omya has had prior year carryover from unused FPA. In 2011/2012, Omya produced (verified production) 14 acre-feet of its 19 acre-foot FPA, with a prior year carryover of 19 acre-feet, and resulting in a total adjusted FPA of 38 acre-feet for the 2013/2014 program year.

## 3.8 Hydrology

**Project Design Features**

As discussed above and provided in Section 2.3.17, the Project has incorporated design features and environmental protection measures to minimize or avoid potential environmental impacts. Table 3.8-2 provides a summary of the Project design features that were considered in the following analysis for hydrology and water quality.

**Table 3.8-2 Summary of Hydrology and Water Quality Project Design Features**

<b>Stormwater</b>	
SW-1	Comply with the SWPPP BMPs.
<b>Groundwater</b>	
GW-1	Ensure that water production will remain within Omya's designated FPA.
GW-2	Comply with all water quality and hazardous materials management regulatory requirements and identified BMP/design features.
GW-3	Comply with SMARA and reclamation activities identified in the approved Reclamation Plan.
<b>Hazardous Materials</b>	
HM-1	Comply with the Hazardous Materials Business Plan, SWPPP, SPCC Plan and BMPs as required by these plans and hazardous materials and waste regulatory requirements.
HM-2	Ensure that the use, transport, management, storage and disposal of fuels (i.e.; diesel and gasoline) and other hazardous materials used for mining operations (i.e.; motor oil, transmission fluids, hydraulic fluids, lubricating greases, brake fluids and/or antifreeze) are in accordance with Federal, State and local hazardous materials and waste management regulations.
HM-3	Inspect and maintain the fuel above ground storage tank to ensure that the secondary containment (i.e.; double wall tank) and spill prevention controls and countermeasures are present and/or operating as required.
HM-4	Maintain an updated Hazardous Materials Business Plan and hazardous materials inventory per CUPA requirements.
HM-5	Minimize blasting events to the extent possible (approximately once per week per quarry) and only blast during daylight hours.
HM-6	Conduct transportation, storage and handling of explosives in accordance with regulatory requirements and only with licensed, trained and qualified professionals.
HM-7	Maintain all emergency and spill response equipment in proper operating condition and have available at areas where hazardous materials and waste are used, transported and/or stored.
HM-8	Ensure all personnel are appropriately trained in hazardous materials and waste management, including spill prevention and response procedures.

### 3.8.3.2 Significance Criteria

The significance threshold criteria for evaluation of potential impacts to hydrology and water quality were developed from the CEQA Guidelines Environmental Checklist, Appendix G and quoted below.

The Project would have a significant impact to hydrology or water quality if it would:

- a) *Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater water quality;*
- b) *Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);*
- c) *Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;*
- d) *Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;*
- e) *Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems, cause flooding on- and off-site, or provide substantial additional sources of polluted runoff;*
- f) *Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;*
- g) *Place within a 100-year flood hazard area structures which would impede or redirect flood flows;*
- h) *Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or*
- i) *Inundation by seiche, tsunami, or mudflow.*

Regarding items “f” and “g,” the Project does not include the construction of housing and the Project Area is not within a 100-year floodplain. As such, these criteria are eliminated from further consideration.

### 3.8.3.3 Impacts and Mitigation Measures

The Project Area is currently an active limestone mine. The total approved operational area is currently 137.5 acres. The Project would add 94.9 acres for a total Project Area of 232.4 acres. Expansions to the existing operational area would generally include expansions of the Butterfield and Sentinel Quarries, and southward expansion of the B5 Pad, which is used for storage of overburden materials excavated during removal of ore grade materials, and fines produced from the crushing system.

### 3.8 Hydrology

#### Impact Analysis

##### *Runoff from the Quarries and B5 Pad*

Geologic materials exposed in the quarries and stored in the B5 Pad consist mainly of calcium carbonate and similar minerals, and do not contain deleterious materials or chemical constituents capable of affecting groundwater. Groundwater would not be encountered during the Project mining activities and groundwater quality would not be affected. Process water would not be directly discharged to groundwater or surface water as part of the Project.

Omya has obtained coverage for stormwater discharges under the Industrial General Permit (IGP, 2014-0057-DWQ NPDES General Permit No CAS000001) through the SWRCB. Stormwater runoff from the Project Area would be addressed through the site SWPPP and implementation of BMPs (Table 3.8-2). The primary objective of the SWPPP and BMPs is to minimize the potential that polluted runoff, including runoff containing suspended solids and sediment, goes off-site.

##### *Groundwater and Surface Water*

There are two components of the Project water use and potential impact on groundwater supplies. These components are:

- Consumptive water use during mining and processing;
- Reduced surface runoff, potentially reducing direct groundwater recharge of the alluvial aquifer to the north.

The water use for the Project, assuming maximum production at 680,000 tpy would be exclusively from the Butterfield and Sentinel Quarries, is expected to increase by 3.75 AF/yr. The water would be used primarily for dust control. (If the Butterfield, Sentinel and White Knob Quarries were all in operation, it is estimated that 1.5 acre-feet/year would be required for the Butterfield and Sentinel Quarries, and 2.25 AF/yr for the White Knob Quarry, for a total increase in water production of 3.75 AF/year.) Based on a 5 year average, the total annual water demand of the existing Omya mining operations and the LVPP has been approximately 13.8 AF/year in recent years. Therefore, Omya's groundwater production is anticipated to be 17.55 AF/yr with the Project operating at the maximum production rate.

The Project would not require new or additional water supply entitlements, and water supply needs would continue to be met using existing sources. The cumulative incremental increase in groundwater production of 3.75 AF/yr is minor, and Omya would remain well within its FPA designated by the MWA of 19 AF/year.

Potential for the Project to reduce runoff volumes in nearby watercourses was evaluated due to the role the watercourses have in recharging aquifers into which they infiltrate. Figure 3.8-4 and Figure 3.8-5 depict how the Project would affect watersheds in the vicinity. Sentinel Quarry would be expanded into the Furnace Canyon watershed by approximately 10.8 acres. The Central Area would be enlarged by

15.2 acres primarily into Furnace Canyon and Holcomb Creek watersheds, and to a lesser extent the Crystal Creek watershed.

The B5 Pad would be enlarged by 22.7 acres toward the south. This area would remain within the Holcomb Creek watershed. Based on the layout for the B5 Pad and the natural topography of the surrounding area, discharges from the B5 only appear feasible from its southern boundary. The B5 Pad would be graded to convey runoff to several local detention areas. Overflow from these detention basins, if any, would discharge to existing watercourses.

The Butterfield Quarry expansion consists of 30.6 acres toward the west, south and north, for an amended total disturbed area of 52.3 acres. The expansion toward the west would remove approximately 3 acres from the East Fork Dry Canyon watershed. The remaining 24 acres of expanded area would be removed from the Holcomb Creek watershed.

The Project would therefore effectively remove 12.9 acres from the Furnace Canyon watershed, which represents 0.1% of the watershed area. 27.9 acres would be removed from the Holcomb Creek watershed. The Forest Service has delineated the entire Holcomb Creek watershed at 30,231 acres (USFS, 2010), so the acreage removed due to the Project would represent a negligible proportion (much less than 0.01%) of this watershed. The Project would also remove 3 acres (0.5%) of the East Fork Dry Canyon watershed, and a negligible portion of the Crystal Creek watershed. As described above, the entire East Dry Canyon and Furnace Canyon watersheds were not completely delineated for the purposes of the Hydrology Technical Report. The total acreages of these watersheds is actually larger than what SLR delineated in the report. Based on the relatively small areas that would be removed from these watersheds, reductions in surface flow caused by the Project are expected to be less than significant. Therefore, the reduction in recharge of valley aquifers near the Project Area is also expected to be less than significant.

Areas removed from the East Dry Canyon, Furnace Canyon, and Holcomb Creek watersheds would effectively become part of the watersheds previously created by excavation of the Butterfield and Sentinel Quarries. In addition, the non-quarry expansion areas would be graded to convey runoff toward the quarries, or toward other on-site detention areas. Runoff retained within the quarries would then evaporate or infiltrate. Runoff accumulating at the bottom of the quarries would then be at a greater depth, and would also be in direct contact with fractured bedrock, possibly enhancing recharge of groundwater.

Post reclamation hydrology would be similar to that of the mining phase. The majority of surface runoff from quarry areas would continue to be retained in the quarries. Sediment and erosion controls deployed during the mining phases would be preserved and maintained.

The incremental increase in groundwater production associated with the Project is not expected to deplete groundwater resources or cause noticeable dewatering of off-site production wells. Also, the

### 3.8 Hydrology

net loss of surface water flow in nearby watercourses is expected to be less than significant and unlikely to substantially or noticeably affect surrounding aquifers or riparian areas.

#### ***Drainage and Erosion/Siltation Control***

As described above, the Project would change on-site and nearby drainage patterns. The following is a summary of the Hydrology Technical Report's evaluation of the potential for these drainage pattern changes to cause erosion or siltation impacts.

Figure 3.8-5 and Figure 3.8-6 show a variety of erosion and sediment controls that are either currently deployed, or would be deployed in conjunction with the Project. These structural control measures are intended to minimize or eliminate erosion and releases of sediment from the Project Area into surrounding drainages.

Runoff would continue to be directed into quarry pits or local detention areas to the extent practical, where it would accumulate and either infiltrate or evaporate. Energy dissipaters such as sediment catchment basins or sumps, rock dams, and berms, would reduce erosion, trap sediment, and minimize the potential for off-site transport of pollutants. The proposed mine design has minimized the extent of disturbed areas associated with the Project. When practical, reclamation and revegetation would be conducted concurrently, and would stabilize previously disturbed areas and slopes.

Where practical, the Crystal Creek Haul Road is graded to direct runoff toward the inward portion of the road, and the outer rim of the road is bermed to inhibit down-slope discharges. Numerous other erosion and sediment control measures have been installed, including sediment detention basins, v-ditches, rip rap, and road sloping. These controls are documented in Drainage Control Program for the Crystal Creek Haul Road (Pluess-Staufer (California), Inc., 1992) and the current SWPPP (June 2017). Omya inspects these control measures after each major storm event. Maintenance is then conducted as appropriate based on the results of the inspections.

Omya has obtained coverage under the IGP (Permit 2014-0057-DWQ NPDES General Permit # CAS000001) and all of Omya's operational areas are covered by this permit, including the mining areas, Crystal Creek Haul Road, and LVPP area.

As required by the IGP, Omya has implemented a SWPPP for their mining activities (Appendix I). The SWPPP contains descriptions of aspects such as potential discharge areas, significant materials, and BMPs. BMPs are generally synonymous with "sediment and erosion control measures." However, BMPs also include non-structural elements such as employee training, documented operating procedures, and general housekeeping. The SWPPP requires future revisions to recognize changes in site conditions, changes in BMPs, or in response to changing regulatory requirements. Omya would continue to maintain coverage under the IGP for the life of the Project.

As described above, the southern portions of the Project Area are located within the Holcomb Creek watershed. Holcomb Creek has been placed on the Section 303(d) list of impaired water bodies. The cause of the impairment has been listed as total dissolved solids. With proper design, installation, and maintenance of the sediment and erosion controls, the Project is not expected to exacerbate the pollutant load of Holcomb Creek.

### ***Reclamation***

The Reclamation Plan is shown in Figure 3.8-6 and provided in Appendix C. The post-mining end-use designated for the Project is open space and wildlife habitat. The primary elements of the Reclamation Plan include the following Project design features and BMPs.

- The quarries would be partially backfilled with quarry overburden material.
- The Central Area and B5 Pad fill slopes would be finished at 2:1.
- Erosion control measures would be implemented such as installation of rip rap, boulder barriers, storm water sumps and berms, and revegetation of select areas.
- Existing stormwater BMPs would continue to be implemented in accordance with the SWPPP.
- All remaining equipment, facilities, and hazardous materials would be removed.
- Stockpiles of ore grade limestone would be removed or used as backfill.
- Internal roads that are not needed for site access, reclamation, revegetation, and/or general site monitoring would be reclaimed.

### ***Hazardous Materials***

In general, the storage or use of hazardous materials during mining operations could pose a potential threat to water quality if a significant spill were to occur. The use of hazardous materials during mining operations would mainly include fuels, lubricants, and fluids associated with vehicles and equipment used in mining operations.

Hazardous materials used as part of daily operations of on-site equipment and vehicles would primarily include:

- Diesel and gasoline motor fuels;
- Motor oils;
- Automatic transmission fluids;
- Hydraulic fluids;
- Lubricating grease;
- Brake fluids; and
- Antifreeze coolant.

Except for the fluids stored in or on the vehicles and equipment, and one AST containing diesel fuel, these materials would not be stored within the Project Area. They would continue to be stored in the maintenance shop located in the LVPP area, and managed in accordance with State and local regulations

### 3.8 Hydrology

(See Section 3.7 Hazards and Hazardous Materials). In addition, routine vehicle and equipment maintenance would be conducted at the maintenance shop in the LVPP area.

The use of hazardous materials listed above represents the greatest risk of accidental spills. Spill from mining vehicles and equipment would likely be small. Such a spill would be promptly and easily cleaned up and disposed of in accordance with governmental regulations. Therefore, release of these chemicals to on-site locations is considered to be a less than significant impact.

The AST storing diesel fuel is located in the mining area. It is doubled walled and surrounded by a concrete containment for leak protection. Equipment that is not easily driven or transported to the LVPP area, (such as loaders, water trucks, excavators, and dozers) is fueled at this AST. Haul trucks, pickups, and similar vehicles which routinely drive between the LVPP area and the Project Area are fueled at the LVPP area or at off-site filling stations. Fueling at the AST only occurs in a designated area, which is underlain by concrete paving to facilitate spill cleanup and to inhibit migration of fuel contaminants into the soil column. Storage, transfer, spill avoidance, and spill response procedures are, and would continue to be, in compliance with the applicable regulatory requirements.

A spill during on-site fueling of equipment or a leak from the AST represents the highest risk of on-site and off-site water contamination. However, the AST has tertiary containment, so the probability of a release from the AST is low.

Upon reclamation, hazardous materials would no longer be used routinely in the Project Area and AST would be permanently removed.

#### **Project Impacts**

**Impact HWQ-1: Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater water quality? (CEQA Guidelines Threshold Criteria (a))**

Water quality impacts could potentially occur due to use, transport, and storage of fuels and chemicals if those materials spill and runoff from the Project Area. Implementation of the Project design features and BMPs discussed above would create sufficient protection and response mechanisms to accidental releases of hazardous materials and would reduce this impact to less than significant levels.

**Potential Impact:** Less than significant

**Mitigation Measure:** None Required

**Impact HWQ-2: Would the Project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells**

**would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? (CEQA Guidelines Threshold Criteria (b))**

Based on the relatively small areas that would be removed from watersheds within which the Project would occur, associated reductions in surface flow would also be relatively small. Therefore, the reduction in recharge of valley aquifers near the Project Area would be less than significant.

The incremental increase in groundwater production associated with the Project would not deplete groundwater resources or cause noticeable dewatering of off-site production wells. Also, the net loss of surface water flow in nearby watercourses would be less than significant and unlikely to substantially or noticeably affect surrounding aquifers or riparian areas. Abiding by the terms of the Stipulated Judgment for the Mojave River Basin Adjudication and coordination with Mojave Water Agency Watermaster will ensure compliance and adequate water supply. As a result of the factors discussed above, the Project would have a less than significant impact on groundwater supplies and groundwater recharge.

**Potential Impact:** Less than Significant

**Mitigation Measures:** None Required

**Impact HWQ-3: Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site? (CEQA Guidelines Threshold Criteria (c))**

The Project would not cause increased siltation or degrade water quality of surface waters or groundwater because the Project incorporates existing and proposed erosion and sediment controls intended to reduce or eliminate stormwater discharges. In addition, the Project Area would continue to be subject to conditions of the IGP which includes requirements for inspections, monitoring, and reporting. As required in the Plan of Operations and Reclamation Plan, erosion and sediment control measures would remain in place until reclamation is completed. With maintenance of existing, and implementation of proposed sediment and erosion control measures, the Project would not exacerbate the pollutant load of Holcomb Creek and other watercourses. As discussed above, erosion and siltation from the Project would have a less than significant impact on existing drainage patterns.

**Level of Significance:** Less than Significant

**Mitigation Measures:** None Required

**Impact HWQ-4: Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site? (CEQA Guidelines Threshold Criteria (d))**

---

### 3.8 Hydrology

Excavation of the quarries would reduce the amount of surface runoff which would also be controlled in accordance with BMPs in the SWPPP. Therefore, the Project would not increase the potential for flooding on- or off-site and would have a less than significant impact on existing drainage patterns.

**Potential Impact:** Less than Significant

**Mitigation Measures:** None Required

**Impact HWQ-5: Would the Project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems, cause flooding on- and off-site, or provide substantial additional sources of polluted runoff? (CEQA Guidelines Threshold Criteria (e))**

Stormwater runoff from the Project Area would be managed in accordance with the SWPPP and BMPs. The current and planned stormwater drainage systems are considered adequate for the anticipated runoff. Thus, no significant impacts to existing or proposed stormwater drainage systems would occur.

**Potential Impact:** Less than Significant

**Mitigation Measures:** None Required

**Impact HWQ-6: Would the Project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? (CEQA Guidelines Threshold Criteria (h))**

The Project would not include the placement of structures, or involve operations within flood hazard areas. Thus, the Project could not result in significant loss, injury, or death from flooding including from levees and dams which do not exist and are not proposed. Therefore, the Project would have a less than significant impact to people and structures from flooding.

**Potential Impact:** Less than Significant

**Mitigation Measures:** None Required

**Impact HWQ-7: Would the Project result in inundation by seiche, tsunami, or mudflow? (CEQA Guidelines Threshold Criteria (i))**

The Project does not include shallow settling basins or ponds that may be susceptible to a seiche due to either seismic shaking or slope failure. Even in very wet years large volumes of water would not accumulate in the quarry, eliminating the possibility for a seiche to form in the quarry. The Project is located inland and not susceptible to inundation by a tsunami. The slope angles and geologic materials are not conducive to the formation of mudflows. Thus, the Project would have a less than significant impact on potential for inundation.

**Potential Impact:** Less than Significant

**Mitigation Measures:** None Required

#### **3.8.4 Cumulative Effects**

As stated above, total annual water demand for the entire Omya mining operation, including the Project, the LVPP and the White Knob Quarry has averaged 13.8 AF/yr over a five year period. Therefore, the cumulative incremental increase in groundwater production of 1.5 to 3.75 AF/yr for the Project is minor. The cumulative groundwater consumption by Omya would be less than 17.55 AF/yr which is within Omya's FPA allowance by MWA of 19 AF/yr. The Project would not make a cumulatively considerable contribution to impacts on hydrology or water quality and the Project's cumulative impact would be less than significant.

The MWA has identified Base Annual Production amounts and associated FPAs for each producer using more than 10-acre feet per year in the Mojave Basin. The BAP was ramped down in each year from 1994 to 2005 in order to achieve the point where water imports and inflows versus consumption achieve safe yield of the basin. Omya's FPA allocation is 19 acre-feet per year. The Project would not result in Omya exceeding their FPA. The existing and foreseeable projects identified in Table 3.0-1 have also been or will be allocated a FPA. The overall cumulative impacts of these projects operating within their conditions of approval combined with the Project is considered to be less than significant.

#### **3.8.5 Alternatives**

The potential impact on hydrology and water quality for the other alternatives being evaluated in this Draft EIR/EIS would be similar to those described for the Project. The same or similar stormwater BMPs and management practices would be used for any of the alternatives. Groundwater production would be slightly less in Alternatives 1 and 3, but since the water use for the Project is minor, this would not present a significant difference between the alternatives.

##### **Alternative 1: No Action – Continue Mining under Current Entitlements**

Under this alternative, Omya would not expand the Butterfield and Sentinel Quarries. The existing mining activities located on approximately 137 acres within the 954 acres of unpatented placer claims controlled by Omya would continue in accordance with the approved Plan of Operations and Reclamation Plans and other Federal, State and local regulations. Groundwater production would be slightly less than the Project, but since the water use for the Project would be minor, this would not present a significant difference between the two alternatives. This Alternative would have less of a potential impact on Drainage Area A than the other alternatives; however, since same stormwater BMPs and management practices would be used in any of the alternatives, the difference in the level of impact between the alternatives is of little consequence.

---

### 3.8 Hydrology

#### **Alternative 3: Partial Implementation – Butterfield Quarry Expansion Only**

Alternative 3 would allow for only the expansion of the Butterfield Quarry. The Sentinel Quarry would continue to be mined under its current POO and Reclamation Plan. In this alternative the Butterfield Quarry would have a shorter duration of 20 years through year 2035 instead of 40 years as proposed in Alternative 2. It would also have a smaller footprint than Alternatives 2 and 4 by approximately 50 acres. Because of these differences, Alternative 3 would have a less significant impact on Drainage Area A (as discussed in the JD). However, since the two alternatives would use the same stormwater BMPs and management practices to control stormwater runoff, the differences between the alternatives would be minimal. Groundwater production would be also be slightly less than the Alternatives 2 and 4 but the amount of water used for the Project would be minor, so the difference between the two alternatives would be of little consequence.

#### **Alternative 4: Combined Production with the White Knob Quarry**

Historically the limestone ore provided to the LVPP has been approximately a 60/40 ratio between the Butterfield-Sentinel Quarries and the White Knob Quarries. This alternative would assume that instead of the Butterfield and Sentinel Quarries providing 100% (680,000 tpy) of the ore to the LVPP, a more representative production mix between the quarries would be evaluated. This alternative would be the same as the Project (Alternative 2) in regards to potential impacts to hydrology and water quality.

### **3.9 Noise**

The Initial Study and scoping process did not identify potentially significant impacts associated with noise from the Project; therefore, this section provides a brief discussion on the affected environment and impacts associated with the resource.

#### **3.9.1 Affected Environment**

The noise environment in the Project Area has included mining operations since the 1950's. Transportation and vibrations from heavy duty trucks associated with the numerous mining operations are also common in the Project Area. Therefore, noise and vibrations associated with mining has become part of the ambient noise background for both the local residences and wildlife in the area. Mining and blasting activities have been ongoing in the Project area over the decades with no reported or observed adverse impact on people, structures or wildlife.

The Project location is near the Range Crest in the central portion of the mountain range. The closest residences are located over two miles away from the quarries and one or more major mountain ridges are located between the quarries and residences. The Project would not increase noise or vibration above existing levels. The frequency and type of blasting would remain the same as current operations. There would not be a significant increase in truck traffic on-site or off-site, therefore the noise and vibration associated with heavy duty mining trucks would not change in the area.

#### **3.9.2 Regulatory Framework**

##### **3.9.2.1 Federal**

The U.S. EPA Office of Noise Abatement and Control was originally established to coordinate federal noise control activities. After its inception, the Federal Noise Control Act of 1972 was issued which established programs and guidelines to identify and address the effects of noise on public health and the environment. In 1981, EPA determined that subjective issues such as noise would be better addressed at lower levels of government. Consequently, in 1982 responsibility for regulating noise was transferred to state and local governments. However, on-site worker safety is still addressed by the OSHA, which specifies exposure limits to safeguard the hearing of workers exposed to occupational noise.

To address the human response to groundborne vibrations, the Federal Transit Administration (FTA) has guidelines for maximum-acceptable vibration criteria for different types of land use.

## 3.9 Noise

**3.9.2.2 State**

California standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise and noise insulation. The California Department of Health Services (CDHS) has studied the correlation of noise levels and their effect on various land uses and has established guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. The State of California requires that all municipalities prepare and adopt a comprehensive long-range General Plan that contains a Noise Element. Occupational exposure to noise is regulated by Cal/OSHA.

**3.9.2.3 Local****San Bernardino County Code – Noise Ordinance**

The San Bernardino County Code, Chapter 83.01.080 regulates both construction and project noise from stationary sources. Ambient noise level, type of noise source, distance to the noise source, time of day, duration of the noise, and zoning of the areas in questions are among the variables considered when analyzing the adverse effects of noise.

Table 3.9-1 presents the noise standards for stationary sources in San Bernardino County.

**Table 3.9-1 San Bernardino County Noise Standards for Stationary Noise Sources**

Affected Land Use (Receiving Noise)	7 A.M. – 10 P.M. $L_{eq}$	10 P.M. – 7 A.M. $L_{eq}$
Residential	55 dB (A)	45 dB (A)
Professional Services	55 dB (A)	55 dB (A)
Other Commercial	60 dB (A)	60 dB (A)
Industrial	70 dB (A)	70 dB (A)

Source: County of San Bernardino County Code Chapter 83.01.080

$L_{eq}$  = (Equivalent Energy Level). The sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period, typically 1, 8 or 24 hours.

dB(A) = (A-weighted Sound Pressure Level). The sound pressure level, in decibels, as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound, placing greater emphasis on those frequencies within the sensitivity range of the human ear.

Table 3.9-2 shows the maximum time of exposure for increasing noise levels when measured on another property.

**Table 3.9-2 San Bernardino County Noise Standards – Noise Limit Category**

Exterior Noise Standard	Noise Metric	Noise Levels not to be Exceeded in Residential Zone 7 A.M. – 10 P.M.	Noise Levels not to be Exceeded in Residential Zone 10 P.M. – 7 A.M.
30 min/hr	L <sub>50</sub>	55 dB(A)	45 dB(A)
15 min/hr	L <sub>25</sub>	60 dB(A)	50 dB(A)
5 min/hr	L <sub>8.3</sub>	65 dB(A)	55 dB(A)
1 min/hr	L <sub>1.7</sub>	70 dB(A)	60 dB(A)
Any period of time	L <sub>max</sub>	75 dB(A)	65 dB(A)

Source: County of San Bernardino County Code Chapter 83.01.080

### 3.9.3 Environmental Consequences/Impacts and Mitigation Measures

The evaluation conducted during the preparation of the Initial Study considered the following Environmental Checklist Form significance criteria (CEQA Guidelines, Appendix G) to determine the Project's potential to result in a significant noise impact:

- a) *Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies?*
- b) *Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?*
- c) *A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?*
- d) *A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?*
- e) *For a project located within an airport land use plan or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?*
- f) *For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?*

The Initial Study evaluation concluded that the Project would have no impact or less than a significant impact; therefore, further detailed evaluation is excluded from this Draft EIR/EIS. Substantiation for this conclusion is provided in the Initial Study (Appendix B) and is summarized below.

As discussed above, the active quarries are located near the Range Crest in the central portion of the mountain range. The closest residences are over two miles away from the quarry and one or more major mountain ridges exist between quarries and residences. Blasts in the Omya quarries are relatively small to maximize selectivity of the mineral. The blasts and mining operations cannot be seen, heard or felt in any of the residential areas. Mining activities vary through the year and can occur 24 hours/day,

---

### 3.9 Noise

seven days a week depending on operational requirements. Blasting is restricted to daylight hours. Operations and blasting have occurred in these quarries for over 35 years with no reported or observed adverse impact on people, structures, or wildlife. The Project would not change the operating schedule from that of the existing mining activities, nor would it cause an increase in the level of noise associated with mining operations or the frequency of blasting.

The existing and proposed mining operations are required to conform with all applicable Federal, State and local noise control regulations. Blasting operations would continue to be conducted by licensed individuals in such a manner as to meet or exceed CalOSHA requirements.

There are no airports or airstrips within two miles of the Project.

Further discussion of the potential effects of blasting noise and vibration on wildlife is provided in Section 3.4 Biological Resources.

## **4.0 OTHER NEPA AND CEQA CONSIDERATIONS**

### **4.1 Short-Term Uses and Long-Term Productivity**

NEPA requires consideration of “the relationship between short-term uses of man’s environment and the maintenance and enhancement of long-term productivity” (40 CFR 1502.16). As declared by the Congress, this includes using all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans (NEPA Section 101).

The short-term and long-term effects of the Project and other alternatives were evaluated in the environmental resources analyses in Section 3.0.

### **4.2 Significant Unavoidable Adverse Impacts**

CEQA Section 21100(b)(2)(A) requires an EIR to identify significant environmental effects that cannot be avoided if a project is implemented. All of the potential Project impacts would be less than significant or would be mitigated to a less than significant level.

### **4.3 Irreversible and Irretrievable Commitments of Resources**

CEQA Guidelines Section 15126.2(c) describes irreversible environmental changes as follows:

*“Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.”*

Operation of the Project would require some nonrenewable resources, such as fuel for vehicles and equipment. However, the amount of fuel required for the Project would not be significantly different than what the existing mining operations at the Butterfield and Sentinel Quarries currently use. The Project would not result in substantial increases from baseline levels in the expenditure of a nonrenewable resource.

At the conclusion of the Project, including reclamation activities, all equipment and other energy-consuming uses would be decommissioned, dismantled, and removed from the Project area. No further energy demand would be generated in the Project Area.

Irreversible commitments of resources are those that cannot be regained, such as the extinction of a species or the removal of mined ore. Irretrievable commitments are those that are lost for a period of time such as the temporary loss of timber productivity in forested areas that are kept clear for use as a power line rights-of-way or road. The geologic and mineral composition of the Project Area would be modified permanently with the Project and Alternatives 3 and 4. This would be an irreversible commitment of resources. In addition, there would be a temporary loss of resources from removal of habitat. The Project Site would be reclaimed after mining, but this gap would result in a short term irretrievable commitment of resources. Analysis of the effects on specific environmental resources is provided in Section 3.0.

#### **4.4 Cumulative Effects**

Cumulative impacts are defined by CEQA Guidelines Section 15355 as:

*“Two or more individual effects, which, when considered together, are considerable or which compound or increase other environmental impacts.” Specifically, “the cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probably future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.”*

The potential cumulative impacts on specific environmental resources are discussed in Section 3.0.

#### **4.5 Identification of Environmentally Preferred Alternative (NEPA) and the Environmentally Superior Alternative (CEQA)**

NEPA requires that the Lead Agency identify the preferred alternative (40 CFR 1502.14). CEQA Guidelines Section 15126.6(e)(2) requires that the Lead Agency identify the environmentally superior alternative; however; if that alternative is the No Project Alternative, the Lead Agency shall also identify an environmentally superior alternative among the other alternatives.

Although some on-site impacts resulting from development and operation of the Project would not occur with Alternative 1, No Action; Alternative 1 would not meet the goals and objectives of the Project. Because Alternative 3 only includes the expansion of the Butterfield Quarry, the limited production allowed in this alternative would not meet the goals and objectives of the Project. Alternatives 2 and 4 are very similar. The key difference between them is that Alternative 2 allows 100% production to occur at the Butterfield and Sentinel Quarries (versus a split between Butterfield-Sentinel and the White Knob Quarry). If for some reason production was stopped at the White Knob Quarry, then Alternative 4 may not be able to meet the Project goals and objectives. Furthermore, Alternative 4 would limit Omya’s operational flexibility and potentially prevent Omya from meeting the market demand for high quality limestone. This is because the quality of limestone varies between the ore deposits and often Omya is required to mix resources, or exclude resources from various deposits/quarries in order to obtain a final

product that meets the necessary purity levels. It is not possible to predict when resources from one deposit/quarry would be required to “sweeten” the mix in order to accomplish this.

NEPA requires that the Lead Agency identify the preferred alternative (40 CFR 1502.14). CEQA Guidelines Section 15126.6(e)(2) requires that the Lead Agency identify the environmentally superior alternative. The No Project Alternative is considered by the County as the CEQA environmentally superior alternative; however, CEQA requires that an EIR further identify an alternative other than the No Project Alternative as the environmental superior alternative. The County identified the CEQA environmental superior alternative to be the Project (Alternative 2) because the other alternatives would not meet key Project objectives and/or result in potentially greater impacts when compared to the Project. The NEPA preferred alternative will be identified by the Forest Service following the public comment period.

#### **4.6 Growth-Inducing Effects**

The CEQA Guidelines define growth-inducing impacts as follows:

*“The ways in which the Proposed Project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increase in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental or of little significance to the environment (CEQA Guidelines Section 15126.2[d]).”*

Assessing the growth inducement potential of the Project thus involves determining whether the Project would directly or indirectly support more economic or population growth or residential construction.

Growth inducement may constitute an adverse impact if the growth is not consistent with the land use and growth management policies for the affected area. The San Bernardino County General Plan and land use and growth management policies guide development patterns and provide for orderly development supported by adequate public services. A project that would induce disorderly growth in conflict with local land use plans could indirectly cause additional adverse environmental impacts to other public services.

The Project would not require additional workers than those already employed by Omya. The production of the LVPP would not be significantly increased as a result of the Project; therefore, the number of off-site truck drivers to and from the Project area would not be increased. The Project would not directly or indirectly induce population growth and potential impacts related to growth-inducement are less than significant.

**4.7 Mitigation Monitoring and Reporting Program**

As discussed Section 1.0, CEQA requires that projects include a MMRP for changes made to the project to avoid or mitigate for significant effects on the environment.

Throughout this Draft EIR/EIS, mitigation measures are clearly identified and presented in language that will facilitate establishment of a MMRP. The mitigation measures adopted by the Forest Service and the County will be included in an MMRP. The MMRP will be provided in the Final EIR/EIS.

**4.8 CEQA Findings of Fact and Statements of Overriding Consideration**

CEQA requires that if a significant impact has been identified, the lead agency must prepare written findings for each of the significant impacts. This is referred to as the Findings of Fact. If an impact is considered significant and unavoidable, the lead agency must also prepare a Statement of Overriding Consideration. The Project would not result in significant and unavoidable impacts.

## **5.0 CONSULTATION AND COORDINATION**

### **5.1 Prepares and Contributors**

This Draft EIR/EIS was prepared by an interdisciplinary team of specialists from the United States Forest Service, San Bernardino County, as well as many other agencies/organizations. Table 5-1 shows the list of preparers and individuals involved in the preparation of this Draft EIS/EIR.

### **5.2 Distribution of the EIS/EIR**

The following is a list of recipients of the Draft EIS/EIR in alphabetical order sorted by category. In addition, all individuals and organizations that were notified are listed in Appendix L.

#### **FEDERAL AGENCIES**

##### U.S. Forest Service

- Forest Supervisor's Office, San Bernardino
- San Bernardino National Forest – Mountaintop District

##### U.S. Fish & Wildlife Service

- Carlsbad, CA Field Office
- Palm Springs, CA Office
- Region 8 – Pacific Southwest Office

##### U.S. Bureau of Land Management

- California Desert District Office
- Barstow, CA Field Office

##### U.S. Environmental Protection Agency

- Region 9 – Environmental Review Office
- Region 9 – Communities and Ecosystems Division

##### U.S. Army Corps of Engineers – Regulatory Branch

##### USDA Natural Resources Conservation District

**Table 5-1 List of Preparers and Individuals Involved in the Preparation of this Draft EIS/EIR.**

Name	Draft EIR/EIS Responsibilities
<b>United States Forest Service (USFS)</b>	
Scott Eliason	Environmental Coordinator District Botanist
Robin Eliason	District Wildlife Botanist
Scott Tangenberg	District Ranger
Greg Visconty	Locatable Minerals Geologist
Michelle Bearmar	Geotechnical Engineer
Bill Sapp	Archeologist
Rich Teixeira	Lead Minerals Examiner
Robert Taylor	Hydrologist
Anita Bueno	Landscape Architect
Mary Najera	Resource Officer
Michael Hunerlach	Minerals Geologist
<b>County of San Bernardino</b>	
Terri Rahhal	San Bernardino County Planning Manager
Reuben Arceo	San Bernardino County Contract Planner
<b>Omya, Inc.</b>	
Shelby Olsen	Environmental Affairs Manager
James Rogers	Geologist
<b>Jeffer Mangels, Butler &amp; Michell (JMBM)</b>	
Kerry Shapiro	Legal Counsel – Omya
<b>Lilburn Corporation</b>	
Marty Derus	Consultant - Omya
Troy Goodwall	Consultant - Omya
<b>Sespe Consulting, Inc.</b>	
John Hecht	President
Maya Rohr	Project Manager III
Lou Merzario	Project Manager II
Scott Cohen	Air Quality
<b>SRL, Inc.</b>	
Ian Hutchison	Geology, Hydrology, Hydrogeology, Geotech
John Bennett	Project Director
<b>Glenn Lukos Associates, Inc.</b>	
Jason Fitzgibbon	Biologist
Thienan Ly Pfeiffer	Regulatory Specialist
Dave Moskovitz	Senior Biologist

**STATE AGENCIES**

CA Department of Fish & Game

CA Department of Conservation

- Department of Mine Reclamation
- State Mining & Geology Board

CA Department of Parks & Recreation – State Historic Preservation Office

CA Department of Transportation

California Environmental Protection Agency – State Water Resources Control Board

California State Parks

California Natural Resources Agency

CA Department of Forestry & Fire Protection

- State Board of Forestry & Fire Protection
- CAL FIRE

State Clearinghouse

Native American Heritage Commission

Governor's Office of Planning and Research

CA Department of Transportation – Regional Planning Office

CA Regional Water Quality Control Board

- Colorado River Regional Office
- Lohantan Regional Office

**LOCAL AGENCIES**

## County of San Bernardino

- Architecture & Engineering Department
- County Geologist
- Building & Safety Department
- Department of Public Works
  - Transportation
  - Flood Control
  - Environmental & Construction
- Land Development Division
- Biological Resources
- Earth Sciences
- Architecture Information Center
- Solid Waste Management Division
- Local Enforcement Agency
- Sheriff's Department
- Regional Parks Department
- Real Estate Services Department
- Local Agency Formation Commission (LAFCO)
- Department of Airports
- Agricultural Commissioner's Office
- Special Districts Department
- Planning Commission
- Fire Department
- Public Health Department
- Board of Supervisors

## San Bernardino Associated Governments

## San Bernardino Valley Water Conservation District

## South Coast Air Quality Management District

## Mojave Desert Air Quality Management District

## Mojave Water Agency

## Mojave Desert Natural Resource Conservation District

## Bear Valley Chamber of Commerce

Big Bear Lake Fire Protection District

Big Bear Valley Fire Safe Council

Big Bear City Community Services District

Big Bear Area Regional Wastewater Agency (BBARWA)

Big Bear Municipal Water District

City of Victorville

City of Bear Lake

City of Hesperia - Hesperia Chamber of Commerce

Town of Apple Valley - Community Development Department

Los Angeles Metropolitan Water District

Inland Empire Resource Conservation District

Lucerne Valley Municipal Advisory Council

Lucerne Valley Chamber of Commerce

Lucerne Valley Economic Development Association

**ORGANIZATIONS**

Sierra Club

- Desert Committee
- San Geronio Chapter
- Mountains Group
- Big Bear Group

National Parks Conservation Association

National Wildlife Federation

Pacific Crest Trail Association

San Bernardino National Forest Association

San Bernardino Valley Audubon Society

Audubon Society

Big Bear Lake Resort Association

Big Bear Mountain Resorts

Society for the Conservation of Bighorn Sheep

Bighorn Institute

Desert Tortoise Council

Desert Survivors

The Wilderness Society

The Wildlands Conservancy

California Native Plant Society

California Off-Road Vehicle Association

Californians for Alternative to Toxics

Center for Biological Diversity

Spirit of the Sage Council

Friends of the Desert Mountains

Friends of the Mountain, Inc.

Friends of Fawnskin

Endangered Habitats League

Tri-County Conservation League

Planning & Conservation League

THIS PAGE IS INTENTIONALLY BLANK

**6.0 REFERENCES**

- CHJ Consultants. (2012). *Slope Stability Investigation - Sentinel & Butterfield Quarries*. Omya California. Colton, CA: CHJ Consultants.
- Forest, S. B. (2016). *Biological/Assessment/Evaluation, Non-Native Species Risk Assessment for OMYA's Butterfield & Sentinel Quarries Expansion Project*. Mountain Ranger District. San Bernardino National Forest.
- Joseph, S. (1984). *Mineral Classification of the Pluess-Staufer, Inc. Limestone Deposit*. CA Department of Conservation, State Mining and Geology Board. Sacramento: State of California.
- Lerch, M. K. (1984). *Cultural Resources Inventory of Claudia Claims*. Bio-Tech/Environmental Planning Consultants. Big Bear Lake: Michael K. Lerch & Associates.
- Lilburn Corporation. (2013). *Initial Study - Amended Plan of Operations for the Butterfield-Sentinel Quarries*. County of San Bernardino, Land Use Services. Lucerne Valley: Omya California.
- Lilburn Corporation. (2013). *Scenery Report for Butterfield-Sentinel Quarries*. San Bernardino National Forest. San Bernardino: USDA Forest Service.
- Mlazovsky, M. (1998). *Archaeological Reconnaissance Report - San Bernardino National Forest*. Big Bear: San Bernardino National Forest.
- Mojave Basin Area Watermaster. (2010-2011). *18th Annual Report of the Mojave Basin Area Watermaster*. Riverside County Superior Court. Barstow / Adelanto: Mojave Basin Area Watermaster.
- Omya California (Division of Omya, Inc.). (2009). *Amended Plan of Operations & Reclamation Plan - Butterfield 3 Quarry Expansion*. San Bernardino National Forest, San Bernardino County. Lucerne Valley: Omya, Inc.
- Pluess-Staufer. (1994). *Reclamation Plan for Existing Limestone Operation*. San Bernardino County, Land Use Services Department. Lucerne Valley: Pluess-Staufer.
- Pluess-Staufer, Inc. (1992). *Butterfield 3 Quarry - Slope Stability Study*. Pluess-Staufer (California), Inc. Lucerne Valley: Howard J. Brown.
- Pluess-Staufer, Inc. (1992). *Slope Stability Study - Sentinel Quarry and Old Overburden Placement Site*. Pluess-Staufer (California), Inc. Lucerne Valley: Howard Brown, Geologist.
- Sespe Consulting, Inc. (2013). *AQIA: Omya Butterfield and Sentinel Quarries Expansion*. U.S. Forest Service. San Bernardino: San Bernardino National Forest.
- SLR Global Environmental Solutions. (2013). *Hydrology Technical Study - Omya Inc., Sentinel and Butterfield Quarries Expansion*. Omya, Inc. Lucerne Valley: SLR International Corp.
- United States Forest Service. (1988). *Sentinel Quarry Expansion Environmental Assessment*. USDA Forest Service. San Bernardino: San Bernardino National Forest.
- United States Forest Service. (2010, May 27). Letter - Holcomb Creek & Crab Creek 2010 Integrated

- Report. *Response Letter - 2010 Integrated Report 303(d)*. (F. Supervisor, Ed., & J. W. Evans, Compiler) San Bernardino, CA, US: USDA.
- USDA, Forest Service. (2006). *Land Management Plan - San Bernardino National Forest*. United States Department of Agriculture, Forest Service. San Bernardino, CA: USDA, Forest Service. Retrieved 2017, from <https://www.fs.usda.gov/main/sbnf/landmanagement/planning>
- Western Regional Climate Center. (1960 - 2013). *Big Bear Lake, CA - Monthly Climate Summary*. (wrcc@dri.edu, Ed.) Retrieved June 25, 2013, from Western Regional Climate Center: <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca0741>

## 7.0 ACRONYMS

<b>AAQS</b>	Ambient Air Quality Standard
<b>AB</b>	Assembly Bill
<b>Ac</b>	Acres
<b>AAQS</b>	Ambient Air Quality Standard
<b>ADL</b>	Annual Dermal Load
<b>AERMOD</b>	Atmospheric Dispersion Modeling
<b>AF</b>	Acre Foot
<b>AF/yr</b>	Acre Foot per Year
<b>AIRFA</b>	American Indian Religious Freedom Act
<b>AMSL</b>	Above Mean Sea Level
<b>ANFO</b>	Ammonium Nitrate/Fuel Oil
<b>A-P Act</b>	Alquist-Priolo Earthquake Fault Zone Act
<b>APE</b>	Area of Potential Effect
<b>APSA</b>	Aboveground Petroleum Storage Act Program
<b>AQIA</b>	Air Quality & Greenhouse Gas Impact Analysis
<b>AQMA</b>	Air Quality Management Area
<b>AQMD</b>	Air Quality Management District
<b>AQRVs</b>	Air Quality Related Values
<b>ARB</b>	California Air Resources Board
<b>ARPA</b>	Archeological Resource Protection Act
<b>ASPA</b>	Aboveground Storage Petroleum Act
<b>AST</b>	Above Ground Storage Tank
<b>ATCM</b>	Airborne Toxics Control Measures
<b>ATCMs</b>	State Air Toxic Control Measures
<b>ATF</b>	Bureau of Alcohol, Tobacco and Firearms
<b>BA</b>	Biological Assessment
<b>BACT</b>	Best Available Control Technology (for toxics)
<b>BAP</b>	Base Annual Production
<b>BBARWA</b>	Big Bear Area Regional Wastewater Agency
<b>BBI</b>	Bloom Biological
<b>Bg</b>	Background
<b>Bgs</b>	Below Ground Surface
<b>BLM</b>	Bureau of Land Management
<b>BMP</b>	Best Management Practices

<b>BWh</b>	Dry-Hot Desert Climate (Köppen climate classification)
<b>BWhh</b>	Dry-Very Hot Desert Climate (Köppen climate classification)
<b>CO<sub>2</sub>e</b>	Carbon Dioxide Equivalents
<b>CAA</b>	Clean Air Act
<b>CAAQS</b>	California Ambient Air Quality Standards
<b>CalARP</b>	California Accidental Release Prevention Program
<b>CalEMA</b>	California Emergency Management Agency
<b>CalOSHA</b>	California Department of Occupational Safety and Health Administration
<b>CalTrans</b>	California Department of Transportation
<b>CAP</b>	Climate Action Plan
<b>CARB</b>	California Air Resources Board
<b>CBC</b>	California Building Code
<b>CCAA</b>	California Clean Air Act
<b>CCAR</b>	California Climate Action Registry
<b>CCH</b>	California Consortium of Herbaria
<b>CCR</b>	California Code of Regulations
<b>CDFW</b>	California Department of Fish and Wildlife
<b>CDHS</b>	California Department of Health Services
<b>CDMG</b>	California Division of Mines and Geology
<b>CE</b>	California State Endangered
<b>CEQ</b>	Council of Environmental Quality
<b>CEQA</b>	California Environmental Quality Act
<b>CESA</b>	California Endangered Species Act
<b>CFC</b>	California Fire Code
<b>CFR</b>	Code of Federal Regulations
<b>Cfs</b>	Cubic Feet per Second
<b>CGS</b>	California Geologic Survey
<b>CH</b>	Critical Habitat
<b>CH<sub>4</sub></b>	Methane
<b>CHMS</b>	Carbonate Habitat Management System
<b>CNDDDB</b>	California Natural Diversity Database
<b>CNPS</b>	California Native Plant Society
<b>CO</b>	Carbon Monoxide
<b>CO<sub>2</sub></b>	Carbon Dioxide
<b>COOP</b>	Cooperative Observer Network

<b>CREL</b>	Chronic Reference Exposure Level
<b>CRHR</b>	California Register of Historical Resources
<b>CSC</b>	California Species of Concern
<b>CSSC</b>	California Species of Special Concern
<b>CUP</b>	Conditional Use Permit
<b>CUPA</b>	Certified Unified Program Agency
<b>CWA</b>	Clean Water Act
<b>Cy</b>	Cubic Yards
<b>dB</b>	Decibel
<b>dba</b>	A-Weighted Decibel
<b>DEIR/EIS</b>	Draft Environmental Impact Report/Environmental Impact Statement
<b>DMR</b>	Department of Mine Reclamation
<b>DOC</b>	Department of Conservation
<b>DOORS</b>	Diesel Off-Road On-line Reporting System
<b>DOT</b>	Department of Transportation
<b>DPM</b>	Diesel Particulate Matter
<b>DTSC</b>	Department of Toxic Substances Control
<b>DWR</b>	California Department of Water Resources
<b>EA</b>	Environmental Assessment
<b>ECSZ</b>	Eastern California Shear Zone
<b>ED</b>	Economic Development
<b>EGUs</b>	Electric Generating Units
<b>EIR</b>	Environmental Impact Report (CEQA)
<b>EIS</b>	Environmental Impact Statement (NEPA)
<b>EPA</b>	United States Environmental Protection Agency
<b>EPCRA</b>	Emergency Planning and Community Right-to-Know Act
<b>ESA</b>	Endangered Species Act
<b>FACE</b>	Financial Assurance Cost Estimate
<b>FE</b>	Federally Endangered
<b>FEIR/EIS</b>	Final Environmental Impact Report/Environmental Impact Statement
<b>FESA</b>	Federal Endangered Species Act
<b>Fg</b>	Foreground
<b>FHA</b>	Fire Hazard Abatement
<b>FLAG</b>	Federal Land Managers Air Quality Related Values Work Group
<b>FLM</b>	Federal Land Manager

<b>FLPMA</b>	Federal Land Policy and Management Act
<b>FONSI</b>	Findings of No Significant Impact
<b>FPA</b>	Free Production Allowance
<b>FR</b>	Federal Register
<b>FS</b>	Fire Safety (Review Area / Overlay)
<b>FS*</b>	Forest Service
<b>FSH</b>	Forest Service Handbook
<b>FSM</b>	Forest Service Manual
<b>FT</b>	Federally Threatened
<b>FTA</b>	Federal Transit Administration
<b>GHG</b>	Greenhouse Gas(es)
<b>GIS</b>	Geographic Information System
<b>GLC</b>	Ground Level Concentration
<b>GRAF</b>	Gastrointestinal Relative Absorption Fraction
<b>GVWR</b>	Gross Vehicle Weight Rating
<b>GWP</b>	Global Warming Potential
<b>H2S</b>	Hydrogen Sulfide
<b>HAP</b>	Hazardous Air Pollutant
<b>HARP</b>	Hotspot Analysis and Reporting Program
<b>HAZWOPER</b>	Hazardous Waste Operations and Emergency Response
<b>HC</b>	Hydrocarbons
<b>HCP</b>	Habitat Conservation Plan
<b>HFC</b>	Hydrofluorocarbons
<b>HI</b>	Hazard Index
<b>HMBP</b>	Hazardous Materials Business Plan
<b>HRA</b>	Health Risk Assessment
<b>HW</b>	Hazardous Waste (Overlay)
<b>ICBO</b>	International Conference of Building Officials
<b>ID</b>	Interdisciplinary (Team)
<b>IGP</b>	Industrial General Permit
<b>IS</b>	Initial Study
<b>ISCST</b>	Industrial Source Complex Short-Term model
<b>ITP</b>	Incidental Take Permit
<b>JD</b>	Jurisdictional Delineation
<b>LAFCO</b>	Local Agency Formation Commission

<b>L<sub>eq</sub></b>	Equivalent Sound (Energy) Level
<b>LMP</b>	Land Management Plan
<b>LOS</b>	Level of Service
<b>LRMP</b>	Land and Resources Management Plan
<b>LRWQCB</b>	Lahontan Regional Water Quality Control Board
<b>LST</b>	Localized Significance Thresholds
<b>LSTM</b>	Less than Significant with Mitigation
<b>LTS</b>	Less than Significant
<b>LVPP</b>	Lucerne Valley Processing Plant
<b>LVEDA</b>	Lucerne Valley Economic Development Association
<b>M</b>	Meter
<b>MACT</b>	Maximum Available Control Technology
<b>MATES</b>	Multiple Air Toxics Exposure Study
<b>MBTA</b>	Migratory Bird Treaty Act
<b>MCC</b>	Mitsubishi Cement Corp
<b>MCE</b>	Maximum Considered Earthquake
<b>MDAB</b>	Mojave Desert Air Basin
<b>MDAQMD</b>	Mojave Desert Air Quality Management District
<b>Mg</b>	Milligram (OR Middleground – Section 3.2)
<b>Mg/L</b>	Milligram per Liter
<b>MIS</b>	Management Indicator Species
<b>MMRP</b>	Mitigation, Monitoring and Reporting Plan
<b>MOU</b>	Memorandum of Understanding
<b>MRZ</b>	Mineral Resource Zone
<b>MRZ-2</b>	Mineral Resource Zone 2
<b>MSHA</b>	Mine Safety and Health Administration
<b>MSL</b>	Mean Sea Level
<b>MWA</b>	Mojave Water Agency
<b>N<sub>2</sub>O</b>	Nitrous Oxide
<b>NAAQS</b>	National Ambient Air Quality Standards
<b>NAHC</b>	Native American Heritage Commission
<b>NCDC</b>	National Climate Data Center
<b>NEPA</b>	National Environmental Protection Act
<b>NF</b>	National Forest
<b>NFMA</b>	National Forest Management Act

<b>NHPA</b>	Natural Historic Preservation Act
<b>NO<sub>2</sub></b>	Nitrogen Dioxide
<b>NOA</b>	Naturally Occurring Asbestos
<b>NOD</b>	Notice of Determination
<b>NOI</b>	Notice of Intent
<b>NOP</b>	Notice of Preparation
<b>NO<sub>x</sub></b>	Oxides of Nitrogen
<b>NPDES</b>	National Pollutant Discharge Elimination System
<b>NRCS</b>	Natural Resources Conservation Service
<b>NRHP</b>	Natural Register of Historic Places
<b>NRIS</b>	National Resource Inventory System
<b>NSFS</b>	United States Forest Service
<b>NSPS</b>	New Source Performance Standards
<b>NSR</b>	Federal New Source Review
<b>NWI</b>	National Wetland Inventory
<b>O</b>	Ozone
<b>O<sub>3</sub></b>	Ground-Level Ozone
<b>Occ</b>	Occupied Habitat
<b>OEHHA</b>	Office of Environmental Health Hazard Assessment
<b>OES</b>	Office of Emergency Services
<b>OHV</b>	Off-Highway Vehicle
<b>OHWM</b>	Ordinary High Water Mark
<b>OMR</b>	Office of Mine Reclamation
<b>OPR</b>	California Governor's Office of Planning and Research
<b>OPR</b>	Governor's Office of Planning and Research
<b>OSHA</b>	Occupational Safety and Health Administration
<b>PAH</b>	Polycyclic Aromatic Hydrocarbons
<b>Pb</b>	Lead
<b>Pcf</b>	Pounds per cubic foot
<b>PCT</b>	Pacific Crest Trail
<b>PERP</b>	Portable Equipment Registration Program
<b>PDFs</b>	Project Design Features
<b>PGA</b>	Peak Ground Acceleration
<b>PM</b>	Particulate Matter
<b>PMI</b>	Point of Maximum Impact

<b>PMx</b>	Particulate Matter (less than or equal to “x” microns in diameter)
<b>POO</b>	Plan of Operation
<b>PPM</b>	Parts per Million
<b>PRPA</b>	Paleontological Resource Preservation Act
<b>PS</b>	Potentially Significant
<b>PSD</b>	Prevention Significant Deterioration
<b>Psf</b>	Pounds per square foot
<b>PV</b>	Photo Voltaic
<b>Q/D</b>	Quantity/Distance
<b>RCAs</b>	Riparian Conservation Areas
<b>RCRA</b>	Resources, Recovery and Control Act
<b>RCS</b>	Raptor Conservation Strategy
<b>RES</b>	Renewable Electricity Standard
<b>RMP</b>	Risk Management Policy
<b>ROD</b>	Record of Decision
<b>ROG</b>	Reactive Organic Gases
<b>RPA</b>	Rangeland and Renewable Resources Planning Act
<b>RPS</b>	Renewables Portfolio Standard
<b>RWQCB</b>	Regional Water Quality Control Board
<b>S</b>	Significant
<b>SARA</b>	Superfund Amendments and Reauthorization Act
<b>SB</b>	Senate Bill
<b>SBNF</b>	San Bernardino National Forest
<b>SCAQMD</b>	South Coast Air Quality Management District
<b>SCS</b>	Sustainable Communities Strategy
<b>SHPO</b>	State Historic Preservation Office
<b>SIL</b>	Significant Impact Levels
<b>SIOs</b>	Scenic Integrity Objectives
<b>SIP</b>	State Implementation Plan
<b>SLCPs</b>	Short-Lived Climate Pollutants
<b>SMARA</b>	Surface Mining and Reclamation Act
<b>SMS</b>	Scenery Management System
<b>SO2</b>	Sulfur Dioxide
<b>SOx</b>	Sulfur Oxides
<b>SPCC</b>	Spill Prevention, Control and Countermeasure Plans

---

<b>SWPPP</b>	Storm Water Pollution Prevention Plan
<b>SWRCB</b>	State Water Resources Control Board
<b>TAC</b>	Toxic Air Contaminant
<b>T-BACT</b>	Technology for Toxic Air Contaminant
<b>T/E</b>	Threatened/Endangered
<b>TESW</b>	Threatened, Endangered, Sensitive, Watchlist
<b>TMDL</b>	Total Maximum Daily Load
<b>Tpd</b>	Tons per Day
<b>Tph</b>	Tons per Hour
<b>Tpy</b>	Tons per Year
<b>TSP</b>	Total Suspended Particles
<b>UARG</b>	Utility Air Regulatory Group
<b>UBC</b>	Uniform Building Code
<b>USACE</b>	United States Army Corps of Engineers
<b>USDA</b>	United States Department of Agriculture
<b>US EPA</b>	United States Environmental Protection Agency
<b>USFS</b>	United States Forest Service
<b>USFWS</b>	United States Fish and Wildlife Service
<b>USGS</b>	United States Geologic Survey
<b>VMS</b>	Visual Management System
<b>VMT</b>	Vehicle Miles Traveled
<b>VOC</b>	Volatile Organic Compound
<b>VQO</b>	Visual Quality Objectives
<b>WDR</b>	Waste Discharge Requirement
<b>WKQ</b>	White Knob Quarry
<b>WSA</b>	Water Supply Assessment
<b>ZEV</b>	Zero Emission Vehicles