MARICOPA SUN SOLAR COMPLEX
HABITAT CONSERVATION PLAN

DRAFT
ENVIRONMENTAL IMPACT STATEMENT

Prepared for:
U.S. Fish and Wildlife Service
Sacramento Fish & Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

May 2014

Quad Knopf

MARICOPA SUN SOLAR COMPLEX HABITAT CONSERVATION PLAN
Draft Environmental Impact Statement

Prepared for:

U.S. Fish and Wildlife Service
Sacramento Fish & Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Contact Person: Mike Thomas, Chief
Conservation Planning Branch, Endangered Species Division
Phone: 916-414-6678
Fax: 916-414-6712
e-mail: Mike_Thomas@fws.gov

Consultant:

Quad Knopf
3400 Douglas Boulevard, Suite 190
Roseville, California 95661
Contact: Randy Chafin, AICP
Phone: (559) 733-0440
Fax: (559) 733-7821

May 2014

© Copyright by Quad Knopf, Inc.
Unauthorized use prohibited.

090160.02

TABLE OF CONTENTS

Executive Summary ES-1
ES.1 Introduction ES-1
ES.2 Purpose and Need ES-2
ES.3 NEPA Compliance ES-3
ES.4 Public Scoping Process ES-3
ES.5 Proposed Action and Alternatives ES-4
ES.5.1 No Action Alternative ES-4
ES.5.2 Proposed HCP Alternative ES-4
ES.5.3 Reduced Permit Area Alternative ES-4
ES.6 Environmental Effects of the Proposed Action and Alternatives ES-11

1.0 Purpose and Need for Action 1-1
1.1 Background and Proposed Action 1-1
1.2 Purpose and Need for the Proposed Federal Action 1-2
1.3 Assessments and Decisions Required 1-3
1.4 Relevant Statutes, Regulations, and Guidelines 1-4
1.4.1 National Environmental Policy Act (NEPA) 1-4
1.4.2 The Endangered Species Act (ESA) 1-5
1.5 Organization of the EIS 1-7
1.6 Scope of Draft EIS Analysis 1-8
1.7 Public Outreach and Scoping Process 1-9
1.7.1 NEPA Scoping Process 1-9
1.7.2 Notice of Intent 1-9
1.7.3 Public Scoping Meetings 1-10
1.7.4 Issues Raised During the Scoping Process 1-10
1.7.5 Identification of Potentially Significant Issues 1-12
1.7.6 Draft EIS Public Review 1-12

2.0 Proposed Action and Alternatives 2-1
2.1 Introduction 2-1
2.2 Background 2-2
2.2.1 Covered Lands 2-2
2.2.2 Existing Land Use 2-10
2.2.3 Covered Species 2-10
2.3 Alternatives 2-11
2.3.1 Introduction 2-11
2.3.2 No Action Alternative 2-11
2.3.3 Proposed HCP Alternative 2-11
2.3.3.1 Covered Activities 2-12
2.3.4 Reduced Permit Area Alternative 2-48
2.3.5 Alternatives Eliminated From Further Consideration 2-49

3.0 Affected Environment 3-1
3.0.1 Introduction to Affected Environment 3-1
3.0.2 Covered Lands and Study Area 3-2
3.1 Aesthetics/Visual Resources 3.1-1
3.1.1 Concepts and Terminology 3.1-1
3.1.1.1 Visual Character 3.1-1
3.1.1.2 Visual Quality 3.1-2
3.1.1.3 Viewer Exposure and Sensitivity 3.1-2

3.1.2 Regulatory Setting ... 3.1-3
3.1.2.1 Federal ... 3.1-3
3.1.2.2 State ... 3.1-3
3.1.2.3 Local ... 3.1-4
3.1.3 Environmental Setting ... 3.1-5
3.1.3.1 Regional Setting ... 3.1-5
3.1.3.2 Local Setting ... 3.1-6
3.2 Agriculture ... 3.2-1
3.2.1 Regulatory Setting ... 3.2-1
3.2.1.1 Federal ... 3.2-1
3.2.1.2 State ... 3.2-1
3.2.1.3 Local ... 3.2-5
3.2.2 Environmental Setting ... 3.2-8
3.2.2.1 State ... 3.2-8
3.2.2.2 Kern County ... 3.2-9
3.2.2.3 Covered Lands ... 3.2-10
3.3 Air Quality and Greenhouse Gas ... 3.3-1
3.3.1 Regulatory Setting ... 3.3-1
3.3.1.1 National Ambient Air Quality Standards ... 3.3-1
3.3.1.2 State Ambient Air Quality ... 3.3-2
3.3.1.3 San Joaquin Valley Air Pollution Control District ... 3.3-2
3.3.1.4 Local ... 3.3-2
3.3.1.5 Greenhouse Gas Regulatory Framework ... 3.3-7
3.3.2 Environmental Setting ... 3.3-9
3.3.2.1 San Joaquin Valley Air Basin Characteristics ... 3.3-10
3.3.2.2 Pollutants of Concern ... 3.3-11
3.3.2.3 Toxic Air Contaminants ... 3.3-15
3.3.2.4 Greenhouse Gases ... 3.3-19
3.4 Biological Resources ... 3.4-1
3.4.1 Regulatory Setting ... 3.4-1
3.4.1.1 Federal ... 3.4-1
3.4.1.2 State ... 3.4-4
3.4.1.3 Kern County ... 3.4-4
3.4.2 Environmental Setting ... 3.4-5
3.4.2.1 Regional Setting ... 3.4-5
3.4.2.2 General Site Characteristics ... 3.4-20
3.4.2.3 Site-Specific Characteristics ... 3.4-47
3.5 Cultural Resources ... 3.5-1
3.5.1 Regulatory Setting ... 3.5-1
3.5.1.1 Federal ... 3.5-1
3.5.1.2 State ... 3.5-2
3.5.1.3 Local ... 3.5-4
3.5.2 Cultural Resources Setting ... 3.5-5
3.5.2.1 Prehistoric Setting ... 3.5-5
3.5.2.2 Ethnographic Setting ... 3.5-7
3.5.2.3 History ... 3.5-8
3.5.3 Paleontological Setting ... 3.5-9
3.5.4 Results of the Records Search ... 3.5-9
3.5.4.1 Records Search ... 3.5-9
3.5.4.2 Field Surveys ... 3.5-10
3.6 Geology and Soils ... 3.6-1
3.6.1 Regulatory Setting ... 3.6-1
3.6.1.1 Federal ... 3.6-1
3.6.1.2 State ... 3.6-2

3.6.1.3 Local ... 3.6-3
3.6.2 Environmental Setting ... 3.6-4
3.6.2.1 Geologic Setting ... 3.6-4
3.6.2.2 Faults and Seismic History ... 3.6-4
3.6.2.3 Soils ... 3.6-5
3.6.2.4 Seismic Hazards ... 3.6-6
3.6.2.5 Fault Rupture ... 3.6-7
3.6.2.6 Ground Shaking ... 3.6-7
3.6.2.7 Ground Failure ... 3.6-7
3.6.2.8 Landslides and Slope Failure ... 3.6-8
3.7 Hazards and Hazardous Materials ... 3.7-1
3.7.1 Regulatory Setting ... 3.7-1
3.7.1.1 Federal ... 3.7-1
3.7.1.2 State ... 3.7-2
3.7.1.3 Local ... 3.7-7
3.7.2 Environmental Setting ... 3.7-8
3.7.2.1 Existing Environment ... 3.7-8
3.8 Hydrology and Water Quality ... 3.8-1
3.8.1 Regulatory Setting ... 3.8-1
3.8.1.1 Federal ... 3.8-1
3.8.1.2 State ... 3.8-1
3.8.1.3 Local ... 3.8-4
3.8.1.4 Wheeler Ridge – Maricopa Water Storage District ... 3.8-5
3.8.2 Environmental Setting ... 3.8-6
3.8.2.1 Regional Surface Water Resources ... 3.8-6
3.8.2.2 Groundwater Resources ... 3.8-13
3.9 Land Use and Planning ... 3.9-1
3.9.1 Regulatory Setting ... 3.9-1
3.9.1.1 Federal ... 3.9-1
3.9.1.2 State ... 3.9-1
3.9.1.3 Local ... 3.9-2
3.9.2 Environmental Setting ... 3.9-10
3.9.2.1 Existing Land Uses ... 3.9-10
3.10 Mineral Resources ... 3.10-1
3.10.1 Regulatory Setting ... 3.10-1
3.10.1.1 Federal ... 3.10-1
3.10.1.2 State ... 3.10-1
3.10.1.3 Local ... 3.10-3
3.10.2 Environmental Setting ... 3.10-5
3.10.2.1 Existing Mineral Resources ... 3.10-5
3.11 Public Services ... 3.11-1
3.11.1 Regulatory Setting ... 3.11-1
3.11.1.1 State ... 3.11-1
3.11.1.2 Local ... 3.11-3
3.11.2 Environmental Setting ... 3.11-6
3.11.2.1 Fire Protection ... 3.11-6
3.11.2.2 Public Protection and Law Enforcement Services ... 3.11-6
3.11.2.3 Other Public Facilities ... 3.11-7
3.12 Traffic and Transportation ... 3.12-1
3.12.1 Regulatory Setting ... 3.12-1
3.12.1.1 State ... 3.12-1
3.12.1.2 Regional ... 3.12-1
3.12.1.3 Local ... 3.12-2
3.12.2 Environmental Setting ... 3.12-4

3.12.2.1 Regional ... 3.12-5
3.12.2.2 Local ... 3.12-6
3.13 Environmental Justice ... 3.13-1
3.13.1 Regulatory Setting ... 3.13-1
3.13.1.1 Federal ... 3.13-1
3.13.1.2 State ... 3.13-2
3.13.1.3 Local ... 3.13-2
3.13.2 Socioeconomic Conditions ... 3.13-5
3.13.2.1 Population ... 3.13-5
3.13.2.2 Demographics ... 3.13-6

4.0 Environmental Consequences ... 4-1
4.0.1 Introduction ... 4-1
4.0.2 Methods of Assessing Direct and Indirect Effects ... 4-1
4.0.3 Methods for Assessing Cumulative Effects ... 4-2
4.0.4 Cumulative Effects Analysis Area ... 4-3
4.0.5 Determination of Scope of Cumulative Effects ... 4-7
4.1 Aesthetics/Visual Resources ... 4.1-1
4.1.1 Overview ... 4.1-1
4.1.2 Methodology ... 4.1-1
4.1.3 No Action Alternative ... 4.1-2
4.1.3.1 Solar Areas ... 4.1-2
4.1.3.2 Conservation Areas ... 4.1-3
4.1.3.3 Mitigation Measures ... 4.1-3
4.1.3.4 Cumulative Effect ... 4.1-3
4.1.4 Proposed HCP Alternative ... 4.1-3
4.1.4.1 Solar Areas ... 4.1-3
4.1.4.2 Conservation Areas ... 4.1-19
4.1.4.3 Proposed Mitigation Measures ... 4.1-19
4.1.4.4 Cumulative Effect ... 4.1-21
4.1.5 Reduced Permit Area Alternative ... 4.1-22
4.1.5.1 Solar Areas ... 4.1-22
4.1.5.2 Conservation Areas ... 4.1-25
4.1.5.3 Proposed Mitigation Measures ... 4.1-26
4.1.5.4 Cumulative Effect ... 4.1-26
4.1.6 Comparison of Alternatives ... 4.1-26
4.2 Agriculture ... 4.2-1
4.2.1 Overview ... 4.2-1
4.2.2 No Action Alternative ... 4.2-1
4.2.2.1 Solar Sites ... 4.2-2
4.2.2.2 Conservation Areas ... 4.2-2
4.2.2.3 Mitigation Measures ... 4.2-2
4.2.2.4 Cumulative Effect ... 4.2-3
4.2.3 Proposed HCP Alternative ... 4.2-5
4.2.3.1 Solar Sites ... 4.2-5
4.2.3.2 Conservation Areas ... 4.2-6
4.2.3.3 Mitigation Measures ... 4.2-7
4.2.3.4 Cumulative Effect ... 4.2-7
4.2.4 Reduced Permit Area Alternative ... 4.2-9
4.2.4.1 Solar Sites ... 4.2-9
4.2.4.2 Conservation Areas ... 4.2-10
4.2.4.3 Mitigation Measures ... 4.2-11
4.2.4.4 Cumulative Effect ... 4.2-11
4.2.5 Comparison of Alternatives ... 4.2-12

4.3 Air Quality and Greenhouse Gas 4.3-1
4.3.1 Overview 4.3-1
4.3.2 Methodology 4.3-1
4.3.3 No Action Alternative 4.3-8
4.3.3.1 Construction and Operation Emissions 4.3-9
4.3.3.2 Exposure of Sensitive Receptors to Substantial Pollutant Concentrations 4.3-9
4.3.3.3 Mitigation Measures 4.3-9
4.3.3.4 Cumulative Effect 4.3-9
4.3.4 Proposed HCP Alternative 4.3-10
4.3.4.1 Construction and Operation Emissions 4.3-10
4.3.4.2 Exposure of Sensitive Receptors to Substantial Pollutant Concentrations 4.3-11
4.3.4.3 Mitigation Measures 4.3-11
4.3.4.4 Cumulative Effect 4.3-13
4.3.5 Reduced Permit Area Alternative 4.3-14
4.3.5.1 Construction and Operation Emissions 4.3-14
4.3.5.2 Exposure of Sensitive Receptors to Substantial Pollutant Concentrations 4.3-14
4.3.5.3 Mitigation Measures 4.3-15
4.3.5.4 Cumulative Effect 4.3-15
4.3.6 Comparison of Alternatives 4.3-15
4.4 Biological Resources 4.4-1
4.4.1 Overview 4.4-1
4.4.2 Methodology 4.4-1
4.4.3 No Action Alternative 4.4-1
4.4.3.1 Effects to Wetlands and Waters of the U.S. 4.4-2
4.4.3.2 Effects to Species 4.4-2
4.4.3.3 Mitigation Measures 4.4-2
4.4.3.4 Cumulative Effects 4.4-2
4.4.4 Proposed HCP Alternative 4.4-3
4.4.4.1 Effects to Wetlands and Waters of the U.S. 4.4-4
4.4.4.2 Effects to Species 4.4-4
4.4.4.3 Mitigation Measures 4.4-13
4.4.4.4 Cumulative Effects 4.4-13
4.4.5 Reduced Permit Area Alternative 4.4-14
4.4.5.1 Effects to Wetlands and Waters of the U.S. 4.4-15
4.4.5.2 Effects to Covered Species 4.4-16
4.4.5.3 Mitigation Measures 4.4-16
4.4.5.4 Cumulative Effects 4.4-16
4.4.6 Comparison of Alternatives 4.4-16
4.5 Cultural Resources 4.5-1
4.5.1 Overview 4.5-1
4.5.2 Methodology 4.5-1
4.5.3 No Action Alternative 4.5-2
4.5.3.1 Solar Sites 4.5-3
4.5.3.2 Conservation Areas 4.5-3
4.5.3.3 Mitigation Measures 4.5-4
4.5.3.4 Cumulative Effects 4.5-4
4.5.4 Proposed HCP Alternative 4.5-4
4.5.4.1 Solar Sites 4.5-5
4.5.4.2 Conservation Areas 4.5-6
4.5.4.3 Mitigation Measures 4.5-6
4.5.4.4 Cumulative Effect 4.5-7

4.5.5 Reduced Permit Area Alternative 4.5-8
4.5.5.1 Cultural and Paleontological Resources 4.5-8
4.5.5.2 Solar Sites 4.5-8
4.5.5.3 Conservation Areas 4.5-8
4.5.5.4 Mitigation Measures 4.5-9
4.5.5.5 Cumulative Effect 4.5-9
4.5.6 Comparison of Alternatives 4.5-9
4.6 Geology and Soils 4.6-1
4.6.1 Overview 4.6-1
4.6.2 Methodology 4.6-1
4.6.3 No Action Alternative 4.6-1
4.6.3.1 Exposure to Seismic Risks 4.6-1
4.6.3.2 Exposure to Other Soils and Geology Risks 4.6-2
4.6.3.3 Mitigation Measures 4.6-2
4.6.3.4 Cumulative Effect 4.6-2
4.6.4 Proposed HCP Alternative 4.6-2
4.6.4.1 Exposure to Seismic Risks 4.6-3
4.6.4.2 Exposure to Other Soils and Geology Risks 4.6-7
4.6.4.3 Mitigation Measures 4.6-7
4.6.4.4 Cumulative Effect 4.6-9
4.6.5 Reduced Permit Area Alternative 4.6-9
4.6.5.1 Exposure to Seismic Risks 4.6-10
4.6.5.2 Exposure to Other Soils and Geology Risks 4.6-10
4.6.5.3 Mitigation Measures 4.6-10
4.6.5.4 Cumulative Effect 4.6-11
4.6.6 Comparison of Alternatives 4.6-11
4.7 Hazards and Hazardous Materials 4.7-1
4.7.1 Overview 4.7-1
4.7.2 Methodology 4.7-1
4.7.3 No Action Alternative 4.7-1
4.7.3.1 Hazardous Materials (Hazardous Substances/Solar Panels/Wells/Agricultural Activities) 4.7-1
4.7.3.2 Hazards (Ambient Temperature/Electromagnetic Fields/Airports/Fire) 4.7-2
4.7.3.3 Mitigation Measures 4.7-2
4.7.3.4 Cumulative Effect 4.7-2
4.7.4 Proposed HCP Alternative 4.7-2
4.7.4.1 Hazardous Materials (Hazardous Substances/Solar Panels/ Wells/Agricultural Activities) 4.7-11
4.7.4.2 Hazards (Ambient Temperature/Electromagnetic Fields/Airports/Fire) 4.7-11
4.7.4.3 Mitigation Measures 4.7-12
4.7.4.4 Cumulative Effect 4.7-13
4.7.5 Reduced Permit Area Alternative 4.7-13
4.7.5.1 Hazardous Materials (Hazardous Substances/Solar Panels/Wells/Agricultural Activities) 4.7-14
4.7.5.2 Hazards (Ambient Temperature/Electromagnetic Fields/Airports/Fire) 4.7-14
4.7.5.3 Mitigation Measures 4.7-14
4.3.5.4 Cumulative Effect 4.7-14
4.7.6 Comparison of Alternatives 4.7-14
4.8 Hydrology and Water Quality 4.8-1
4.8.1 Overview 4.8-1
4.8.2 Methodology 4.8-1

4.8.3 No Action Alternative 4.8-1
4.8.3.1 Runoff and Drainage 4.8-1
4.8.3.2 Groundwater Effects 4.8-1
4.8.3.3 Cumulative Effect 4.8-2
4.8.4 Proposed HCP Alternative 4.8-2
4.8.4.1 Runoff and Drainage 4.8-2
4.8.4.2 Groundwater Effects 4.8-5
4.8.4.3 Mitigation Measures 4.8-6
4.8.4.4 Cumulative Effect 4.8-7
4.8.5 Reduced Permit Area Alternative 4.8-7
4.8.5.1 Runoff and Drainage 4.8-8
4.8.5.2 Groundwater Effects 4.8-8
4.8.5.3 Mitigation Measures 4.8-8
4.8.5.4 Cumulative Effect 4.8-8
4.8.6 Comparison of Alternatives 4.8-9
4.9 Land Use and Planning 4.9-1
4.9.1 Overview 4.9-1
4.9.2 No Action Alternative 4.9-1
4.9.2.1 Solar Sites 4.9-2
4.9.2.2 Conservation Areas 4.9-2
4.9.2.3 Mitigation Measures 4.9-2
4.9.2.4 Cumulative Effect 4.9-2
4.9.3 Proposed HCP Alternative 4.9-3
4.9.3.1 Solar Sites 4.9-5
4.9.3.2 Conservation Areas 4.9-5
4.9.3.3 Mitigation Measures 4.9-5
4.9.3.4 Cumulative Effect 4.9-6
4.9.4 Reduced Permit Area Alternative 4.9-7
4.9.4.1 Solar Sites 4.9-9
4.9.4.2 Conservation Areas 4.9-9
4.9.4.3 Mitigation Measures 4.9-10
4.9.4.4 Cumulative Effect 4.9-10
4.9.5 Comparison of Alternatives 4.9-11
4.10 Mineral Resources 4.10-1
4.10.1 Overview 4.10-1
4.10.2 No Action Alternative 4.10-1
4.10.2.1 Solar Areas 4.10-1
4.10.2.2 Conservation Areas 4.10-2
4.10.2.3 Mitigation Measures 4.10-2
4.10.2.4 Cumulative Effect 4.10-2
4.10.3 Proposed HCP Alternative 4.10-3
4.10.3.1 Solar Areas 4.10-4
4.10.3.2 Conservation Areas 4.10-4
4.10.3.3 Mitigation Measures 4.10-4
4.10.3.4 Cumulative Effect 4.10-7
4.10.4 Reduced Permit Area Alternative 4.10-8
4.10.4.1 Solar Areas 4.10-8
4.10.4.2 Conservation Areas 4.10-8
4.10.4.3 Mitigation Measures 4.10-9
4.10.4.4 Cumulative Effect 4.10-9
4.10.5 Comparison of Alternatives 4.10-10
4.11 Public Services 4.11-1
4.11.1 Overview 4.11-1
4.11.2 Methodology 4.11-1

4.11.3 No Action Alternative 4.11-1
4.11.3.1 Cumulative Effect 4.11-2
4.11.4 Proposed HCP Alternative 4.11-2
4.11.4.1 Fire and Medical Aid Services 4.11-2
4.11.4.2 Sheriff Services 4.11-3
4.11.4.3 Mitigation Measures 4.11-3
4.11.4.4 Cumulative Effect 4.11-4
4.11.5 Reduced Permit Area Alternative 4.11-5
4.11.5.1 Fire and Medical Aid Services; Sheriff Services 4.11-5
4.11.5.2 Cumulative Effect 4.11-5
4.11.6 Comparison of Alternatives 4.11-6
4.12 Traffic and Transportation 4.12-1
4.12.1 Overview 4.12-1
4.12.2 Methodology 4.12-1
4.12.3 No Action Alternative 4.12-1
4.12.3.1 Cumulative Effect 4.12-2
4.12.4 Proposed HCP Alternative 4.12-2
4.12.4.1 Construction and Decommissioning 4.12-2
4.12.4.2 Mitigation Measures 4.12-5
4.12.4.3 Operations 4.12-6
4.12.4.4 Cumulative Effect 4.12-7
4.12.5 Reduced Permit Area Alternative 4.12-7
4.12.5.1 Construction and Decommissioning 4.12-7
4.12.5.2 Mitigation Measures 4.12-8
4.12.5.3 Operations 4.12-8
4.12.5.4 Cumulative Effect 4.12-8
4.12.6 Comparison of Alternatives 4.12-8
4.13 Environmental Justice 4.13-1
4.13.1 Methodology 4.13-1
4.13.2 Socioeconomics 4.13-1
4.13.2.1 Job Creation 4.13-2
4.13.2.2 Revenue and Other Monetary Benefits 4.13-2
4.13.2.3 Health Benefits 4.13-2
4.13.3 No Action Alternative 4.13-3
4.13.4 Proposed HCP Alternative 4.13-3
4.13.5 Reduced Permit Area Alternative 4.13-4
4.13.6 Cumulative Effects 4.13-5
4.13.6.1 Socioeconomic Effects and Environmental Justice 4.13-5

5.0 Additional Topics Required by NEPA 5-1
5.1 Substantial Irreversible Changes to the Environment Resulting from the Proposed HCP 5-1
5.2 Relationship Between Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity 5-1
5.3 Substantial Adverse Effects that Cannot be Avoided 5-2
5.4 Growth-Inducing Effects 5-2
5.5 Environmentally Preferable Alternative 5-3

6.0 List of Agencies and Organizations Consulted 6-1

7.0 List of Preparers 7-1
7.1 United States Fish and Wildlife Service 7-1
7.2 Quad Knopf, Inc. 7-1

7.3 TKM Consulting, Inc. 7-1
7.4 Jaymie Brauer, Environmental Planning Services 7-1

8.0 References 8-1
8.1 Printed 8-1
8.2 Personal Communications 8-7

9.0 Acronyms 9-1

Appendices *(Contained on CD. See pocket on back cover)*

Appendix A Notice of Intent, Comment Letters, Mailing List

Appendix B Habitat Conservation Plan (HCP) Maricopa Sun Solar Complex Project, Maricopa Sun, LLC, Kern County, California, Quad Knopf, Inc., June 2013

TABLES

Table	Name	Page
ES-1	Species Covered by the Maricopa Sun HCP and ITP	ES-2
ES-2	Occurrences of Covered Activities by Phase	ES-5
ES-3	Summary of Impacts and Mitigation Measures	ES-11
2.2-1	Species Covered by the Maricopa Sun HCP and ITP	2-10
2.3-1	Occurrences of Covered Activities by Phase	2-13
3.2-1	Land Capability Classification	3.2-11
3.3-1	Federal and State Ambient Air Quality Standards	3.3-4
3.3-2	San Joaquin Valley Air Basin Attainment Status	3.3-5
3.3-3	Three Year Summary of Days Exceeding NAAQS and CAAQS Pollutant Standards	3.3-6
3.3-4	Kern County Coccidioidomycosis (Valley Fever) Cases by City	3.3-18
3.3-5	Greenhouse Gases	3.3-19
3.3-6	Kern County 2005 Base Year and 2020 Forecasted Year by Sector and Subsector	3.3-22
3.4-1	Monthly Maximum, Minimum, and Mean Temperature and Precipitation (Maricopa climate station: http://www.idcide.com/weather/ca/taft.htm)	3.4-9
3.4-2	Soil Types Present on the Maricopa Sun Solar Project's Covered Lands	3.4-11
3.4-3	Wetlands and Other Waters Identified Within and Adjacent to the Maricopa Sun Solar Project's Covered Lands	3.4-16
3.4-4	Plant Species Occurring on Solar Sites and Adjacent Lands of the Maricopa Sun Solar Project	3.4-23
3.4-5	Plant Species Occurring within Conservation Sites, Movement Corridors, and Adjacent Lands of the Maricopa Sun Solar Project	3.4-27
3.4-6	Wildlife Species Occurring on Covered Lands and Lands Adjacent to the Maricopa Sun Solar Project	3.4-29
3.4-7	Sensitive Vegetation Communities and Special Status Plant Species Occurring in the Region of the Maricopa Sun Solar Habitat Conservation Plan Area	3.4-31
3.4-8	Special Status Wildlife Species Occurring in the Region of the Maricopa Sun Solar Habitat Conservation Plan Area	3.4-32
3.4-9	List of Species Proposed for Coverage, Maricopa Sun HCP	3.4-41
3.4-10	Existing Maricopa Sun Solar Site Conditions and Presence of Covered Species	3.4-48
3.4-11	Existing Conditions of Maricopa Sun Solar Project's Conservation Sites and Presence of Covered Species	3.4-57
3.5-1	Existing Resources Identified During Survey	3.5-10
3.12-1	Peak Hour Trips for Nearby Highways	3.12-5
3.13-1	2000-2002 U.S. Census Population Estimates	3.13-5
3.13-2	Race and Ethnicity (2010 Census)	3.13-6
3.13-3	Educational Achievement	3.13-7
3.13-4	Income (In 2011 Inflation-adjusted dollars)	3.13-7
3.13-5	Annual Average Unemployment (not seasonally adjusted)	3.13-8
4.0-1	Proposed, Pending, and Recently Approved Projects Within a Radius of 6 Miles from The Covered Lands – Kern County, CA	4-4
4.1-1	Comparison of Alternatives to the No Action Alternative	4.1-27
4.2-1	Comparison of Alternatives to the No Action Alternative	4.2-12
4.3-1	De Minimus Level Thresholds	4.3-2
4.3-2	San Joaquin Valley Air Pollution Control Board Thresholds	4.3-3
4.3-3	Comparison of Alternatives to the No Action Alternative	4.3-15
4.4-1	Comparison of Alternatives to the No Action Alternative	4.4-17
4.5-1	Comparison of Alternatives to the No Action Alternative	4.5-10
4.6-1	Comparison of Alternatives to the No Action Alternative	4.6-11

4.7-1 Noise Levels from a Pile Driver 4.7-8
4.7-2 Comparison of Alternatives to the No Action Alternative 4.7-15
4.8-1 Comparison of Alternatives to the No Action Alternative 4.8-9
4.9-1 Comparison of Alternatives to the No Action Alternative 4.9-11
4.10-1 Comparison of Alternatives to the No Action Alternative 4.10-10
4.11-1 Comparison of Alternatives to the No Action Alternative 4.11-6
4.12-1 Peak Project-Level Construction Trip Generation 4.12-5
4.12-2 Comparison of Alternatives to the No Action Alternative 4.12-9
5-1 Overall Summary Comparing Environmental Effects of the Alternatives 5-4

FIGURES

Figure No.	Name	Page
ES-1	Regional Vicinity	ES-7
ES-2	Proposed Action Parcels	ES-9
2-1	Regional Vicinity	2-5
2-2	Proposed Action Parcels	2-7
2-3	Transmission Routes	2-21
2-4	Barrier Fencing	2-43
3.4-1	Location of Regional Context and Protected Public Lands in the Vicinity Map	3.4-7
3.4-2	Soils Map	3.4-13
3.4-3	Flood Zone Map	3.4-17
3.4-4	Wetlands and Waters of the United States	3.4-21
3.4-5	Land Use Map	3.4-25
3.4-6A	CNDDB Sensitive Avian Species Observations	3.4-33
3.4-6B	CNDDB Sensitive Mammal Species Observations	3.4-35
3.4-6C	CNDDB Sensitive Plant Species Observations	3.4-37
3.4-6D	CNDDB Sensitive Reptile, Amphibian, Insect, and Invertebrate Species Observations	3.4-39
3.4-7	Special Status Species Survey Results	3.4-49
3.8-1	Watersheds	3.8-9
3.8-2	Surface Water Availability and Groundwater Quality Boundary	3.8-11
3.9-1	General Plan Land Use Designations	3.9-3
4.1-1	Site and Vicinity Conditions, Looking South toward Existing High-Tension Transmission Line from 170th Street West and Avenue A	4.1-5
4.1-2	Site and Vicinity Conditions with Views of Active Farmland and Mountain Background from Holiday Avenue and 120th Street West	4.1-7
4.1-3	Site and Vicinity Conditions, Looking East form 120th Street West at Undeveloped Lands	4.1-9
4.1-4	View of the Covered Lands from the Wind Wolves Preserve Crossing Picnic Area	4.1-15
4.1-5	View of the Covered Lands with Computer Generated Solar Panel Facility from the Wind Wolves Preserve Crossing Picnic Area	4.1-17
4.6-1	Regional and Local Faults	4.6-5
4.7-1	Fire Hazard Severity Zones	4.7-9
4.12-1	Workers and Materials Routes	4.12-3

EXECUTIVE SUMMARY

ES.1 INTRODUCTION

Maricopa Sun, LLC, has submitted an application to the Service for an Incidental Take Permit (ITP) pursuant to Section 10(a)(1)(B) of the ESA, as amended, for activities covered under the Maricopa Sun Solar Complex Habitat Conservation Plan (Maricopa Sun HCP) The Draft HCP is included in the Appendix of this EIS. Maricopa Sun LLC has requested that an ITP from the Service authorize the incidental take of five species, including three federally listed species and 2 other species that may become federally listed during the 35-year life of the HCP. These species are collectively referred to as the Covered Species and are shown in Table ES-1.

Maricopa Sun LLC proposes to construct and operate the Maricopa Sun Solar Complex Project (Project), a 700 megawatt (mw) photo-voltaic power generating facility[1]. Electricity generated by the photo-voltaic facility will be sold to retail energy providers and made available to consumers. The Project, on approximately 5,784.3 acres, is generally located along South Lake Road and along Copus Road approximately 3 miles from the unincorporated community of Maricopa in southwestern Kern County (Covered Lands) (See Figures ES-1 and ES-2). Activities proposed to be covered by the ITP (Covered Activities) include pre-construction, construction, operations and maintenance, decommissioning, preservation and enhancement, and conservation plan management. (See Chapter 2.0 of this EIS, for proposed land use/disturbance. More detailed information can be found in the Draft HCP, contained in the Appendix of this EIS). At the end of the life of the Project (35 years) and after decommissioning, disturbed lands will be included in a conservation easement in perpetuity.

This Environmental Impact Statement (EIS) has been prepared by the U.S. Fish and Wildlife Service (Service) pursuant to the National Environmental Policy Act (NEPA) (42 U.S.C. §4321 *et seq.)* This EIS evaluates the effects of issuing an ITP pursuant to Section 10(a)(1)(B) of the ESA of 1973, as amended (16 U.S.C. § 1531 *et seq.*, 1539), for activities associated with the proposed Maricopa Sun Solar Complex Project (Project). Under Section 10(a)(2)(A) of the ESA, any application for an ITP must include a conservation plan that details, among other things, the impacts of take and the steps taken to minimize and mitigate such impacts.

An ITP is needed to authorize incidental take of The ITP applications request authorization for the incidental take of three federally listed species and for two currently unlisted species that may become listed within the 35-year permit period that may result from implementing activities covered under the proposed Maricopa Sun HCP.

[1] The amount of energy from a 700 mw facility is calculated as follows: 700 mw x 8,766 hours/year x 30% capacity factor = 1.84 million MWh = 1,840 gigawatt hours = 1.84 terrawatt hours

Table ES-1
Species Covered by the Maricopa Sun HCP and ITP

Common Name	Scientific Name	Federal Status[1]	State Status[1]	Other[1]
Covered Reptiles				
Blunt-nosed leopard lizard	*Gambelia sila*	FE	SE	SFP
Covered Mammals				
Tipton kangaroo rat	*Dipodomys nitratoides nitratoides*	FE	SE	-
San Joaquin kit fox	*Vulpes macrotis mutica*	FE	ST	-
Nelson's antelope squirrel	*Ammospermophilus nelsoni*	-	ST	-
Covered Birds				
Burrowing owl	*Athene cunicularia*	-	CSC	MBTA

Source: Quad Knopf, 2011a.
1 THE FOLLOWING ACRONYMS ARE DEFINED AS: FP = PROPOSED FOR FEDERAL LISTING, CSC = CALIFORNIA SPECIES OF CONCERN, SE = STATE ENDANGERED, ST = STATE THREATENED, SFP = STATE FULLY PROTECTED, MBTA = MIGRATORY BIRD TREATY ACT, AND BLMS = BUREAU OF LAND MANAGEMENT STATUS.

ES.2 PURPOSE AND NEED

The purpose of the proposed action and preparing this EIS are to:

- Respond to Maricopa Sun, LLC's application for an ITP for the covered species, pursuant to Section 10(a)(1)(B) of the ESA, as amended, and its implementing regulations (50 C.F.R. part 17.22 (b)(1) and policies.
- Protect, conserve and enhance the covered species and their habitats for the continuing benefit of the people of the United States.
- Provide a means and take steps to conserve the ecosystems depended on by the covered species.
- Ensure the long-term survival of the covered species through protection and management of the species and their habitat.
- Ensure compliance with the ESA, NEPA, and other applicable federal laws and regulations.

The need for the action is based on the covered activities proposed by Maricopa Sun, LLC that could result in the incidental take of covered species within the HCP boundaries as a result of habitat modification from planned future development of a Photovoltaic Solar Complex Project.

ES.3 NEPA COMPLIANCE

NEPA provides an interdisciplinary framework to ensure that federal agency decision-makers consider the effects of their actions on the environment. Under NEPA, any major federal action that may significantly affect the quality of the environment requires the preparation of an EIS.

Issuance of an ITP pursuant to the proposed HCP could result in significant environmental effects. Therefore, preparation of an EIS to consider the effects of the proposed action is necessary. This DEIS is an informational document intended to provide federal agencies, responsible or other interested agencies, and the public with an assessment of the potential environmental effects associated with issuance of an ITP by the U.S. Fish and Wildlife Service based on the proposed HCP. This EIS has been prepared in compliance with NEPA and the Council on Environmental Quality (CEQ) regulations (40 CFR 1500-1508).

ES.4 PUBLIC SCOPING PROCESS

The Council on Environmental Quality regulations for implementing NEPA require a process, referred to as scoping, for determining the range of issues to be addressed during the environmental review of a proposed action (40 CFR 1501.7). Through the scoping process, comments are solicited from agencies, organizations, and individuals to assist the Service in identifying environmental issues to be addressed in the EIS.

It should be noted that an environmental scoping process was conducted for the EIR that was prepared under the California Environmental Quality Act (CEQA) for the Maricopa Sun Solar Project and certified by the County of Kern (# 2010031034, Kern County 2010). A scoping meeting was conducted for the EIR in March 2010. At the end of the scoping process 13 comment letters were received addressing the proposed scope of EIR. The environmental topic areas analyzed in the EIR were based in part upon comments received during the scoping process. Those same environmental topics, or issue areas, are addressed in this EIS.

The Service held a public scoping meeting on January 23, 2012, at the Kern County Public Services Building, 2700 M Street, Conference Room 1-A, Bakersfield, California.

The scoping period began with publication of the NOI on December 23, 2011 and officially ended on February 21, 2012. A total of one comment letter was received from public agencies, organizations, and individuals. The single letter received is from the U.S. Environmental Protection Agency, dated February 14, 2012. There were no public comments.

ES.5 PROPOSED ACTION AND ALTERNATIVES

ES.5.1 No Action Alternative

Under the No Action Alternative, the Service would not issue an ITP and the Project would not be developed. The No Action Alternative would avoid the potential take of the proposed Cover Species, but would also not provide a clean source of electricity, offset carbon emissions, or contribute to the Nation's renewable energy portfolio. The 5,784.3 acres identified as the Permit Area would likely remain agricultural, the 1894.4 acres identified as Conservation Sites would not be permanently conserved, and the proposed Conservation Management Plan would not be implemented. As a result, there would be no conservation benefit to Covered Species or other listed or sensitive species as a result of the Proposed Action. Agricultural activities, including grazing or disking, would likely continue resulting in reduced habitat quality as a result of vegetation removal and soil compaction.

ES.5.2 Proposed HCP Alternative

The Proposed Action comprises the issuance of an ITP requested by the Applicant and implementation of the proposed Maricopa Solar HCP, including covered activities and conservation measures to avoid, minimize, or mitigate effects to the covered species. The Maricopa Sun Solar Complex is the first large scale PV solar project on private lands in the San Joaquin Valley. A number of environmental commitments have been incorporated into the covered activities to reduce the effects of the Project on the human environment.

Covered activities include four distinct phasing – Pre-construction, Construction, Operations and Maintenance, and Decommissioning. Multiple activities are expected to occur within each phase, as summarized in Table ES-2.

ES.5.3 Reduced Permit Area Alternative

Under the Reduced Permit Area Alternative, the Permit Area would be reduced from 5,784.3 acres to 3,682 acres by removing from the Project: Sites 4-S/4-M (652.5 acres), 6-S (320.9 acres), 7-S/7-M (481.2 acres) and 17-C (647.7 acres). The lands excluded from the Permit Area would likely remain vacant and would continue to be disked on a regular basis for weed control. If water became available, these lands would likely be converted to active agricultural production.

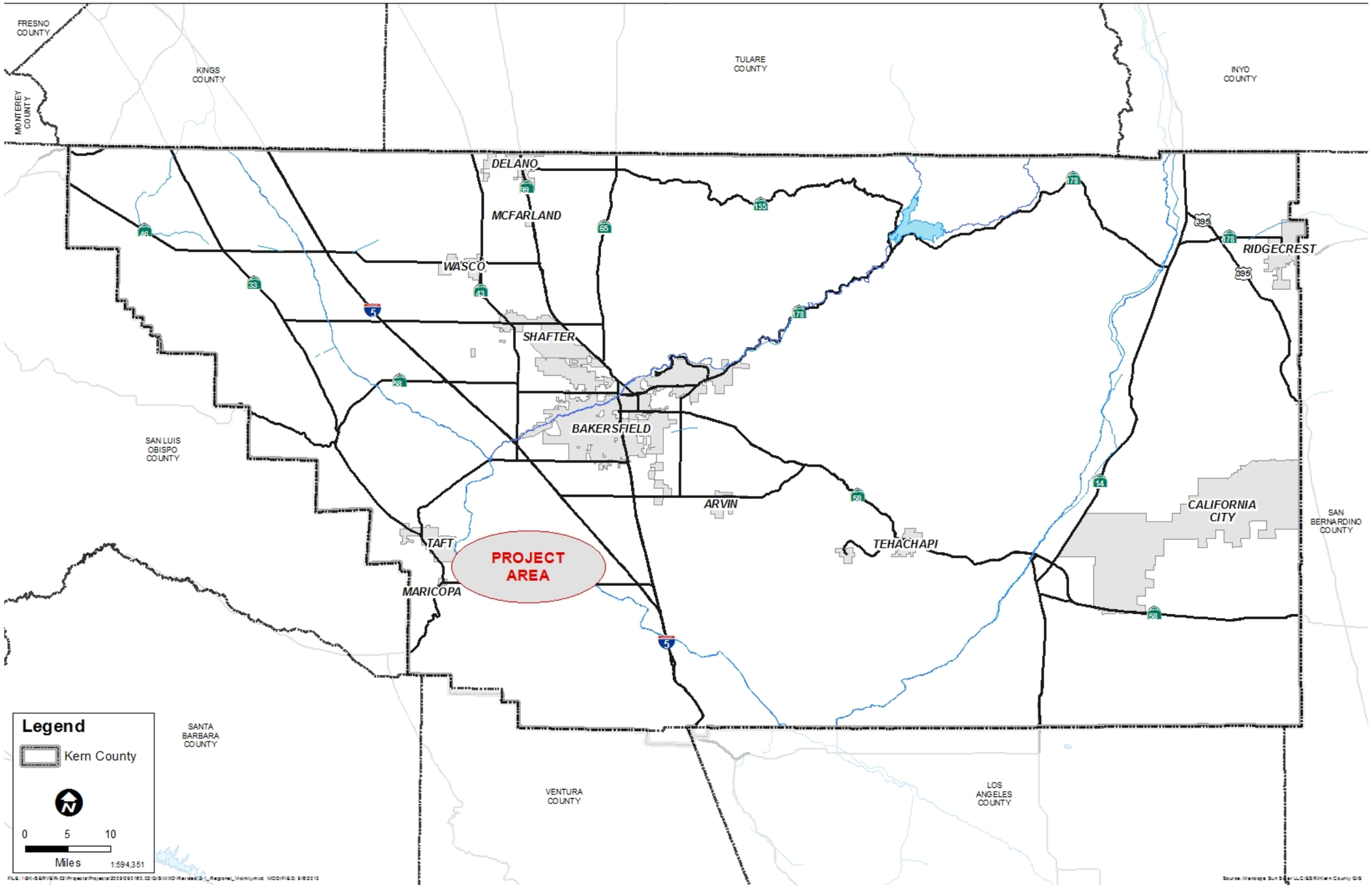
Under this alternative, there would be fewer disturbances of the Covered Species than under the Proposed Action because construction, operations, maintenance and decommissioning activities would occur over a smaller area. However, less land would be permanently conserved and managed, likely resulting in fewer benefits to the Covered Species.

Table ES-2
Occurrences of Covered Activities by Phase

Activity	Pre-construction	Construction	O&M*	Decommission
Clearing, grubbing, grading and leveling	X	X		X
Construction of O&M* buildings and meteorological stations		X		
Construction of overhead power lines, solar arrays		X		
Delivery of materials and equipment	X	X	X	
Demarcation of construction areas	X			
Drainage, erosion and dust control	X	X	X	X
Establishing and maintaining staging area(s)	X	X	X	
Fencing, installing gates, lighting, and construction of parking areas	X	X	X	
Geotechnical drilling and testing	X			
Grading and compacting	X	X		
Installation of overhead AC transmission lines		X		
Installation of signs	X	X		
Landscaping/site enhancement		X		
Managing waste (non-hazardous & hazardous)	X	X	X	X
Meter reading			X	
Monitoring alarms/security			X	
Operation of solar modules			X	
Paving of access road(s) and building areas		X	X	
Post construction soil treatment		X	X	
Removal of access roads				X
Reconductoring and installation of overhead AC transmission line system and substation expansion		X		
Removal of buildings, foundations, and concrete pads		X		X
Removal of electrical cabling				X
Removal of solar systems				X
Solar panel maintenance			X	
Surveying and staking	X			
Testing, plugging and abandoning wells	X			
Vegetation and weed management			X	
Habitat management, enhancement, and research**		X	X	X

* O&M = operations and maintenance
** Habitat management, enhancement, and research are independent of solar operations and are not discussed relative to phase.

This page is intentionally left blank.

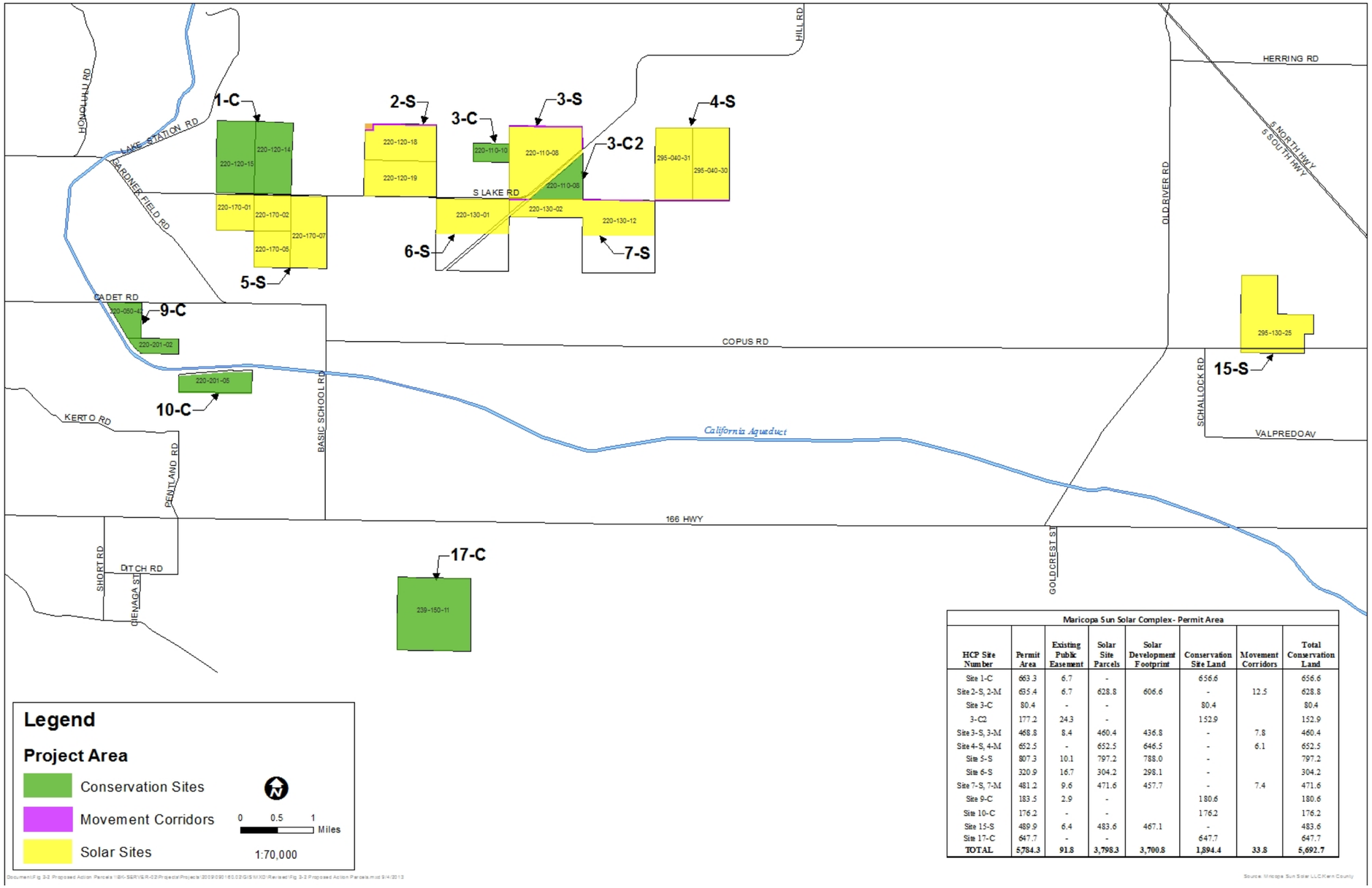


Quad Knopf

REGIONAL VICINITY
MARICOPA SUN SOLAR LLC

Figure
ES - 1

This page intentionally left blank.



Maricopa Sun Solar Complex- Permit Area							
HCP Site Number	Permit Area	Existing Public Easement	Solar Site Parcels	Solar Development Footprint	Conservation Site Land	Movement Corridors	Total Conservation Land
Site 1-C	663.3	6.7	-		656.6		656.6
Site 2-S, 2-M	635.4	6.7	628.8	606.6	-	12.5	628.8
Site 3-C	80.4	-	-		80.4		80.4
3-C2	177.2	24.3	-		152.9		152.9
Site 3-S, 3-M	468.8	8.4	460.4	436.8	-	7.8	460.4
Site 4-S, 4-M	652.5	-	652.5	646.5	-	6.1	652.5
Site 5-S	807.3	10.1	797.2	788.0	-		797.2
Site 6-S	320.9	16.7	304.2	298.1	-		304.2
Site 7-S, 7-M	481.2	9.6	471.6	457.7	-	7.4	471.6
Site 9-C	183.5	2.9	-		180.6		180.6
Site 10-C	176.2	-	-		176.2		176.2
Site 15-S	489.9	6.4	483.6	467.1	-		483.6
Site 17-C	647.7	-	-		647.7		647.7
TOTAL	**5,784.3**	**91.8**	**3,798.3**	**3,700.8**	**1,894.4**	**33.8**	**5,692.7**

Quad Knopf

PROPOSED ACTION PARCELS
MARICOPA SUN SOLAR LLC

Figure
ES - 2

This page intentionally left blank.

ES.6 ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION AND ALTERNATIVES

Table ES-3
Summary of Impacts and Mitigation Measures

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
4.1 Aesthetics/Visual Resources				
No Action Alternative	Minimal		There are no mitigation measures imposed under the No Action Alternative.	Minimal
Proposed HCP Alternative and Reduced Permit Area Alternative Visual character effects during construction and operations	Considerable	4.1-1	Drought tolerant native plants, in minimum of 15-gallon size containers, approved by the Kern County Planning and Community Development Department, shall be planted along the fence line at 500-foot intervals where the adjoining property is zoned for residential use (E [Estate Residential], R-2 [Medium Density Residential], or R-3 [High-Density Residential]). This vegetative treatment should also be implemented along local rural routes.	Substantial and unavoidable
		4.1-2	Prior to the final site plan approval and the issuance of grading or building permits, the project boundary setbacks shall be increased by an additional 50 feet near heavily used travel ways (e.g., SR-166, South Lake Road, and Old River Road), and residences. This technique would create separation by reducing the immediate adjacency of the proposed project, effectively reducing the project's proximity to visual receptors. This would also help create a sense of space where project parcels are on both sides of the travel way.	
		4.1-3	The Project Operator, to the extent feasible, shall install underground, onsite electrical collection systems to reduce the random tall vertical lines created by the electrical poles.	

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
			Undergrounding would also remove the dark horizontal lines of the conductors. This would create a project footprint that has a considerably smaller vertical presence, resulting in a less cluttered skyline and a more benign industrial nature.	
		4.1-4	The Project Operator shall clear debris from the project area at least twice per year; this can be in conjunction with regular panel washing and site maintenance activities. The applicant shall erect signs with contact information for the facility operator's maintenance staff at regular intervals along the site boundary, as required by Kern County Planning and Community Development Department. Maintenance staff shall respond within two weeks to resident requests for additional cleanup.	
		4.1-5	All outdoor lighting shall be the minimum required to meet safety and security standards. The color of all light fixtures shall emit a minimum of blue in their spectrum. "White" light sources, such as metal halide lamps and white light-emitting diodes, shall not be used. Acceptable light sources include high- and low-pressure sodium lamps, incandescent bulbs, and "yellow" light-emitting diodes. Project facility lighting shall be designed to provide the minimum illumination needed to achieve safety and security objectives.	
		4.1-6	All light fixtures shall have a flat lens recessed within a shield or hood to direct light to the intended illumination area. This will reduce the potential for glare effects that otherwise may create light trespass to residents or motorists and will minimize the amount of	

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
			light spilling upward into the sky, which would potentially affect local dark-sky conditions. Appropriate lighting at that time will be used and this will be in compliance withal development standards, the Kern County Zoning Ordinance Chapter 19.81, and the goals, policies and implementation plans of the Kern County General Plan Land Use, Open Space and Conservation Element.	
		4.1-7	Security lighting shall utilize advanced security technologies, such as motion detectors or remote security surveillance that would activate the security lighting only when the sensors identify a perimeter breach or other security threat. Additionally, lights shall use timers limiting their activation time. Dusk till dawn security lighting is prohibited. Operation and maintenance activities shall be conducted during daylight hours.	
		4.1-8	Solar panels and hardware shall be designed to minimize glare and spectral highlighting. To the extent possible, emerging technologies shall be utilized that introduce diffusion coatings and nanotechnological innovations that will effectively reduce the refractive index of the solar cells and protective glass. These technological advancements are intended to make the polar panels more efficient at converting incident sunlight into electrical power, but have the tertiary effect of reducing the amount of light that escapes into the atmosphere in the form of reflected light, which would be the potential source of glare and spectral highlighting.	

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
		4.1-9	As needed along the boundaries of the facility, appropriately colored privacy slats shall be woven into the perimeter fencing to reduce the potential for glare and spectral highlighting of the solar panels, which may be a source of distraction or discomfort to motorists along I-5, SR 166, South Lake Road, Copus Road, and Old River Road, and to scattered rural residents, especially along Copus Road.	
Cumulative visual effects	Cumulatively considerable		Mitigation measures MM 4.1-1 through MM 4.1-9 would be applied.	Substantial and unavoidable
4.2 Agriculture				
No Action / Alternative	Minimal		There are no mitigation measures imposed under the No Action Alternative.	Minimal
Proposed HCP Alternative and Reduced Permit Area Alternative	Minimal		Compliance with the goals, policies, and implementation measures of the Kern County General Plan is required. No additional mitigation measures are proposed.	Minimal
Cumulative agricultural effects	Minimal		No mitigation required.	Minimal
4.3 Air Quality and Greenhouse Gas				
No Action Alternative	Minimal		There are no mitigation measures imposed under the No Action Alternative.	Minimal

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
Proposed HCP Alternative and Reduced Permit Area Alternative Contribution to non-attainment during construction, operations, and decommissioning.	Considerable	4.3-1	Prior to obtaining grading permits for development of Permit Area, the project operator shall provide detailed greenhouse gas impact studies that include a quantification of emissions and identification of appropriate design or mitigation measures to minimize emissions as necessary.	Minimal
		4.3-2	Construction and operation of the proposed project shall be conducted in compliance with applicable rules and regulations set forth by the SJVAPCD. Dust control measures outlined below shall be implemented where they are applicable. The list shall not be considered all inclusive, and any other measures to reduce fugitive dust emissions not listed shall be encouraged. a. Land Preparation, Excavation, and/or Demolition. The following dust control measures shall be implemented: i. All soil excavated or graded shall be sufficiently watered to prevent excessive dust. Watering shall occur as needed with complete coverage of disturbed soil areas. Watering shall take place a minimum of twice daily on unpaved/untreated roads and on disturbed soil areas with active operations. ii. All clearing, grading, earth moving, and excavation activities shall cease during periods of winds greater than 20 miles per hour (averaged over 1 hour), if	

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
			disturbed material is easily windblown, or when dust plumes of 20% or greater opacity impact public roads, occupied structures, or neighboring property. iii. All fine material transported off site shall be either sufficiently watered or securely covered to prevent excessive dust. iv. Areas disturbed by clearing, earth moving, or excavation activities shall be minimized at all times. v. Stockpiles of soil or other fine loose material shall be stabilized by watering or other appropriate method to prevent wind-blown fugitive dust. vi. Where acceptable to the fire department, weed control shall be accomplished by mowing instead of discing, thereby leaving the ground undisturbed and with a mulch covering. b. Site Construction. After clearing, grading, earth moving, and/or excavating, the following dust control practices shall be implemented: i. Once initial leveling has ceased, all inactive soil areas within the construction site shall be (1) seeded and watered until plant growth is evident, (2) treated with a dust palliative, or (3) watered twice daily until soil has sufficiently crusted to prevent fugitive dust emissions.	

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
			ii. All active disturbed soil areas shall be sufficiently watered at least twice daily to prevent excessive dust. c. Vehicular Activities. During all phases of construction, the following vehicular control measures shall be implemented: i. Onsite vehicle speed shall be limited to 15 miles per hour. ii. All areas with vehicle traffic shall be paved, treated with dust palliatives, or watered a minimum of twice daily. iii. Streets adjacent to the project site shall be kept clean, and project-related accumulated silt shall be removed. iv. Access to the site shall be by means of an apron into the project site from adjoining surfaced roadways. The apron shall be surfaced or treated with dust palliatives. If operating on soils that cling to the wheels of vehicles, a grizzly[2] or other such device shall be used on the road exiting the project site, immediately prior to the pavement, in order to remove most of the soil material from vehicle tires.	

[2] A device (i.e. rails, pipes, or grates) used to dislodge mud, dirt, and/or debris from the tires and undercarriage of motor vehicles and/or haul trucks prior to leaving the work site (San Joaquin Valley Air Pollution Control District 2001).

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
		4.3-3	The project operator and/or its contractor(s) shall implement the following measures during construction of the proposed project: a. All equipment shall be maintained as recommended by manufacturer manuals. b. Equipment shall be shut down when not in use for extended periods of time. c. Construction equipment shall operate no longer than 8 cumulative hours per day. d. Electric equipment shall be used whenever possible in lieu of diesel- or gasoline-powered equipment. e. All construction vehicles shall be equipped with proper emissions control equipment and kept in good and proper running order to substantially reduce NOX emissions. On- and off-road diesel equipment shall use diesel particulate filters if permitted under manufacturer's guidelines. On- and off-road diesel equipment shall use diesel particulate filters if permitted under manufacturer's guidelines.	
Cumulative air and greenhouse gas effects	Cumulatively considerable		Mitigation measures MM 4.3-1, MM 4.3-2, and MM 4.3-3 would be applied.	Substantial and unavoidable
4.4 Biological Resources				
No Action Alternative	Minimal		There are no mitigation measures imposed under the No Action Alternative.	Minimal

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
Proposed HCP Alternative and Reduced Permit Area Alternative Effects on covered species during site preparation, construction, operations, and decommissioning	Considerable	4.4-1	Exclusion barrier fencing will be established between wetlands and Waters of the U.S. and the work area within Covered Lands to eliminate the potential for any adverse affects to these features.	Minimal
		4.4-2	Prior to development within Covered Lands the project proponent shall be required to conduct and submit to the Kern County Planning and Community Development Department appropriate protocol level biological surveys for special-status plant and animal species.	
		4.4-3	A qualified biologist shall be on site during vegetation removal and grading activities when those activities take place within 200 feet of sensitive habitats or species. Once those ground clearing activities have been accomplished, full-time monitoring shall no longer be required, but weekly inspections shall be conducted throughout the construction period to insure that mitigation measures for biological effects are being adequately implemented.	
			The Avoidance and Minimization Measures listed in Section 2.3.3 of this EIS for the Proposed HCP Alternative are applicable to this Alternative. Additionally, mitigation measures listed in Section 4.4.4.3 of this EIS for the Proposed HCP Alternative are applicable to this Alternative.	

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
Cumulative biological effects	Cumulatively considerable		Mitigation measures MM 4.4-1 through MM 4.4-3 would be applied.	Substantial and unavoidable
4.5 Cultural Resources				
No Action Alternative	Minimal		No mitigation measures would be imposed for the No Action alternative.	Minimal
Proposed HCP Alternative and Reduced Permit Area Alternative Effects on potential cultural and paleontological resources during site preparation and construction.	Considerable	4.5-1a	Subsequent to the submission of a specific project, and prior to issuance of grading permits and ground disturbance activities, the project operator shall hire a qualified archaeologist to conduct a Phase-1 cultural resources assessment in areas where none have yet been conducted for this project. A report of the study shall be submitted to the Kern County Planning and Community Development Department for review. Based on the results, further cultural resources analyses (Phase-2) and/or additional mitigation measures may be required.	Minimal
		4.5-1b	Prior to conducting ground-disturbing activities, all contractor employees associated with earthmoving and excavation will attend a training session, informing them of the potential for inadvertently discovered cultural resources and/or human remains, and measures/protocols to be followed to prevent destruction of cultural or paleontological resources or human remains.	
		4.5-2	If concentrations of historic-period and/or prehistoric cultural materials are encountered during construction activities, all work in the immediate vicinity of the find shall halt until a qualified archaeologist can evaluate the find and make recommendations.	

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
			Cultural resource materials may include, but are not limited to, historic resources such as household debris, ceramics, industrially related materials and fire-blown glass, metal, wood, brick or structural remnants. If the qualified archaeologist determines that he discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse effects from project implementation. These additional studies may include avoidance, testing, and evaluation, or data recovery excavation. Construction shall not resume until appropriate measures are recommended or the material are determined to be minimal.	
		4.5-3	During grading and site preparation activities, if paleontological resources, such as fossils are encountered all work in the immediate vicinity of the fins shall halt until a qualified paleontologist can evaluate the find and make recommendations. If the qualified archaeologist determines that he discovery represents a potentially significant paleontological resource, additional investigations may be required to mitigate adverse effects from project implementation. These additional studies may include avoidance, testing, and evaluation, or data recovery excavation. Construction shall not resume until appropriate measures are recommended or the material are determined to be minimal.	
		4.5-4	If human remains are discovered within the Project sites, the specific protocols, guidelines, and channels of communication outlined by the Native American Heritage Commission, and in accordance with Section 7050.5 of the Health and Safety Code, Section 5097.98 of the PRC (Chapter 1492, Statues of 1982, SB	

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
			297), and SB 447 (Chapter 44, Statues of 1987) will be followed. Section 7050.5 will guide the potential Native American involvement, in the event of discovery of human remains, at the direction of the County Coroner.	
Cumulative cultural resource effects	Cumulatively considerable		Mitigation measures MM 4.5-1a, MM 4.5-1b, MM 4.5-2, MM 4.5-3 and MM 4.5-4 would apply.	Minimal
4.6 Geology and Soils				
No Action Alternative	Minimal		There are no mitigation measures imposed under the No Action Alternative.	Minimal
Proposed HCP Alternative and Reduced Permit Area Alternative Effects on soil resources during site preparation, construction, and operations	Considerable	4.6-1a	Prior to the approval of grading permits on all Permit Area sites, the project operator shall retain a qualified geotechnical engineer to design the project facilities to withstand probable seismic-induced ground shaking on the site. All grading and construction on site shall adhere to all specifications and procedures and site conditions presented in the final design plans, which shall be fully compliant with the seismic requirements of the California Building Code, Uniform Building Codes, Kern County Building Code, Chapter 17, and as recommended by a California registered professional engineer. The procedures and site conditions include, but are not limited to, proper site preparation, foundation specifications, and buried metal protection measures. The final structural design shall be subject to approval and follow-up inspection by the Kern County Building Inspection Department. Final compliance requirements shall be provided to the onsite construction supervisor and Kern County building inspector to ensure compliance.	Minimal

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
		4.6-1b	A detailed Phase II geotechnical evaluation by a qualified soils/geotechnical engineer or geologist, consisting of field exploration (drilling and soil sampling), laboratory testing of soils samples and engineering analysis, shall be prepared to determine soils properties as related to, but not limited to the following: ground motion acceleration parameters, amplification properties of the subsurface units at the specific site(s), the potential for the hydrocompaction of soils to affect the proposed facilities, septic sanitary system feasibility, as well as the expansive soils' potential to affect the proposed facilities. These studies shall be used to determine the appropriate solar panel foundation and support structure engineering to be utilized, as well as building requirements and septic system requirements to be incorporated in the proposed development as appropriate. Copies of all analyses shall be submitted for review and approval by the Kern County Engineering Surveying and Permit Services Department and the Planning and Community Development Department.	
		4.6-2	The project operator shall limit grading to the minimum area necessary for construction and operation of the project, and shall retain a California registered professional engineer to review the final grading earthwork and foundation plans prior to construction. Final plans shall include BMPs to limit on- and offsite erosion, and a water plan to treat disturbed areas during construction to reduce dust suppression.	
		4.6-3	The project operator shall use existing roads to the greatest extent feasible to minimize increased erosion. Prior to approval of the	

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
			grading permit, the final plans shall be reviewed by the County to confirm that existing roads were used to the greatest extent feasible. If the county determines that new roads would be created that are not necessary to the project construction or are redundant to existing roads, the project operator will remove the offending roads from the final plans prior to approval.	
		4.6-4	The project operator shall design the septic systems and leach fields in accordance with the Kern County Environmental Health Services Department and shall obtain the required permits and\or approvals related to septic systems and leach fields and implement all required conditions.	
Cumulative geologic and soils effects	Cumulatively considerable		Mitigation Measures MM 4.6-1a through MM 4.6-4 would apply.	Minimal
4.7 Hazards and Hazardous Materials				
No Action Alternative	Minimal		There is no mitigation measure imposed under the No Action Alternative.	Minimal
Proposed HCP Alternative and Reduced Permit Area Alternative Potentially hazardous effects during construction and operations	Considerable	4.7-1	During construction, should installation of trackers and panels require a pile driver to drive in steel support piles, the applicant shall use the Vermeer PD10 pile driver, or a similar piece of equipment that would not exceed the County of Kern's 65 DM Ldn limit at the nearest resident.	Minimal

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
		4.7-2	The plugged and/or abandoned wells located within the project boundaries shall be inspected and tested for leakage prior to construction activities. Remedial operations will be performed if necessary. The well locations shall be recorded on all future maps of the project. A copy of the map shall be submitted to the California Department of Oil, Gas, & Geothermal Resources (DOGGR). In the event that other abandoned or unrecorded wells are uncovered or damaged during excavation or grading activities, remedial plugging operations may be required. DOGGR shall be contacted for requirements and approval, and copies of said approvals shall be submitted to the Kern County Planning and Community Development Department.	
		4.7-3	In accordance with the California Health and Safety Code and Kern County regulations, the project operator shall prepare a hazardous materials business plan and submit it to the Kern County Environmental Health Services Department/Hazardous Materials Section for review and approval. The hazardous materials business plan will delineate hazardous material and hazardous waste storage areas; describe proper handling, storage, transport, and disposal techniques; describe methods to be used to avoid spills and minimize effects in the event of a spill; describe procedures for handling and disposing of unanticipated hazardous materials encountered during construction; and establish public and agency notification procedures for spills and other emergencies, including fires.	

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
			The hazardous materials business plan will also include procedures to avoid or minimize dust from existing residual pesticide and herbicide use that may be present on the site. The project operator will provide the hazardous materials business plan to all contractors working on the project and will ensure that one copy is available at the project site at all times.	
		4.7-4	The contractor or personnel shall use herbicides that are approved for use by the California Department of Fish and Wildlife. Workers applying herbicides shall have all appropriate State and local herbicide applicator licenses and comply with all State and local regulations regarding herbicide use. Herbicides shall be mixed and applied in conformance with the product manufacturer's directions. The herbicide applicator shall be equipped with splash protection clothing and gear, chemical resistant gloves, chemical spill/splash wash supplies, and material safety data sheets for all hazardous materials to be used. To minimize harm to wildlife, vegetation, and water bodies, herbicides shall not be applied directly to wildlife; products identified as non-toxic to birds and small mammals will be used if nests or dens are observed; and herbicides shall not be applied within 50 feet of any surface water body when water is present. Herbicides shall not be applied if it is raining at the site, rain is imminent, or the target area has puddles or standing water. Herbicides shall not be applied when wind velocity exceeds 10 miles per hour. If spray is observed to be drifting to a non-target location, spraying shall be discontinued until conditions causing the drift have abated.	

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
Cumulative hazardous effects	Cumulatively considerable		Mitigation measures MM 4.7-1 through MM 4.7-4 would apply.	Minimal
4.8 Hydrology and Water Quality				
No Action Alternative	Minimal		There are no mitigation measures imposed under the No Action Alternative.	Minimal
Proposed HCP Alternative and Reduced Permit Area Alternative Potential effects on local surface hydrology and water quality	Considerable	4.8-1	Prior to issuance of grading permits, the project operator shall submit a Stormwater Pollution Prevention Plan (SWPPP) to the Kern County Planning and Community Development Department that specifies BMPs to prevent all construction pollutants from contacting stormwater, with the intent of keeping all products of erosion from moving off site and into receiving waters. The requirements of the SWPPP shall be incorporated into design specifications and construction contracts. Recommended BMPs for the construction phase may include the following: • Stockpiling and disposing of demolition debris, concrete, and soil properly; • Protecting existing storm drain inlets and stabilizing disturbed areas; • Implementing erosion controls; • Properly managing construction materials; and • Managing waste, aggressively controlling litter, and implementing sediment controls.	Minimal

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
		4.8-2	Prior to issuance of grading permits, the project operator shall prepare a drainage plan that is designed to mitigate runoff and surface water pollution and shall include engineering recommendations to minimize the potential for impeding or redirecting 100-year flood flows. The final design of the solar arrays shall include a 0.5-foot clearance above 1.0 foot of freeboard between the calculated maximum flood depths for Base Elevation and the bottom support rail of the solar arrays or the finished floor of any permanent structure. Solar sites shall be graded to direct potential flood waters into channels adjacent to the existing and proposed right of ways, without increasing the water surface elevations more than one-foot or as required by Kern County's Floodplain Ordinance. The drainage plan shall be prepared in accordance with the Kern County Grading Code and approved by the Kern County Engineering, Surveying and Permitting Services, Floodplain Management Section prior to the issuance of grading permits. With implementation of these measures for the Solar Development Footprint involved in this project the construction, operation and decommissioning of the Solar Sites and their equipment and access facilities will have minimal environmental effects.	
Cumulative hydrology and water quality effects	Cumulatively considerable		Mitigation measures MM 4.8-1 and MM 4.8-2 would be applicable.	Minimal

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
4.9 Land Use and Planning				
No Action Alternative	Minimal		There are no mitigation measures imposed under the No Action Alternative.	Minimal
Proposed HCP Alternative and Reduced Permit Area Alternative Potential effects on land use	Considerable	4.9-1	Prior to operation of the solar facility, the project operator shall consult with the Department of Defense to identify the appropriate Frequency Management Office officials to coordinate the use of telemetry to avoid potential frequency conflicts with military operations.	Minimal
		4.9-2	Prior to issuance of any building permit, the project operator will provide a decommission plan for review and approval by the Kern County Engineering, Surveying, and Permit Services Department or a County-contracted consulting firm at a cost to be borne by the project operator. The decommission plan will factor in the cost to remove the solar panels and support structures, replace disturbed soils from removal of support structures, and control fugitive dust on the remaining vacant land. Salvage value for the solar panels and support structures will be included in the financial assurance calculations. This mitigation measure will be in effect only when/if the project operator is incapable of performing the work or when Kern County would be required to hire an independent contractor to perform the decommission work. In addition to submitting a decommission plan, the project operator will post or establish and maintain with Kern County financial assurances related to the deconstruction of the site as identified on the approved decommission plan in the event that at any point in time the project manager determines that he/she cannot undertake the decommissioning process as outlined.	

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
			The financial assurance required to issuance of any building permit will be established using one of the following: • An irrevocable letter of credit; • A surety bond; • A trust in accordance with the approved financial assurances to guarantee the deconstruction will be completed in accordance with the approved decommission plan; or • Other financial assurances as reviewed and approved by the County Administrative Office in consultation with the Kern County Planning and Community Development Department. The financial institution or surety company will give Kern County at least 120 days' notice of intent to terminate the letter of credit or bond. Financial assurances will be reviewed annually by the Kern County Engineering, Surveying, and Permit Services Department or a County-contracted consulting firm at a cost to be borne by the project operator to substantiate that adequate funds exist to ensure deconstruction of all solar panels and support structures identified on the approved decommission plan. Should the project operator deconstruct the site on its own, the County will not pursue forfeiture of the financial assurance. Once deconstruction has occurred, financial assurance for that portion of the site will no longer be required and any financial assurance posted will be adjusted or	

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
			returned accordingly. Any funds not used through decommission of the site by the County will be returned to the project operator.	
Cumulative land use and planning effects	Cumulatively considerable		Mitigation measures MM 4.9-1 and 4.9-2 would apply.	Minimal
4.10 Mineral Resources				
No Action Alternative			There are no mitigation measures imposed under the No Action Alternative.	
Proposed HCP Alternative and Reduced Permit Area Alternative Effects on mineral resources during construction and operations	Considerable	4.7-1	Found in Section 4.7, Hazardous Materials requires inspection and testing of capped or abandoned wells within the Covered Lands. The plugged and/or abandoned wells located within the project boundaries shall be inspected and tested for leakage prior to construction activities. Remedial operations will be performed if necessary. The well locations shall be recorded on all future maps of the project. A copy of the map shall be submitted to DOGGR. In the event that other abandoned or unrecorded wells are uncovered or damaged during excavation or grading activities, remedial plugging operations may be required. DOGGR shall be contacted for requirements and approval, and copies of said approvals shall be submitted to the Kern County Planning and Community Development Department.	Minimal
		4.9-2	Found in Section 4.9 Land Use, requires a decommissioning plan. Prior to issuance of any building permit, the project operator will provide a decommission plan for review and approval by the Kern County Engineering, Surveying, and Permit Services Department or a County-contracted consulting firm at a cost to be borne by the	

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
			project operator. The decommission plan will factor in the cost to remove the solar panels and support structures, replace disturbed soils from removal of support structures, and control fugitive dust on the remaining vacant land. Salvage value for the solar panels and support structures will be included in the financial assurance calculations. This mitigation measure will be in effect only when/if the project operator is incapable of performing the work or when Kern County would be required to hire an independent contractor to perform the decommission work. In addition to submitting a decommission plan, the project operator will post or establish and maintain with Kern County financial assurances related to the deconstruction of the site as identified on the approved decommission plan in the event that at any point in time the project manager determines that he/she cannot undertake the decommissioning process as outlined.	
		4.10-1a	For Solar Site 2-S,Solar Site 3-S, Solar Site 4-S, Site 6, Site 7-S, and Solar Site 15-6, (see Figure 2-2 for Site Locations): The Project Operator or its successor-in-interest ("Project Operator") shall reach a written agreement with Vintage Production California LLC or its successor-in-interest ("Vintage") as to the location of a maximum of five separate 10-acre drill site areas per section (hereinafter "Drilling Areas") on these parcels and routes of ingress and egress thereto. The Drilling Areas shall be located in such a manner as to allow complete and efficient access to, and the exploration and/or extraction of, underlying oil reserves or other minerals. The total acreage of Drilling Areas shall not exceed 50 acres per 640-acre section.	

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
		4.10-1b	The Project Operator shall record or cause to be recorded easements or other documents confirming Vintage's interest in the Drilling Areas and its right of ingress and egress to each drill site.	
		4.10-1c	Evidence of Vintage's written agreement with the Project Operator as to the location of the Drilling Areas and the easements or other documents confirming Vintage's interest in the Drilling Areas and right of access to each drill site shall be submitted by Project Operator to the Planning and Community Development Department for verification prior to final site plan approval and the issuance of any grading or building permits for the development of solar facilities on project sites.	
		4.10-1d	Should an alternative agreement to part a) and/or b) above, be reached between Vintage and the Project Operator, written documentation shall be submitted by Project Operator to the Planning and Community Development Department for verification prior to final site plan approval and the issuance of any grading or building permits for the development of solar facilities on project sites.	
		4.10-2a	For Conservation Site 1-C, Solar Site 5-S, Conservation Site 9-C, Conservation Site 10-C, (see Figure 2-2 for Site Locations): The Project Operator shall consult with Vintage regarding the number, location, and size of the Drilling Areas for these specified parcels and access to each of the Drilling Areas. The Project Operator shall reach a written agreement with Vintage as to the number, location, and size of the Drilling Areas on these specified parcels and routes	

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
			of ingress and egress thereto. The Drilling Areas shall be located in such a manner as to allow complete and efficient access to, and the exploration and/or extraction of, underlying oil reserves or other minerals.	
		4.10-2b	The Project Operator shall record or cause to be recorded easements or other documents confirming Vintage's interest in the Drilling Areas and its right of ingress and egress to each drill site.	
		4.10-2c	Evidence of Vintage's written agreement with the Project Operator as to the location of the Drilling Areas and the easements or other documents confirming Vintage's interest in the Drilling Areas and right of access to each drill site shall be submitted by Project Operator to the Planning and Community Development Department for verification prior to final site plan approval and the issuance of any grading or building permits for the development of solar facilities on project sites.	
		4.10-2d	Should an alternative agreement to part a) and/or b) above, be reached between Vintage and the Project Operator, written documentation shall be submitted by Project Operator to the Planning and Community Development Department for verification prior to final site plan approval and the issuance of any grading or building permits for the development of solar facilities on project sites.	
		4.10-3a	For sites upon which Aera Energy LLC ("Aera") owns an interest in the minerals, The Project Operator or its successor-in-interest ("Project Operator"), shall reach a written agreement with Aera or	

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
			its successor-in-interest as to the location or a maximum of five separate 10-acres drill site areas per section (hereinafter, "Drilling Areas") on these parcels and routes of ingress and egress thereto. The Drilling Areas shall be located in such a manner as to allow complete and efficient access to, and the exploration and/or extraction of, underlying oil reserves or other minerals. The total acreage of Drilling Areas shall not exceed 50 acres per 640-acre section.	
		4.10-3b	The Project Operator shall record or cause to be recorded easements or other documents confirming Area's interest in the Drilling Areas and its right of ingress and egress to each drill site.	
		4.10-3c	Evidence of Vintage's written agreement with the Project Operator that the solar panel configuration and associated equipment will allow for sufficient placement of seismic geophones and access for vibrator buggies, along with Aera's written agreement as to the location of the Drilling Areas and the easements or other documents confirming Aera's interest in the Drilling Areas as well as, sufficient pipeline and power line corridors from the drill sites to a point exiting the property and right of access to each drill site, shall be submitted by Project Operator to the Planning and Community Development Department for verification prior to final site plan approval and the issuance of any grading or building permits for the development of solar facilities on project sites.	

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
		4.10-3d	Should an alternative agreement to part a) and/or b) above, be reached between Aera and the Project Operator, written documentation shall be submitted by Project Operator to the Planning and Community Development Department for verification prior to final site plan approval and the issuance of any grading or building permits for the development of solar facilities on project sites.	
		4.7-1	Found in Section 4.7, Hazardous Materials requires inspection and testing of capped or abandoned wells within the Covered Lands.	
		4.9-2	Found in Section 4.9 Land Use, requires a decommissioning plan.	
Cumulative mineral resources effects	Cumulatively considerable		Mitigation measures MM 4.7-1, MM 4.9-2, MM 4.10-1a through 4.10-1d, MM 4.10-2a through 4.10-2d and MM 4.10-3a through 4.10-3d would apply.	Minimal
4.11 Public Services				
No Action Alternative	Minimal		There are no mitigation measures imposed under the No Action Alternative.	
Proposed HCP Alternative and Reduced Permit Area Alternative Potential effects on public services during construction and operations	Considerable	4.11-1	The applicant shall develop and implement a fire safety plan for use during construction and operation. The applicant shall submit the plan, along with maps of the project site and access roads, to the KCFD for review and approval prior to the issuance of any building permit or grading permits. The fire safety plan shall contain notification procedures and emergency fire precautions including, but not limited to, the following:	Minimal

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
			a. All internal combustion engines, stationary and mobile, shall be equipped with spark arresters. Spark arresters shall be in good working order; b. Trucks and cars with factory-installed (type) mufflers shall be used only on roads where the roadway is cleared of vegetation. These vehicle types shall maintain their factory-installed (type) muffler in good condition; c. Fire rules shall be posted on the project bulletin board at the contractor's field office and areas visible to employees; d. Equipment parking areas and small stationary engine sites shall be cleared of all extraneous flammable materials; e. Personnel shall be trained in the practices of the fire safety plan relevant to their duties. Construction and maintenance personnel shall be trained and equipped to extinguish small fires in order to prevent them from growing into more serious threats; and f. The applicant shall make an effort to restrict use of chainsaws, chippers, vegetation masticators, grinders, drill rigs, tractors, torches, and explosives to outside the official fire season. When the above tools are used, water tanks equipped with hoses, fire rakes, and axes shall be easily accessible to personnel.	

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
		4.11-2	The applicant shall pay the County for impacts to countywide public protection, sheriff patrol and investigation, and fire services at a rate of $29.59 per 1,000 square feet of covered ground for the facility and related onsite structures for the entire covered area of the project. The total amount shall be divided by the number of years of operation and paid on a yearly basis. The annual amount shall be based on the square footage of solar site ground covered by April 30 of each year, if completed in phases. The amount shall be paid for each and all years of operation. The fee shall be paid to the Kern County auditor/controller by April 30 of each calendar year.	
		4.11-3	Written verification of ownership of the project shall be submitted to the Kern County Planning and Community Department by April 15 of each calendar year. If the project is sold to a city, county, or utility company that pays assessed taxes that equal less than $1,000 per MW per year, than they shall pay those taxes plus an amount necessary to equal the equivalent of $1,000 per MW. The amount shall be paid for all years of operation. The fee shall be paid to the Kern County Auditor/Controller by April 30 of each calendar year.	
Cumulative public services effects	Cumulatively considerable		Mitigation measures MM 4.11-1 through 4.11-3 would apply.	Minimal
4.12 Traffic and Transportation				
No Action Alternative			There are no mitigation measures imposed under the No Action Alternative.	

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
Proposed HCP Alternative and Reduced Permit Area Alternative Potential effects on traffic and transportation systems during construction and operations	Considerable	4.12-1	Prior to the issuance of building or grading permits the project operator shall: a. Submit engineering drawings of any proposed access road design for the review and approval of the Kern County Roads Department. b. Obtain an encroachment permit from the Kern County Roads Department for applicable roads in the Kern County Road Maintenance System. c. Enter into a secured agreement with Kern County to ensure that any County roads that are demonstrably damaged by project-related activities are promptly repaired and, if necessary, paved, slurry-sealed, or reconstructed as per requirements of the state and or Kern County. d. Identify the roads to be used during construction, and be responsible to repair any damage to non-County maintained roads that may result from construction activities; submit to the Kern County Planning and Community Development Department a preconstruction video log and inspection of roadway conditions for those roads to be used during construction.	Minimal
		4.12-2	Subsequent to completion of construction and to decommissioning, submit post-construction/post decommissioning video log and inspection reports to the County in DVD format. The County, in consultation with the HCP's engineer, shall determine the extent of remediation required, if any.	

Impact	Significance Before Mitigation	Mitigation #	Mitigation Measure	Significance After Mitigation
Cumulative traffic and transportation effects	Cumulative considerable		Mitigation measures MM 4.12-1 and MM 4.12-2 would apply.	Minimal
4.13 Environmental Justice				
No Action Alternative	Minimal		There are no mitigation measures imposed under the No Action Alternative.	
Proposed HCP Alternative and Reduced Permit Area Alternative Potential environmental justice effects	Minimal		No mitigation measures are required.	Minimal
Cumulative environmental justice effects	Minimal		No mitigation measures are required.	Minimal

1.0 PURPOSE AND NEED FOR ACTION

1.1 BACKGROUND AND PROPOSED ACTION

Private landowners, corporations, state or local governments, or other non-Federal landowners who wish to conduct otherwise lawful activities on their land that might incidentally *take* wildlife that is listed as endangered or threatened under the Federal Endangered Species Act of 1973, as amended (16 U.S.C Section 1531 et seq., 1539) (ESA) must first obtain an incidental take permit (ITP) from the U.S. Fish and Wildlife Service (Service). As discussed further in Section 1.3, ESA take is generally defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting a protected animal species.

Maricopa Sun, LLC, has submitted an application to the Service for an ITP pursuant to Section 10(a)(1)(B) of the ESA, as amended, for activities covered under the Maricopa Sun Solar Complex Habitat Conservation Plan (Maricopa Sun HCP) The Draft HCP dated August 2013 is included in Appendix B of this EIS. Maricopa Sun LLC has requested that an ITP from the Service authorize the incidental take of five species, including three federally listed species and 2 other species that may become federally listed during the 35-year life of the HCP. These species are collectively referred to as the Covered Species and include the following: blunt-nosed leopard lizard (*Gambelia sila*), Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*), San Joaquin kit fox (*Vulpes macrotis mutica*), Nelson's antelope squirrel (*Ammospermophilus nelsoni*), and burrowing owl (*Athene cunicularia*).

Maricopa Sun LLC proposes to construct and operate the Maricopa Sun Solar Complex Project (Project), a 700 megawatt (mw) photo-voltaic power generating facility[1]. Electricity generated by the photo-voltaic facility will be sold to retail energy providers and made available to consumers. The Project, on approximately 5,784.3 acres, is generally located along South Lake Road and along Copus Road approximately 3 miles from the unincorporated community of Maricopa in southwestern Kern County (Covered Lands) (See Chapter 2.0, Figure 2-2 of this EIS). Activities proposed to be covered by the ITP include pre-construction, construction, operations and maintenance, decommissioning, preservation and enhancement, and conservation plan management (Covered Activities). (See Chapter 2.0 of this EIS, for proposed land use/disturbance. More detailed information can be found in the Draft HCP, contained in Appendix B of this EIS). At the end of the life of the Project (35 years) and after decommissioning, disturbed lands will be placed in a conservation easement that will be held in perpetuity.

[1] The amount of energy from a 700 mw facility is calculated as follows: 700 mw x 8,766 hours/year x 30% capacity factor = 1.84 million MWh = 1,840 gigawatt hours = 1.84 terrawatt hours

This Environmental Impact Statement (EIS) has been prepared by the Service pursuant to the National Environmental Policy Act (NEPA) (42 U.S.C. §4321 *et seq.)* This EIS evaluates the effects of issuing an ITP pursuant to Section 10(a)(1)(B) of the ESA for activities associated with the proposed Maricopa Sun Solar Complex Project (Project or Proposed Action). Under Section 10(a)(2)(A) of the ESA, any application for an ITP must include a conservation plan that details, among other things, the impacts of take and the steps taken to minimize and mitigate such impacts.

The ITP applications request authorization for the incidental take of three federally listed species and for two currently unlisted species that may become listed within the 35-year permit period that may result from implementing activities covered under the proposed Maricopa Sun HCP.

1.2 PURPOSE AND NEED FOR THE PROPOSED FEDERAL ACTION

Certain areas of Maricopa Sun LLC's property are occupied by, or provide suitable habitat for, species that are presently listed as threatened and endangered under the ESA or may become listed under the ESA. Proposed pre-construction, construction, operations and maintenance, and decommissioning activities could result in take of the Covered Species, and Maricopa Sun LLC needs a long-term, comprehensive solution that assures compliance with the ESA.

The Service needs to ensure compliance with the ESA and continue to conserve the Covered Species and their habitats within the Maricopa Sun Solar project area through the use a comprehensive conservation program that improves habitat functions and connectivity. Specifically, the Service has a desire to conserve five species, including three federally-listed species and two other species that may become federally-listed during the 35-year life of the Maricopa Sun HCP. These include the blunt-nosed leopard lizard (*Gambelia sila*), Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*), San Joaquin kit fox (*Vulpes macrotis mutica*), Nelson's antelope squirrel (*Ammospermophilus nelsoni*), and burrowing owl (*Athene cunicularia*).

The purpose of the proposed federal action is to enable the permit applicant (Maricopa Sun LLC) to engage in pre-construction, construction, operations and maintenance, and decommissioning activities that will provide protection and conservation of the Covered Species and allow some take of listed species, as provided for under section 10(a)(1)(B) of ESA.
The applicant's needs and goals for preparing an HCP, are listed below.

- Respond to Maricopa Sun, LLC's application for an ITP for the covered species, pursuant to Section 10(a)(1)(B) of the ESA, as amended, and its implementing regulations (50 C.F.R. part 17.22 (b)(1) and policies.

- Protect, conserve and enhance the covered species and their habitats for the continuing benefit of the people of the United States.
- Provide a means and take steps to conserve the ecosystems depended on by the covered species.
- Ensure the long-term survival of the covered species through protection and management of the species and their habitat.
- Ensure compliance with the ESA, NEPA, and other applicable federal laws and regulations.
- Develop a commercially viable solar energy facility in the Maricopa area of Kern County that would deliver electrical energy to the PG&E power grid in order to help meet California's Renewable Portfolio Standard goals and help reduce greenhouse gas emissions pursuant to Assembly Bill (AB) 32 and the Energy Element of the Kern County General Plan.

The need for the action is based on the covered activities proposed by Maricopa Sun, LLC that could result in the incidental take of Covered Species within the HCP boundaries as a result of habitat modification from planned future development of the Maricopa Sun Solar Complex Project.

1.3 ASSESSMENTS AND DECISIONS REQUIRED

The primary responsibility of the Service is the conservation and enhancement of the nation's fish and wildlife populations and their habitats. The Service's mission is: "working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American People" (should reference this). The Service is the lead agency for the preparation of this EIS and will be making the following assessments and decisions.

As required by NEPA, the Service will use a systematic, interdisciplinary approach for the EIS, considering environmental amenities and values in decision-making along with economic and technical considerations. The purpose of NEPA is to ensure that the potential environmental impacts of any proposed federal action are fully considered and made available for public review.

Upon completion of the EIS process including a 90-day public comment period on the Draft EIS (DEIS), the Service will issue a Final EIS and provide a concise record of its consideration of the environmental analysis in the Record of Decision (ROD). The ROD will discuss the agency's assessment of the alternatives considered in the EIS and its determination on whether to issue an

ITP for the Project. No permit decision would be made until at least 30 days after completion of the ROD.

As required by the ESA Section 10(a)(2)(B) and 50 C.F.R.17.22(b)(2) and 50 C.F.R. 17.32(b)(2) as well as the guidance in the Service's Five Point Policy (Fed.Reg. 65, 35241-35257), the Service must determine that the following criteria are met before issuing an ITP:

- The taking will be incidental;
- The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking;
- The applicant will ensure that adequate funding will be provided for the HCP;
- The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild;
- The HCP addresses the five concepts outlined in the Five Point Policy: permit duration, public participation, adaptive management, monitoring provisions, and biological goals;
- The HCP will be implemented; and
- Such other measures that the Secretary may require as being necessary or appropriate for purposes of the HCP will be implemented.
- The Service's decision pursuant to the ESA may consist of one of the following:
    - Issue an ITP conditioned on implementation of the Applicant's HCP;
    - Issue an ITP conditioned on implementation of the Applicant's HCP together with other specified measures; or
    - Deny the ITP application.

1.4 RELEVANT STATUTES, REGULATIONS, AND GUIDELINES

This Draft EIS has been prepared in compliance with various federal, State, and local statutes and guidelines, as described in greater detail in Section 3.0. Relevant statutes and regulations include the following:

1.4.1 National Environmental Policy Act (NEPA)

The National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.), requires that all Federal agencies proposing major actions with potential significant effects on the quality

of the human environment prepare a detailed statement of environmental effects. The Services have concluded that an environmental impact statement review is appropriate for this proposed action.

1.4.2 The Endangered Species Act (ESA)

Section 9 of the ESA prohibits "take" of species that are listed as endangered, and Section 4 provides the Services with the discretion to extend all or some of those protections deemed necessary and advisable to provide for the conservation of threatened species. Take includes harassment, harm, pursuit, hunting, shooting, wounding, killing, trapping, capturing, or collecting a listed species, or attempting to engage in any such conduct. (16 USC §1538(19)) Harm is further defined in ESA implementing regulations as an act which actually kills or injures fish or wildlife, including significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering. (50 C.F.R. §17.3, and §222.102)

Under Section 10 of the ESA, non-federal entities can apply for an ITP exempting them from the "take" prohibition for scientific purposes to aid the species' survival, or for an "incidental take" authorization when the project or activity does not involve a federal action and the take is incidental to, and not the purpose of, an otherwise lawful activity. (16 USC §1539(a)(1)(A-B)) Section 10 and the Services' implementing regulations then define under what circumstances the Services will issue an ITP.

Under Section 10(a)(2)(A)(i-iv), no permit may be issued by the Services authorizing incidental take of listed species unless the applicant submits a conservation plan that specifies:

- the impact that will likely result from such taking;
- what steps the applicant will take to minimize and mitigate such impacts, and the funding that will be available to implement such steps;
- what alternative actions to such taking the applicant considered and the reasons why such alternatives are not being utilized; and
- such other measures that the Services may require as being necessary or appropriate for purposes of the plan.

Section 10(a)(2)(B), provides that the Services shall issue an ITP if the Services find, after opportunity for public comment, that:

- the taking will be incidental;

- the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking;
- the applicant will ensure that adequate funding for the plan will be provided;
- the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild;
- the measures, if any, required by the Services as being necessary or appropriate for purposes of the plan will be met; and
- the Services have received such other assurances as may be required that the plan will be implemented.

In 2000, the Services adopted a five-point policy designed to clarify certain elements of an HCP. 65 FR 35242-35257 (June 1, 2000). The five-point policy recommends that:

- an HCP include specific, measurable biological goals and objectives based on the best available scientific information;
- an HCP include an adaptive management provision;
- an HCP include a monitoring program to gauge the effectiveness of the plan in meeting the biological goals and objectives and the permittees compliance with the plan;
- the Services consider several factors to determine the appropriate duration of an ITP, including the duration of the covered activities and the expected effects on the covered species; and
- the Services expand public participation by providing a 60-day comment period for most HCPs.

The ESA's implementing regulations provide "no surprises" assurances. (50 CFR Part 17.22(b)(5), 17.32(b)(5); 50 CFR 222.307(g)). The no surprises rule assures private landowners that if "unforeseen circumstances" arise, the Services will not require the commitment of additional land, water or financial compensation or additional restrictions on the use of land, water, or other natural resources beyond what is required by the ITP and associated HCP and Implementing Agreement without the permittee's consent. The government will honor these assurances as long as a permittee is implementing the terms and conditions of the HCP, permit, and other associated documents.

In addition, the following laws apply:

- California Endangered Species Act (California Fish and Game Code, Section 2014, et seq.);
- Fish and Wildlife Act of 1918 (16 U.S.C. Section 742(a) -754);
- Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-712);
- Federal Water Pollution Control Act (33 U.S.C. 1251, et seq.);
- Porter-Cologne Water Quality Control Act (California Water Code, Section 13000, et seq.);
- Federal Clean Air Act (42 U.S.C. 7401, et seq.);
- California Clean Air Act (California Health and Safety Code, Section 39000, et seq.);
- National Historic Preservation Act of 1966 (16 U.S.C. 470);
- California Surface Mining and Reclamation Act (California Public Resources Code, Section 2710, et seq.);
- California Integrated Waste Management Act (Assembly Bill 939);
- Consolidated Appropriations Act, 2008 (H.R. 2764 [110th]);
- California Global Warming Solutions Act (Assembly Bill 32);
- Alquist-Priolo Earthquake Fault Zoning Act (California Public Resources Code, Division 2, Chapter 7.5, Sections 2621-2630);
- Seismic Hazards Mapping Act (California Public Resources Code, Division 2, Chapter 7.8); and
- Renewable Energy federal and state mandates, and executive orders.

1.5 ORGANIZATION OF THE EIS

The organization of this EIS follow CEQ's recommended organization (40 CFR 1502.10) and complies with guidance provided in the Service's NEPA Reference Handbook, including proposed National Environmental Policy Act – Compliance Guidance (550 FW 2). The EIS consists of an Executive Summary, nine sections, and appendices. Following is a brief description of the content of each section and appendix.

- **Executive Summary:** This section provides a summary of the proposed action and alternatives and the results of the environmental analysis, including the significant

environmental impacts/effects and the proposed mitigation measures contained in the EIS.

- **Section 1.0 Purpose and Need for Action:** This section describes the purpose and need for action, the purpose of the EIS, the relevant statutes, regulations, and guidelines, and the organization of the document.
- **Section 2.0 Proposed Action and Alternatives:** This section describes the proposed action and alternatives that are discussed and analyzed in the EIS
- **Section 3.0 Affected Environment:** This section describes the current physical and regulatory environment that could be affected by the alternatives analyzed. Issue areas identified include aesthetics/visual resources agriculture, air quality and greenhouse gas, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, public services, traffic and transportation, and environmental justice.
- **Section 4.0 Environmental Consequences:** This section analyzes the potential environmental effects of implementation of the proposed action and the alternatives, and compares the environmental consequences of implementing the various alternative scenarios. Cumulative impacts of the proposed action are described in this section for each of the issue areas. Each of the issue areas listed in Section 3.0 are addressed in this section.
- **Section 5.0 Additional Topics Required by NEPA:** This section addresses additional impacts relating to growth-inducing effects; the irreversible or irretrievable commitment of resources; and significant irreversible changes to the environment.
- **Section 6.0 List of Agencies and Organizations Consulted:** This section identifies the organizations and persons consulted during preparation of the EIS.
- **Sections 7.0 List of Preparers:** This section identifies the list of preparers of the EIS.
- **Section 8.0 Reference**s: This section provides references for cited materials.
- **Section 9.0 Acronyms:** This section provides a list of acronyms used in the document.
- **Appendices**

1.6 SCOPE OF DRAFT EIS ANALYSIS

This Draft Environmental Impact Statement (Draft EIS) analyzes the potential direct, indirect, and cumulative environmental effects of authorizing “take” of the Covered Species through

issuance of the requested ITPs and applicant implementation of the proposed HCP. Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. The Draft EIS considers the physical and biological effects of the Proposed Action and the alternatives in the study area. The analysis of cumulative effects uses a broader study area, depending on the resource being assessed.

The Draft EIS address three alternatives: 1) No Action Alternative, 2) Proposed HCP Alternative, and 3) Reduced Permit Area Alternative. The resource areas analyzed for each alternative are associated with the physical environment (Aesthetics/Visual Resources, Agriculture, Air Quality and Greenhouse Gas, Biological Resources, Cultural Resources, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Mineral Resources, Public Services, Traffic and Transportation, and Environmental Justice. The resource area of Indian Trust assets were not analyzed in depth because the preliminary analysis indicated these resources are not in the study area and would not be affected.

1.7 PUBLIC OUTREACH AND SCOPING PROCESS

1.7.1 NEPA Scoping Process

The CEQ regulations for implementing NEPA require a process, referred to as scoping, for determining the range of issues to be addressed during the environmental review of a proposed action (40 CFR 1501.7). Through the scoping process, comments are solicited from agencies, organizations, and individuals to assist the Service in identifying environmental issues to be addressed in the EIS.

It should be noted that an environmental scoping process was conducted for the EIR that was prepared under the California Environmental Quality Act (CEQA) for the Maricopa Sun Solar Project and certified by the County of Kern (SCH# 2010031034). A scoping meeting was conducted for the EIR in March 2010. At the end of the scoping process 13 comment letters were received addressing the proposed scope of EIR. The environmental topic areas analyzed in the EIR were based in part upon comments received during the scoping process. Those same environmental topics, or issue areas, are addressed in this EIS.

The following sections explain the scoping process used for the EIS and the resulting comments received from the public.

1.7.2 Notice of Intent

The Service published a Notice of Intent (NOI) in the Federal Register on December 23, 2011 (76 FR 80385) to provide notice of the preparation of an environmental document, announce the

initiation of a public scoping period, obtain information to assist the Service in determining whether to prepare an EIS or Environmental Assessment (EA), and to obtain suggestion on the scope and issues to be included in the environmental document. The NOI provided information on the background and purpose of the Proposed Action and provided details for the public scoping meeting, and comment period.

1.7.3 Public Scoping Meetings

The Service held a public scoping meeting on January 23, 2012, at the Kern County Public Services Building, 2700 M Street, Conference Room 1-A, Bakersfield, California.

The scoping period began with publication of the NOI on December 23, 2011 and officially ended on February 21, 2012. A total of one comment letter was received from public agencies, organizations, and individuals. The single letter received is from the U.S. Environmental Protection Agency, dated February 14, 2012. There were no public comments.

A copy of the Scoping Report, which includes a copy of the comment letter is attached as Appendix A.

1.7.4 Issues Raised During the Scoping Process

The February 14, 2012 letter from the U.S. EPA, requested that the following issues be addressed in the EIS:

- The EIS should clarify whether any covered activities and conservation measures will be assessed under separate and future environmental review;
- The environmental impacts of the proposed action and alternative should be presented in comparative form, and impacts should be quantified to the greatest extent possible;
- The EIS should describe the rationale used to determine whether impacts are significant or not;
- An advisory committee should be formed to help craft a scientifically supportable HCP;
- The EIS should describe how it will serve as a tiering document for future environmental analyses, factors used to determine when a subsequent EIS will be required, and factors used to determine when an Environmental Assessment will be required;
- To the greatest extent possible, energy projects should be sited on previously disturbed ground and should minimize disturbance of fragile soils and physical processes;

- The EIS should analyze potential impacts on water supply and quality. Specifically, a planning-level delineation of aquatic resources should be performed with each of the designated energy development areas;
- The EIS should describe natural drainage patterns, the 50 and 100-year flood plain, and general function of the main aquatic features in the HCP area;
- The EIS should provide information on CWS Section 303(d) impaired waters in the HCP area and efforts to develop and revise TMDLs;
- The EIS should describe impacts to wildlife and habitat and measures to avoid and mitigate impacts to these;
- The EIS should provide a detailed discussion of ambient air quality and potential impacts of the proposed action;
- The EIS should consider climate change in the analysis, specially how climate change could potentially impact the HCP;
- The EIS should describe reasonably foreseeable future land use and associated impacts that might result from the additional power supply;
- The EIS should identify mitigation measures to avoid, reduce, or compensate for adverse environmental impacts associated with construction and operation;
- An adaptable management plan is recommended to evaluate and monitor impacted resources and ensure successful implementation of mitigation measures;
- The EIS should include a requirement for a decommissioning and site restoration plan;
- The EIS should describe the process of consultation between the Service and tribal governments within the project area, and the EIS should address the existence of Indian sacred sites that may exist in the project area;
- The EIS should include an evaluation of environmental justice populations in the project area;
- The EIS should include an invasive plant management plan; and,
- The EIS should address potential impacts associated with hazardous waste from the construction and operation of the propose project.

1.7.5 Identification of Potentially Significant Issues

Issuance of the ITP associated with the Draft HCP could result in potentially significant environmental effects on the following resource areas:

- Aesthetics/Visual Resources
- Agriculture
- Air Quality/Greenhouse Gas
- Biological Resources
- Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Public Services
- Traffic and Transportation
- Environmental Justice

1.7.6 Draft EIS Public Review

In accordance with NEPA, the Draft EIS has been circulated for public review and comment. The public review period was initiated with the publication of a Notice of Availability (NOA) in the Federal Register, and will run for 90 days from publication of the NOA. During the public review period, a public meeting will be conducted. The review period will provide the public and federal, State, and local agencies with an opportunity to comment on the Draft EIS. Comments will be responded to in the Final EIS.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

This chapter of the EIS describes the Proposed Action, as well as the Project as proposed by the Applicant. NEPA requires that the environmental documents prepared for a proposed action discuss alternatives. Therefore this chapter also describes the two alternatives to the Proposed Action that were retained for detailed analysis, including a No Action alternative. The alternatives to the Proposed Action were primarily designed to address the potential for take of Covered Species and relate to the size of the solar complex in relation to adjacent Covered Species habitat. The alternatives do not address other aspects of the Project such as siting of individual solar panels. The Applicant has demonstrated that siting and design of the Project has incorporated avoidance and minimization of direct physical impacts to Covered Species (e.g., ground disturbance or habitat removal) to the maximum extent practicable, as described in the August 2013 Draft HCP (Appendix B)

The Solar Complex involves the construction and operation of photovoltaic (PV) power-generating facilities on 5,784.3 acres (the Permit Area), which at full build-out would produce up to 700 MW of electricity. The Permit Area is comprised of Solar Sites which encompass 3,798.3 acres and Conservation Sites which encompass 1,894.4 acres. Of the 3,798.3 acres of Solar Sites, 3,700.8 acres will be developed with PV facilities (Solar Development Footprint). The project includes all actions that are necessary to construct, operate and maintain, and decommission the solar generating facilities, as well as those necessary to manage habitat and conserve biological species.

The Draft HCP has been created to support the application for a section 10(a)(1)(B) Incidental Take Permit (ITP) for the construction and operation of a Solar Complex that may result in the take of federally-listed species under the ESA. Activities included in the Draft HCP are identified as Covered Activities and allow for: 1) Construction and operation activities within Solar Sites; 2) Management and maintenance activities within Movement Corridors; 3) Management activities within the areas designated for conservation (Conservation Sites) including monitoring and reporting actions; 4) Activities associated with implementation of the conservation program specified in the Draft HCP and 5) Decommissioning.

The Draft HCP covers all activities within the Covered Lands (defined below) for a period of 35 years that are related to the construction, operation and maintenance of the Solar Complex and its facilities, and implementation of the conservation program described in the Draft HCP.

Construction of solar facilities on all Solar Sites is anticipated to be completed over an 8 to 10-year period from the commencement of the initial development. However, unknown constraints could extend the development phase to a 10 to 15-year period.

It should be noted that the project description for the Maricopa Sun Solar Complex project, which was analyzed in the Environmental Impact Report (EIR) prepared for the County of Kern (Kern County, 2010, SCH #2010031038) has been reduced in acreage. The project proponent for the Solar Complex has elected to reduce the amount of land within the project for which the Draft HCP has been prepared. The Permit Area described in the EIR totaled 6,046 acres, whereas the Permit Area in the Draft HCP and this EIS total 5,784.3 acres. The Project Proponent chose to reduce the size of the project in reaction to an increase in the required ratio of offsite compensatory conservation lands to solar sites. Although the overall acreage is reduced slightly, there was a significant reduction of the solar development area, and a significant increase in the amount of conservation lands that are now part of the Covered Lands. Originally, the conservation lands totaled only 640 acres (Site 17C) and the remaining 6,046 acres were solar. Now, 1,864 acres are conservation lands, and 3,798 acres are solar sites. The remaining acreage is for setbacks and movement corridors.

2.2 BACKGROUND

2.2.1 Covered Lands

The Draft HCP covers 5,784.3 acres in unincorporated Kern County, which is located at the southern end of California's Central Valley within the San Joaquin Valley. Kern County is surrounded by Kings and Tulare counties to the north, Inyo and San Bernardino counties to the east, Ventura and Los Angeles counties to the south, and Santa Barbara and San Luis Obispo counties to the west.

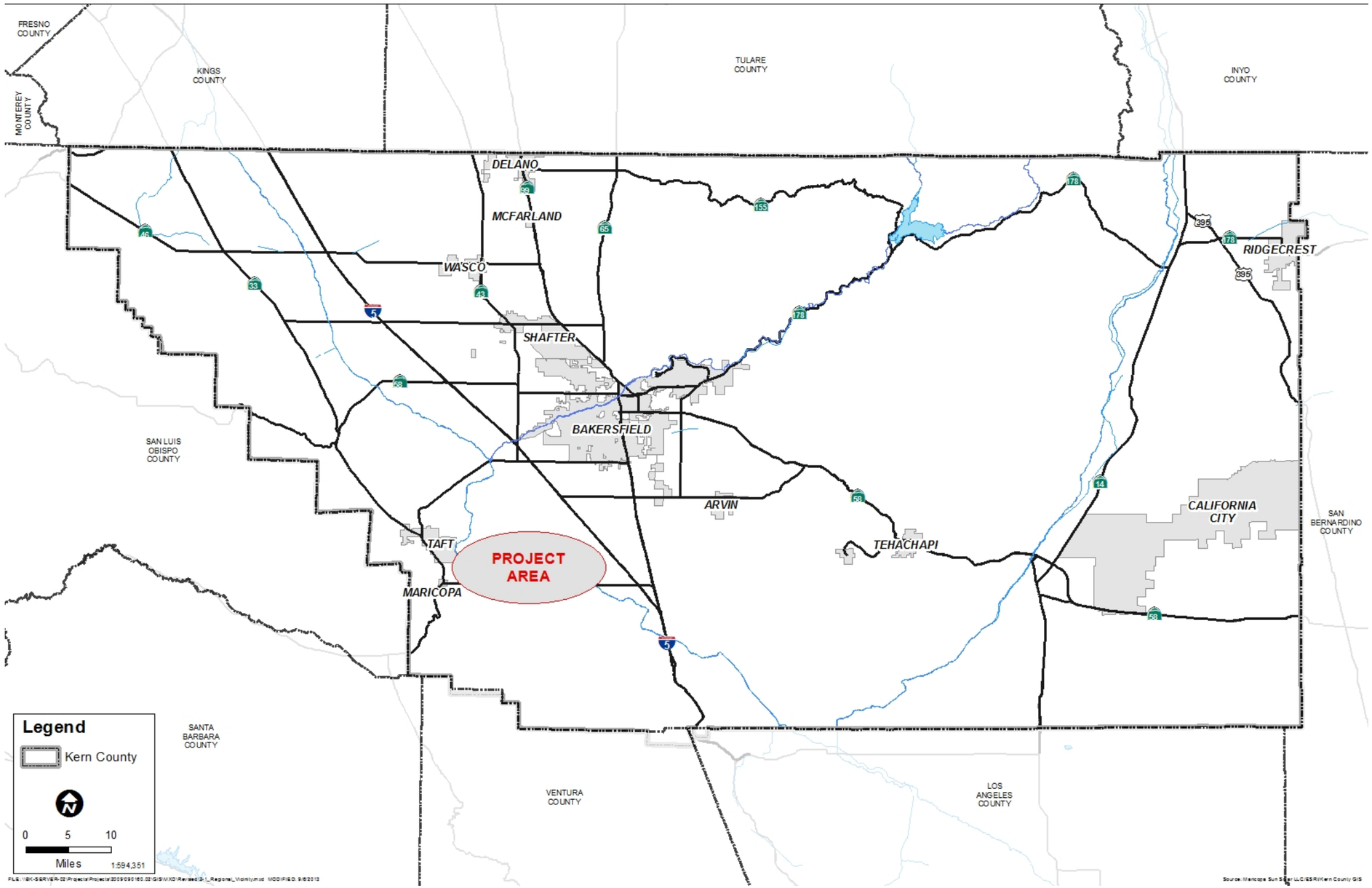
The County is divided into three regions consisting of the Valley Region, Mountain Region, and Desert Region. The Maricopa Sun Solar Complex is located in the Valley Region, which is characterized by relatively low rainfall and high average summer temperatures, and generally mild winters. The Valley region consists of four sub-areas, as follows: the Northern San Joaquin Valley, the Southern San Joaquin Valley, Westside, and Belridge. The Draft HCP applies to land located within the Westside sub-area, which is situated in the central west area of Kern County, bounded by the Belridge sub-area to the north, the San Luis Obispo County to the west, State Highway 166 to the south, and Interstate 5 to the east. The incorporated cities of Taft and Maricopa, and the unincorporated communities of South Taft, Ford City, Taft Heights and McKittrick are all located within the Westside sub-area. Figure 2-1 identifies the regional location of the Covered Lands that are addressed in this EIS.

The Draft HCP includes the following components, as described below: Permit Area, Solar Site Parcels, Solar Development Footprint, Movement Corridors, and Conservation Sites. Figure 2-2 describes the parcels that comprise the Covered Lands.

Permit Area

The Permit Area is the gross acreage of all parcels, which includes those parcels that will be developed into solar facilities and those that will be set aside as conservation areas. The Permit Area includes all existing public easements, movement corridors, setbacks, the Solar Development Footprint, and the Conservation Sites. The Permit Area totals 5,784.3 acres.

This page intentionally left blank.

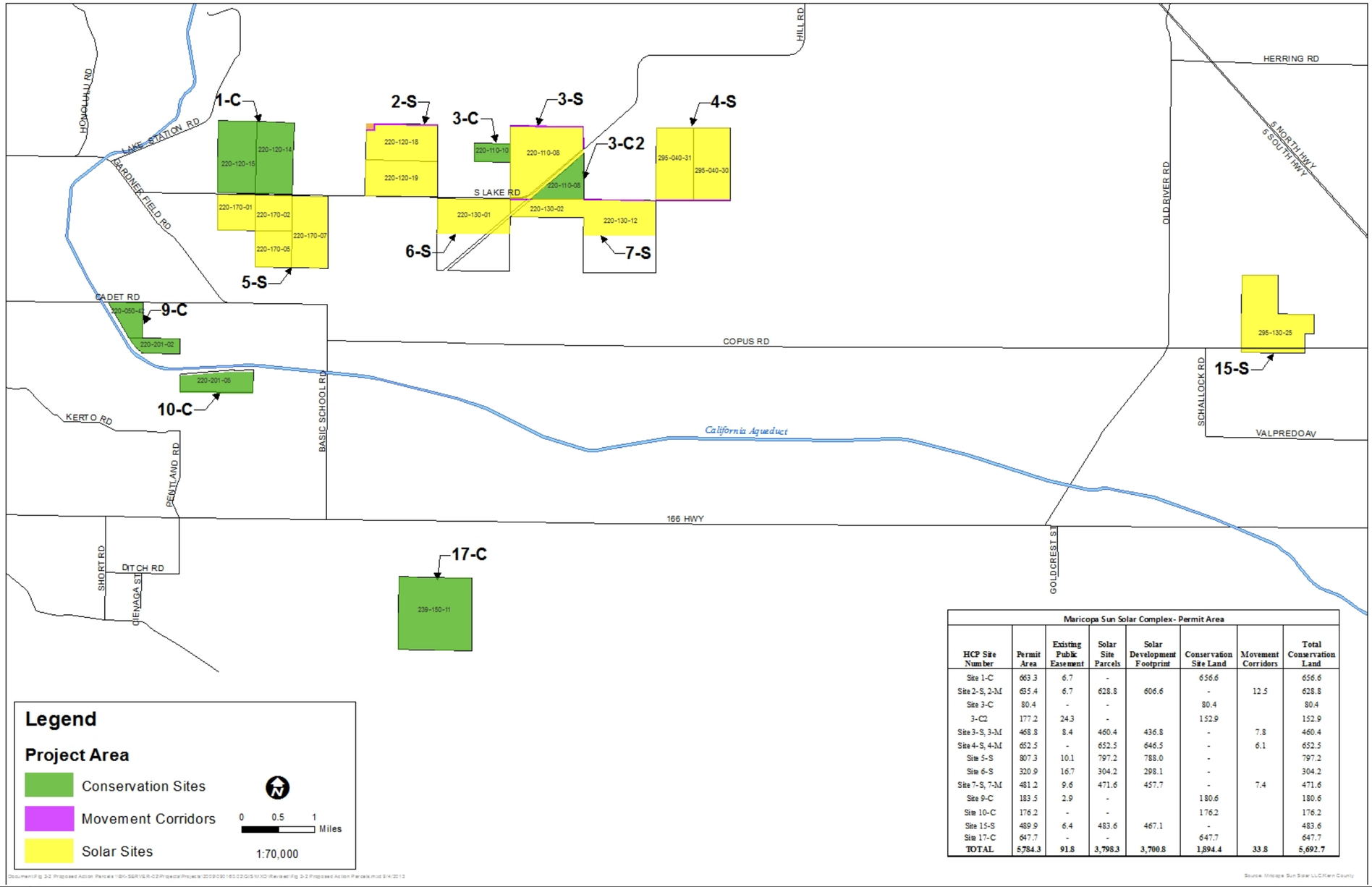


Quad Knopf

REGIONAL VICINITY
MARICOPA SUN SOLAR LLC

Figure
2 - 1

This page intentionally left blank.



Maricopa Sun Solar Complex- Permit Area							
HCP Site Number	Permit Area	Existing Public Easement	Solar Site Parcels	Solar Development Footprint	Conservation Site Land	Movement Corridors	Total Conservation Land
Site 1-C	663.3	6.7	-		656.6		656.6
Site 2-S, 2-M	635.4	6.7	628.8	606.6	-	12.5	628.8
Site 3-C	80.4	-	-		80.4		80.4
3-C2	177.2	24.3	-		152.9		152.9
Site 3-S, 3-M	468.8	8.4	460.4	436.8	-	7.8	460.4
Site 4-S, 4-M	652.5	-	652.5	646.5	-	6.1	652.5
Site 5-S	807.3	10.1	797.2	788.0	-		797.2
Site 6-S	320.9	16.7	304.2	298.1	-		304.2
Site 7-S, 7-M	481.2	9.6	471.6	457.7	-	7.4	471.6
Site 9-C	183.5	2.9	-		180.6		180.6
Site 10-C	176.2	-	-		176.2		176.2
Site 15-S	489.9	6.4	483.6	467.1	-		483.6
Site 17-C	647.7	-	-		647.7		647.7
TOTAL	**5,784.3**	**91.8**	**3,798.3**	**3,700.8**	**1,894.4**	**33.8**	**5,692.7**

Quad Knopf

PROPOSED ACTION PARCELS
MARICOPA SUN SOLAR LLC

Figure
2 - 2

This page intentionally left blank.

Solar Site Parcels

The Solar Site Parcels are those portions of the Permit Area parcels that will be developed into solar facilities, but the acreage of existing public easements occurring on each parcel is subtracted from the gross acreage. The Solar Site Parcels encompass 3,798.3 acres. Upon completion of decommissioning, the Solar Site Parcels will be placed into permanent conservation easements concurrently with the acquisition of grading or building permit (whichever comes first) for each individual Solar Site and will be managed for the benefit of Covered Species in perpetuity as mitigation for the project's impacts to species once the Solar Site has been decommissioned.

Existing Public Easements

Existing Public Easements include lands within established public right-of-ways occurring along the project boundary. Existing Public Easements include public roadways, transmission line corridors, and a railroad line. Fifty-foot setbacks are established between all Existing Public Easements and the project boundary.

Solar Development Footprint

The Solar Development Footprint includes those portions of the Solar Site Parcels that will have solar facilities installed. The acreage of the Solar Development Footprint is equal to the Solar Site Parcels minus movement corridors and mandatory setbacks. The Solar Development Footprint totals 3,700.8 acres.

Movement Corridors

Movement Corridors are corridors of land identified to aid in the movement of species between areas of natural habitat across the landscape, which will be interspersed with developed parcels. Conservation easements on Movement Corridors will be included with the associated Solar Sites, but will be managed for Covered Species immediately upon establishing the conservation easement. These corridors are located along specified perimeters of the Solar Site Parcels and will be enhanced by installation of dens, perching posts, and changes in topographic relief to facilitate the movement of species and to provide connections between natural habitat patches. The acreage of the Movement Corridors totals 33.8 acres.

Conservation Sites

Conservation sites are parcels that were identified in special studies and during environmental review of the project as having value as habitat for Covered Species. Conservation easements will be recorded on these parcels to remove the potential for development. These parcels will remain in their native state or, if previously disked, will be enhanced to benefit species. These

lands will be conserved and managed in perpetuity as mitigation for the project's impacts to species. Conservation sites total 1,894.4 acres.

Total Conservation Land

The total conservation land is the net acreage of the Solar Site Parcels plus the Conservation Site Land that will be permanently conserved as mitigation for the Project's impacts to biological species which will be placed into a conservation easement that will take effect once the solar facilities are decommissioned.

2.2.2 Existing Land Use

The Covered Lands are primarily comprised of currently undeveloped and vacant agricultural land, and are relatively flat. Surrounding land uses are both active and inactive agricultural land. Surrounding land use designations include intensive and extensive agriculture designations, lands designated as flood hazard areas, lands designated for public facilities, lands designated for the protection of important watershed recharge areas or wildlife habitat or having value as a buffer between resource areas and urban areas, and lands designated for industrial uses.

The Project site has been previously cultivated for agricultural production and is within the boundaries of Agricultural Preserve No. 12. The Project site was granted a certificate of cancellation of the Williamson Act land use contracts (Resolution No. 2011-078) by the Kern County Board of Supervisors on March 29, 2011 (County of Kern 2010).

2.2.3 Covered Species

The Draft HCP (Appendix B) proposes to include those species that are currently listed by the U.S. Fish and Wildlife Service (Service) or that might become listed (collectively, Covered Species) by the Service during the permit period, and that may be subject to "take" as defined by the FESA. Covered Species under the Draft HCP include the following: one reptile species, three mammal species, and one bird species that are identified in Table 2.2-1.

Table 2.2-1
Species Covered by the Maricopa Sun HCP and ITP

Common Name	Scientific Name	Federal Status[1]	State Status[1]	Other[1]
Covered Reptiles				
Blunt-nosed leopard lizard	*Gambelia sila*	FE	SE	SFP
Covered Mammals				
Tipton kangaroo rat	*Dipodomys nitratoides nitratoides*	FE	SE	-
San Joaquin kit fox	*Vulpes macrotis mutica*	FE	ST	-
Nelson's antelope squirrel	*Ammospermophilus nelsoni*	-	ST	-

Common Name	Scientific Name	Federal Status[1]	State Status[1]	Other[1]
Covered Birds				
Burrowing owl	*Athene cunicularia*	-	CSC	MBTA

Source: Quad Knopf, 2011a.

1 THE FOLLOWING ACRONYMS ARE DEFINED AS: FP = PROPOSED FOR FEDERAL LISTING, CSC = CALIFORNIA SPECIES OF CONCERN, SE = STATE ENDANGERED, ST = STATE THREATENED, SFP = STATE FULLY PROTECTED, MBTA = MIGRATORY BIRD TREATY ACT, AND BLMS = BUREAU OF LAND MANAGEMENT STATUS.

2.3 ALTERNATIVES

2.3.1 Introduction

The description of the proposed action in Section 2.3.3 is divided into two primary sections, as follows:

1. **PV Project**. A description of the activities associated with preconstruction, construction, operation and maintenance, and decommissioning of the PV facilities; and,

2. **HCP**. A description of elements of the Draft HCP (see Appendix B), including management and maintenance activities associated with movement corridors and conservation sites, including monitoring and reporting activities and activities associated with implementation of the conservation program described in the Draft HCP.

2.3.2 No Action Alternative

Under the No Action Alternative, the Service would not issue an ITP and the Project would not be developed. The No Action Alternative would avoid the potential take of the proposed Cover Species, but would also not provide a clean source of electricity, offset carbon emissions, or contribute to the Nation's renewable energy portfolio. The 5,784.3 acres identified as the Permit Area would likely remain agricultural, the 1894.4 acres identified as Conservation Sites would not be permanently conserved, and the proposed Conservation Management Plan would not be implemented. As a result, there would be no conservation benefit to Covered Species or other listed or sensitive species as a result of the Proposed Action. Agricultural activities, including grazing or disking, would likely continue resulting in reduced habitat quality as a result of vegetation removal and soil compaction.

2.3.3 Proposed HCP Alternative

The Proposed Action comprises the issuance of an ITP requested by the Applicant and implementation of the proposed Maricopa Solar HCP, including covered activities and conservation measures to avoid, minimize, or mitigate effects to the covered species. The Maricopa Sun Solar Complex is the first large scale PV solar project on private lands in the San

Joaquin Valley. A number of environmental commitments have been incorporated into the covered activities to reduce the effects of the Project on the human environment.

The following description of covered activities is excerpted from Section 2.3.5 of the Draft HCP, dated August 2013. Refer to the Draft HCP (Appendix B) for additional information.

2.3.3.1 Covered Activities

Photovoltaic Project

The PV project is broadly defined as the construction and operation of PV power generating facilities (Solar Development Footprint) on 3,700.8 acres. Complete build-out of the Maricopa Sun Solar Complex will produce up to 700 MW of electricity[1].

The Draft HCP covers the following activities of the PV project, as further described herein: 1) Pre-construction, 2) Construction, 3) Operations and maintenance, and 4) Decommissioning activities within Solar Sites. A summary of covered activities in provided in Table 2.3-1.

Project Phasing

Construction of solar facilities on all Solar Sites is anticipated to be completed over an 8 to 10 year period from the commencement of the initial development. Unknown constraints, however, could extend the development phase to a 10 to 15 year period. It is anticipated that development of each Solar Site will take 12 to 18 months, depending on the acreage of the Solar Site, weather conditions, labor and equipment availability, and time of year. Additional details relative to project phasing can be found in Section 6.0 of the Draft HCP.

Pre-Construction Activities

CLEARING, GRUBBING, GRADING, AND LEVELING

Each Solar Site will be cleared or grubbed of vegetation to prepare for grading activities. Vegetation clearing and grubbing are anticipated to be minimal because of the lack of vegetation present on the sites, due to repeated disking operations. Minimal site grading is anticipated for most areas and will be dependent upon each specific site's topography. Soil will not be imported or exported from any site. The sites will not be laser leveled nor will vast amounts of soil be moved to accomplish leveling. During grading and compacting activities, water trucks will be operated to minimize airborne particles and dust. Clearing, grubbing, grading, and leveling will occur within all of the Solar Development Footprint and result in disturbance to 3,700.8 acres of land.

[1] The amount of energy from a 700 mw facility is calculated as follows: 700 mw x 8,766 hours/year x 30% capacity factor = 1.84 million MWh = 1,840 gigawatt hours = 1.84 terrawatt hours

DELIVERY OF MATERIALS AND EQUIPMENT

Construction materials including concrete, pipe, fencing, wire and cable, fuels, reinforcing steel, building materials, and small tools and consumables will be delivered to the sites by truck. PV modules and other materials for the solar facilities will be manufactured off site, and will also be delivered by truck. Because the delivery of materials and equipment will occur to all Solar Development Footprints, this activity will result in disturbances to 3,700.8 acres of land.

Table 2.3-1
Occurrences of Covered Activities by Phase

Activity	Pre-construction	Construction	O&M*	Decommission
Clearing, grubbing, grading and leveling	X	X		X
Construction of O&M* buildings and meteorological stations		X		
Construction of overhead power lines, solar arrays		X		
Delivery of materials and equipment	X	X	X	
Demarcation of construction areas	X			
Drainage, erosion and dust control	X	X	X	X
Establishing and maintaining staging area(s)	X	X	X	
Fencing, installing gates, lighting, and construction of parking areas	X	X	X	
Geotechnical drilling and testing	X			
Grading and compacting	X	X		
Installation of overhead AC transmission lines		X		
Installation of signs	X	X		
Landscaping/site enhancement		X		
Managing waste (non-hazardous & hazardous)	X	X	X	X
Meter reading			X	
Monitoring alarms/security			X	
Operation of solar modules			X	
Paving of access road(s) and building areas		X	X	
Post construction soil treatment		X	X	
Removal of access roads				X
Reconductoring and installation of overhead AC transmission line system and substation expansion		X		
Removal of buildings, foundations, and concrete pads		X		X
Removal of electrical cabling				X
Removal of solar systems				X
Solar panel maintenance			X	
Surveying and staking	X			

Activity	Pre-construction	Construction	O&M*	Decommission
Testing, plugging and abandoning wells	X			
Vegetation and weed management			X	
Habitat management, enhancement, and research**		X	X	X

* O&M = operations and maintenance

** Habitat management, enhancement, and research are independent of solar operations and are not discussed relative to phase.

DEMARCATION OF NON-CONSTRUCTION AREAS

Non-construction areas will be delineated by marking avoidance areas between the Solar Development Footprint which will be under construction and lands which will not undergo construction. These barriers will be established to keep construction activities confined to the Solar Development Footprint.

DRAINAGE, EROSION, AND DUST CONTROL

Prior to issuance of grading permits, the solar operator will submit a Stormwater Pollution Prevention Plan (SWPPP) to the Kern County Planning and Community Development Department that specifies what procedures will be utilized throughout the duration of the build-out of each parcel. The solar operator will prepare a drainage plan that is designed to minimize runoff and surface water pollution and will include engineering recommendations to minimize the potential for impeding or redirecting 100-year flood flows. Fugitive dust shall be managed using the delivery of water by spray trucks and the application of chemical dust.

ESTABLISHING AND MAINTAINING STAGING AREAS

During the pre-construction and/or construction phases of each solar development, paved staging areas will not exceed 5 acres total in size and will be erected inside of the permitted Solar Development Footprint, resulting in a total of 35 acres of staging areas dispersed over all solar sites. Each staging area will be enclosed with 8-foot tall perimeter security fencing (7-foot tall chain-link topped with 1 foot of barbed wire). This fencing will be permeable to wildlife to avoid entrapment in the event that staging area gates are left open during the day. Permeability of the fencing, particularly as pertains to San Joaquin kit fox, is described in Chapter 2.0 of the Draft HCP (Appendix B).

FENCING, INSTALLING GATES, AND CONSTRUCTION OF PARKING AREAS

Prior to construction, the Solar Site perimeters will be enclosed with security fencing composed of 6-foot tall chain-link fencing topped with barbed wire for a total height of 8 feet. Perimeter security fencing will consist of a total of 165,273.2 linear feet (~31.3 linear miles). A maximum

of 39,600 linear feet (7.5 linear miles) of additional fencing may also be installed around individual solar developments within the Solar Development Footprint. The security fencing will be permeable to movement of wildlife. The fencing will remain in place during the operation of the solar facilities to provide security, and will be removed during decommissioning, at which time the fencing will be replaced with permanent perimeter fencing constructed of three or four strand barbed wire.

GEOTECHNICAL DRILLING AND TESTING

Each site will be tested for geotechnical conditions (soil strength and compaction) by performing field density tests or other acceptable methods. A track mounted drilling rig and a support truck will be used to accomplish boring.

GRADING AND COMPACTING OF ROADWAYS

Temporary and permanent roadways shall be prepared using standard grading and compaction techniques. Grading of roads shall be minimized by following existing topography. Heavy earth-moving equipment that will be used in grading and compaction may include: graders, scrapers, dozers, sheep's foot rollers, vibrating rollers, back-hoes, excavators, and other equipment as necessary.

INSTALLATION OF SIGNAGE

A variety of signs at a variety of locations will be installed including caution or warning signs for high-output electrical systems, signs designating limits on vehicle speed, stop signs, yield signs, no trespassing signs, signs to direct traffic, signs to indicate ecologically sensitive areas, and other similar signs. Signs will be affixed to fences whenever possible, but some free standing signs will be installed.

MANAGING WASTE

Non-hazardous waste generated from the project, including paper/plastic, cardboard, wire, wooden spools, pallets, and other waste and packaging materials, will be removed on a weekly basis from the Solar Sites. Hazardous materials may include, but may not be limited to, fuels, oils, lubricants, hydraulic fluids and solvents. The materials shall be stored properly and Material Safety Data Sheets (MSDS) shall be available on-site. PV panels that are damaged or become otherwise inoperational will be removed from the site. It is anticipated that much of the metal and glass material used in the PV solar panels will be recycled, and will not contribute to local landfills. Hazardous materials and waste shall be managed in accordance with federal, State and local regulations.

SURVEYING AND STAKING

Prior to construction, site surveys shall be performed to locate various property corners, property boundaries, and to complete topographic and elevation mapping. Surveying will also be needed to establish locations of solar arrays, staging areas, fencing, underground conduits, and other components of the project.

PLUGGING AND ABANDONING WELLS

There are three known previously plugged and abandoned oil wells located on the Solar Sites. The three oil wells are all located on Site 5-S. The wells will be leak tested. In the event of failure, remediation action will be taken, as directed by the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR).

Construction Activities

Several activities that occur during pre-construction will also occur (with occasional slight modification) during construction. These include: 1) Delivery of materials and equipment, 2) Drainage, erosion, and dust control, 3) Maintaining staging areas, 4) Fencing, gates, lighting, and construction of parking areas, 5) Installation of signage, and 6) Managing waste.

Construction of the project will occur in a series of solar array blocks, each averaging approximately 8.64 acres in size and each producing roughly 1 MW of electricity (depending upon technology). However, because some land area will contain other project related facilities, such as operations and maintenance buildings, meteorological stations, staging areas, an average of 1 MW per 8.64 acres of total Solar Development Footprint may not be obtained. Nonetheless, 8.64 acre block size per MW is assumed

The following assumptions were used to calculate construction-related vehicle trips:

- Paving of the access road was estimated to cover 10 acres and would last 1–2 months at the beginning of construction in 2011.
- Construction of solar arrays was estimated to be constructed at a rate of 757.5 acres per year over 8 years from 2011 through 2018.
- Construction employee trips:
    - An average of 200 employees per day was assumed.
    - Employees were estimated to travel a roundtrip distance of 40 miles per day during 260 working days per year (Workers will originate from Maricopa, Taft,

and Bakersfield. However, to account for the worst case scenario, the roundtrips are estimated from Old River Road to Bakersfield).

- Construction delivery truck trips:
    - Twelve delivery trucks per 1 MW was assumed.
    - Delivery trucks were estimated to travel from the Port of Long Beach with a roundtrip distance of 260 miles per day during 260 working days per year.

It is anticipated that multiple sites will be undergoing construction activities at any given time, and that it will take from 12 to 18 months to complete construction on any given site.

Various equipment will be utilized for the project, including, but not necessarily limited to, excavators, graders, lightweight trucks, dump trucks, flatbed trucks, support pickups, water trucks, concrete trucks, forklifts, end loaders, cranes, truck-mounted pole hole auger, line truck with air compressor, scrapers, motor graders, backhoe/loaders, truck mounted cranes, dozers, grade-all, pad drum vibratory roller, conductor reel and pole trailers, bucket trucks, truck-mounted tensioner, and puller and trenchers.

CONSTRUCTION OF OPERATIONS AND MAINTENANCE BUILDING AND METERING STATIONS

The project sites will include a single operations and maintenance building adjacent to the solar fields. The building will include sufficient on-site parking as required in the County Zoning Ordinance (Section 19.82), and possible storage and equipment warehouse areas. The operations and maintenance buildings may also contain offices and storage space, bathrooms, and a break area. The total size of each operations and maintenance building will not exceed 1,800 square feet. Septic systems will be installed to accommodate sanitary needs as required by the County Environmental Health Services Department.

A maximum of two meteorological monitoring stations, constructed on concrete pads, not to exceed 400 square feet in area (each), will be constructed on the project site to track insolation temperature, wind direction, and speed.

CONSTRUCTION OF SOLAR ARRAY/MODULE/ELECTRICAL ASSEMBLY AND CONSTRUCTION

The solar fields will be constructed of either crystalline silicon or thin film PV (including concentrated PV) technology on tilted or horizontal single-axis trackers, or fixed tilt supports. If tilted trackers are used, the PV modules will be mounted south-facing and tilted about 15 to 25 degrees from horizontal. Tilted tracker units will be arranged in east/west-oriented rows and be self tracking or connected by drive shafts to drive motors that rotate the solar panels from east to west to follow the sun throughout the day. If used, the drive motors will be located approximately every 1,200 feet along each east/west row and will be mounted on small concrete

foundations, approximately 8 feet by 12 feet in area and approximately 2 feet thick. The highest point on the tilted tracker units (the uppermost solar panel) will be approximately 22 feet above the ground surface.

GRADING AND COMPACTING

The site access roads, inverter areas, and other plant areas will be prepared using standard grading and compaction techniques. Topographic contouring will not occur. Grading of roads will be minimized to the greatest extent possible. The Solar Sites shall be graded to direct potential flood waters into channels adjacent to the existing and proposed right of ways, without increasing the water surface elevations more than one-foot (Kern County Municipal Code, Section 17.48: Floodplain Management Code). These activities will result in disturbance to 3,700.8 acres.

RECONDUCTORING AND INSTALLATION OF OVERHEAD TRANSMISSION LINE SYSTEMS

Reconductoring and Installation of Overhead Transmission Line Systems

Construction and upgrade of structures for alternating current (AC) collection and distribution systems will include layout, drilling, installing, and backfilling foundations, as well as activities associated with stringing of new transmission lines (Figure 2-3). Trucks, cranes, drills, and other heavy line equipment will be utilized to install the new structures, and lines may be installed by low-flying helicopter. Transmission line system activities will be conducted either by PG&E or by a private subcontractor (under contract to Maricopa Sun, LLC). Certain transmission activities occurring outside of the Solar Sites are expected to be covered under a separate HCP held by Pacific Gas & Electric Company (PG&E) (Jones & Stokes 2006) as discussed below.

In addition to on-site substations, the following transmission related activities will be conducted by a private subcontractor under contract Maricopa Sun, LLC and will be Covered Activities under the Draft HCP:

- A short segment of new transmission line (gen-tie line) will be installed to connect Site 5-S to the existing 69kV Maricopa-Copus transmission line. Site 5-S will be connected to the existing transmission line just south of Site 5-S via an approximately 300 foot-long gen-tie line (Figure 2-3). A maximum of three new wooden pole installations and one replacement of a wooden pole at the point of interconnection (POI) with a tubular steel pole (TSP) will be required to accommodate the new gen-tie line. All pole replacements will occur within the PG&E right-of-way easement on lands owned by Maricopa Orchard, LLC. The ground disturbance associated with the installation of each new pole and the replaced pole would be a maximum of a 50-foot radius, for a total of 31,415 square feet or 0.72 acre. One of the new poles would be placed within the project site,

which consists of disked lands. All other poles would be placed within an existing orchard, and the installation of these poles may require some orchard trees to be removed.

The following transmission related activities will be conducted by PG&E and will be Covered Activities under the PG&E HCP (Jones & Stokes 2006):

- Up to 10 wooden poles may need to be replaced along the existing Maricopa-Copus 69kV transmission line. Five of those poles would be located to the east of the POI, and five would be located to the west of the POI. The area of disturbance associated with those pole replacements would be a maximum radius of 50 feet around each pole, totaling 78,537 square feet or 1.8 acres. The five poles to the east of the POI are located within an existing orchard (with a 0.9 acre potential disturbance area) and some orchard trees may need to be removed to allow adequate work space for the pole replacements. The five poles to the west of the POI would be located within disked lands (with a 0.9 acre potential disturbance area).

- Utility upgrades associated with the development of a 400-acre solar development on Site 15 include: installation of 20 TSPs along Copus Road between the project site and the Lakeview substation or the installation of lattice steel towers (LSTs) as an alternate to the TSPs, pulling and tensioning at each TSP or LST location, potential underground installation of communications cable along the gen-tie route between the project site and Lakeview substation, expansion of the Lakeview substation, expansion of the Copus substation, and installation of telecommunications and related equipment at the Old River substation and Wheeler Ridge substations.

- Up to 20 TSPs or LSTs with 20-foot by 20-foot cement bases would be installed along 2,700 feet of Copus Road between the project site and the Lakeview substation. The towers would be placed on either the north or south side of Copus Road. Work areas would be confined to a maximum area of 50-foot radius around each tower, resulting in a maximum total disturbance area of 157,075 square feet or 3.6 acres. An additional 157,075 square feet, or 3.6 acres, is assumed to be needed for the pulling and tensioning sites.

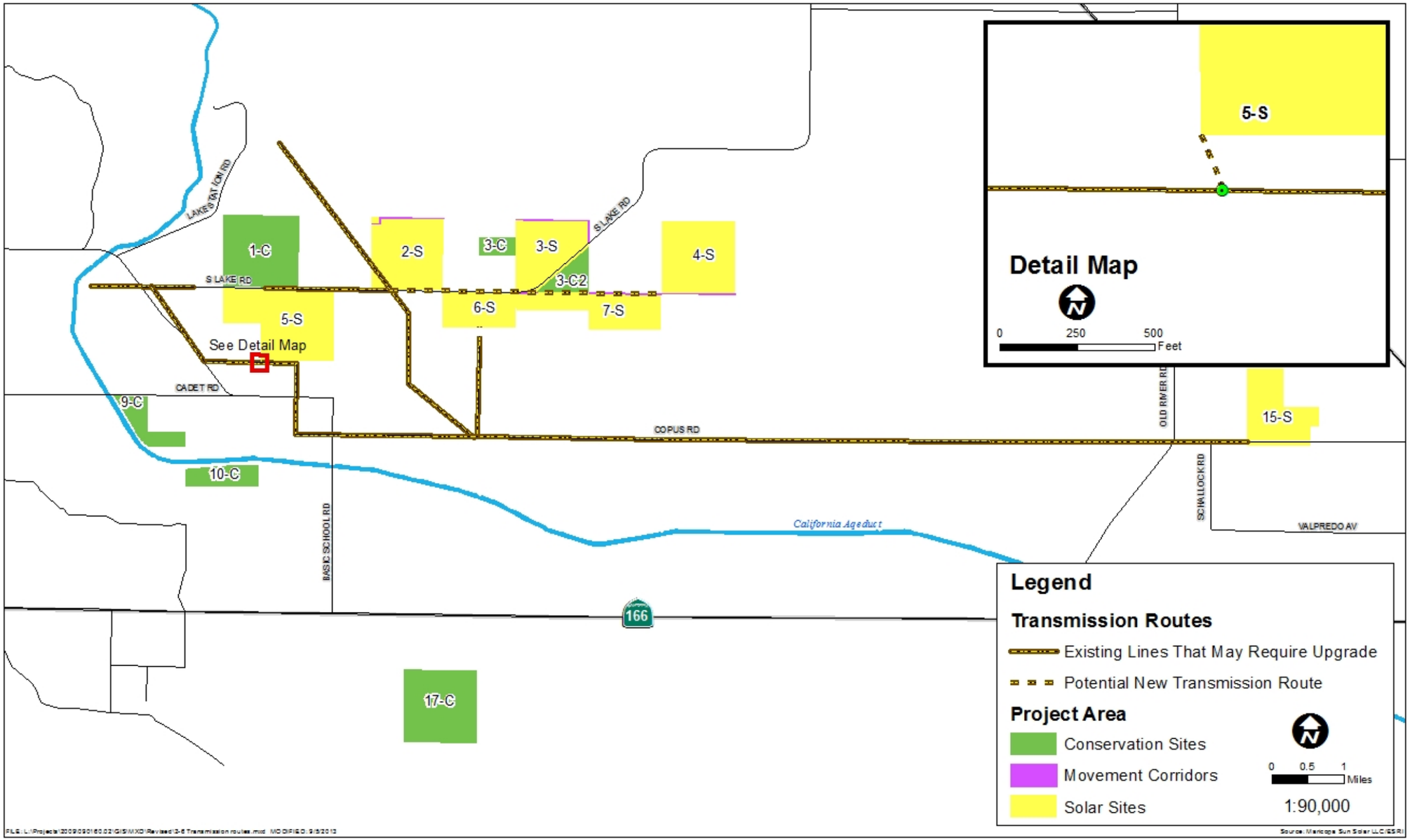
- Communications cables may be installed underground between the project site and Lakeview substation. The cables would be installed along the 2,700 feet distance where TSPs or LSTs are installed. Underground installation of cables would require the excavation of a trench up to 4 feet deep and 2 feet wide, resulting in a disturbance area of approximately 10 feet wide by 2,700 feet long, or 0.62 acre. The trench would be installed either along the north side or south side of Copus Road, depending upon where

the TSPs or LSTs are installed. Both the north and south sides of Copus Road between the project site and Lakeview substation are intensively cultivated agricultural lands. Alfalfa, asparagus, carrots, and other row crops are the primary agricultural crops along the north side of Copus Road, and grapes and alfalfa are the primary crops to the south of Copus Road. The land is cultivated up to the pavement edge of Copus Road on both sides of the road, but on the north side of the road there is sometimes a dirt road along the southern borders of fields with a narrow band of weedy vegetation between Copus Road and the dirt roads.

- PG&E will also conduct various upgrades within their existing Copus, Maricopa, Midway, Lakeview, and Taft substations. These upgrades are generally related to communications and safety protocols required by PG&E. All upgrades will be conducted within the fenced footprints of these existing facilities and do not require the expansion of any substation. Because these upgrades will occur within existing fenced facilities that do not contain habitat that would support sensitive biological resources, significant impacts to biological resources will not occur.

- Upgrades to and expansion of the Lakeview substation may be required by the project. The footprint of the substation may need to be extended to the west by 300 feet and to the south by 200 feet, thus enlarging the substation by approximately 235,000 square feet, or approximately 5.4 acres. The removal and replacement of an existing control building, including concrete foundation, may be required. The installation of a six circuit breaker ring-bus and upgrades of other equipment may be needed. Several entrances of existing lines into the substation will need to be reconfigured, resulting in the removal of up to five existing wooden poles and the installation of up to four new light duty steel poles and up to six new TSPs. The expansion areas of the Lakeview substation are completely within cultivated croplands consisting of grapes (to the south) and alfalfa (to the west). All pole replacements and new poles would be located within existing agricultural fields (alfalfa or asparagus) or along previously cleared dirt roads.

- Upgrades to and expansion of the Copus substation may be required by the project, which would include extending the substation footprint to the south by 100 feet and to the west by 150 feet, resulting in an enlargement of the existing footprint by approximately 72,500 square feet, or 1.7 acres. Fencing would need to be replaced, a small enclosure for telecommunications equipment may need to be installed, and a new control building may need to be located within the expanded footprint area. The expanded footprint and all associated upgrades would be located entirely within an existing citrus orchard.



Quad Knopf

TRANSMISSION ROUTES
MARICOPA SUN SOLAR LLC

Figure
2 - 3

This page intentionally left blank.

LANDSCAPING/SITE ENHANCEMENT

Drought-tolerant, native plants in pots that are a minimum 15-gallon size will be planted along the security fence directly adjacent to local county roads to provide a visually appealing view from public roadways. Plants will be watered with drip irrigation or by water truck.

PAVING OF ACCESS ROADS AND BUILDING AREAS

With the exception of Site 4-S, each proposed Solar Site has existing paved road access from either South Lake Road (Sites 2-S, 3-S, 5-S, 6-S and 7-S) or Copus Road (Site 15-S). Paving of one access road to Site 4-S will occur. The access road to Site 4-S will encompass paving approximately 3,520 linear feet of roadway, measuring 20 feet in width. Driveway approaches that are 12 feet wide by 60 feet long will also be paved at each Solar Site. Where paving is necessary, construction of paving may take up to two months to complete for each Solar Site, and will occur at the beginning of construction.

POST CONSTRUCTION SOIL TREATMENT

After clearing**,** grading, earth moving, and/or excavating, once initial leveling has ceased, all inactive soil areas within the construction site shall be either: (1) seeded using native plant species and watered until plant growth is evident; (2) treated with a dust palliative; or (3) watered twice daily until soil has sufficiently crusted to prevent fugitive dust emissions.

Operations and Maintenance Activities

Some of the previously mentioned activities will also occur during the Operations and Maintenance phase. These include: 1) Delivery of materials and equipment, 2) Drainage, erosion, and dust control, 3) Maintaining staging areas, 4) Fencing, gates, lighting, and construction of parking areas, and 5) Installation of signage. Activities that will occur on a recurring basis during the operations and maintenance period include regular panel washing and routine maintenance.

Implementation of the project will result in the following: placement of PV solar arrays and associated infrastructure, including inverters, transformers, circuit breakers, a substation, and operations and maintenance buildings on approximately 3,700.8 acres of vacant land. Solar equipment has a lifespan of up to 25 years, during which operations and maintenance activities will be conducted. Operational activities are limited to monitoring facility performance, responding to utility needs for facility cleaning and adjustment, and on-site security.

Trucks (pickup, flatbed), forklifts, and loaders may be used for routine and unscheduled maintenance, and water trucks will be used to wash solar panels and prevent excessive dust. Large heavy-haul transport equipment will not be routinely needed, but may be used for specific equipment repair or replacement.

The following list and descriptions of activities comprise the Covered Activities that will be implemented during the operations and maintenance phase. Some regular and unscheduled operations and maintenance activities will be conducted at night when it is possible to safely and cost efficiently power down the solar facilities. Examples of such activities include delivery of oil for transformers and maintenance of solar panels.

METER READING

Physical meter reading may be required on a limited basis to confirm automated readings.

MONITORING ALARMS/SECURITY

Perimeter security fencing will be maintained during construction and operational phases of the project.

OPERATION OF SOLAR MODULES

Solar modules will operate 7 days a week, 365 days a year. The system is solid state with no moving parts, although depending upon the chosen design, some Solar Sites may be equipped with solar panel arrays that provide tracking of the sun. Those designs that track the sun have motors and other moving parts. Maintenance activities will include repairs to equipment including transformers, water/oil separator systems, electrical equipment, road and fence repairs, panel and inverter repairs, visual inspections of transformers and water/oil separator system, visual inspection of panels, inverters, structures, cabling and wiring, replacing and/or upgrading panels, inverters, transformers, wiring, cabling, power lines, mounting hardware, monitoring systems and panel cleaning systems as needed. Water trucks will be utilized twice per year to clean solar panels (approximately 1 gallon of water for each panel).

SOLAR PANEL CLEANING AND MAINTENANCE

Regular maintenance of the solar panels will involve cleaning and testing of proper function on an ongoing basis. Cleaning of the solar panels will occur as much as twice yearly during the operations and maintenance phase and will involve the use of water trucks driving between solar panels throughout the Solar Development Footprint. The following assumptions were used to calculate long-term, operational vehicle trips:

- Operational water truck emissions:
    - Module cleaning involving a negligible number of personnel for short periods of time would require a total of 4,412 truck trips per year. This averages approximately 12 trips per day.

  - Based on the location of the available water wells proposed to provide water for panel cleaning, it is anticipated that the trucks would travel approximately 5 miles between wells and the solar facilities.

- Operational worker truck emissions:
  - Two worker trucks would service the project site.
  - Worker trucks were estimated to travel a total of 4 miles per truck per day twice a year on site.
  - Worker trucks were estimated to travel a total of 60 miles per truck per day twice a year off site.

It is anticipated that cleaning will be conducted by eight water trucks at a given time each of which can make eight trips per day to accomplish cleaning of all 4,411,902 solar panels over all Solar Sites (2 gal/solar panel/year for a total of 8,823,804 gals of water/year at 4,000 gal/truck capacity). The water is expected to come from one or more unspecified existing wells within the Wheeler Ridge Maricopa Water District. In the event water is not available from wells within the District, an alternative source will be located and transported to the site to accomplish solar panel cleaning. While cleaning of the PV panels with water truck in from local sources is proposed as part of routine operations, some panel cleaning can be expected to occur naturally as a result of wind and rain. Also, while dust build-up on the PV panels will reduce the efficiency of the panels, washing in accordance with a strict schedule is not absolutely essential to the operation of the facility. In other words, the facility will continue to produce electricity, albeit at reduced efficiency, if the panels become coated with dust.

Routine maintenance of the solar facilities will involve infrequent use of heavy equipment including forklifts, heavy haul trucks and vegetation removal equipment. The majority of maintenance activities will be conducted at night when solar facilities can be safely powered down. Night time maintenance activities will occur very infrequently, but when they do occur they will present an increased risk to San Joaquin kit fox and Tipton kangaroo rats. Measures are in place to ensure potential impacts to Covered Species due to night activities are avoided or minimized to the extent possible.

VEGETATION AND WEED MANAGEMENT

The Solar Sites will be disked on a biannual basis; however, weedy vegetation develops in low amounts between disking events. In scattered localities, low growing tamarisk is present and will need to be removed more aggressively. Residual water from panel cleaning activities could stimulate vegetative growth. Vegetation removal is expected to occur twice per year. Chapters 5 and 6 of the Draft HCP (Appendix B) contains a Vegetation Management strategy.

Decommissioning Activities

Solar equipment has a lifespan of up to 25 years. At the end of the project operation term, the project will be decommissioned and deconstructed. Prior to any decommissioning activities, surveys will be conducted to assess the extent to which Covered Species have occupied the Solar Development Footprint. All minimization, avoidance, and mitigation measures appropriate for presence of Covered Species, such as avoidance barriers, pre- and post-activity sweeps, and monitoring, shall be implement prior to and during decommissioning activities.

The following list and descriptions of activities comprise the Covered Activities that will be implemented during the decommissioning phase.

DRAINAGE, EROSION, AND DUST CONTROL

Drainage and erosion control features will be left in place and will not be removed by decommissioning activities. Although most of these features will be composed of earthen berms, there will be some culverts and pipes that will be left abandoned and in-place. Keeping these features in place will aid in management of these lands as Conservation Sites by reducing and minimizing periods of flooding and erosion events. Dust control during decommissioning activities will be consistent with those activities and methods previously described.

MANAGING WASTE

Hazardous and non-hazardous waste will be managed during the operations and maintenance phase. Very little activity is expected on any of the solar facilities during operations and maintenance and so waste material is expected to occur in very low levels. As with any other phase of the solar project, daily waste management will occur when workers are present on-site and waste will be deposited in the appropriate close containers. As noted above, PV panels that are damaged or become otherwise nonoperational will be removed from the site. It is anticipated that much of the metal and glass material used in the PV solar panels will be recycled, and will not contribute to local landfills. If waste occurs, hazardous waste will be removed from the solar facilities immediately after a spill or upon the finding of the waste, and non-hazardous waste will be removed on a weekly basis.

REMOVAL OF ACCESS ROADS AND FENCING

All paved and graveled access roads, parking and staging areas, and access driveways will be removed. It is estimated that 1,822 cubic yards of materials will need to be removed from paved roadways and 37,268 cubic yards of material will be removed from paved staging and parking areas. An additional 6,708 cubic yards of aggregate will be removed from graveled roads. All security fencing will be removed. Permanent perimeter fencing (constructed of 4-strand barbed wire or equivalent) will be installed around the Solar Sites.

REMOVAL OF BUILDINGS, FOUNDATIONS, AND CONCRETE PADS

The removal of operations and maintenance buildings will be accomplished by use of a front-end loader and dump truck. It is estimated that a total of 600 cubic yards of material consisting of cement foundations, roofing materials, and wooden structural components will be removed from each site, totaling 4,200 cubic yards of material from all sites. All leach fields and septic tanks will be left in place as their removal will involve greater ground disturbance. All trenches or holes will be filled with soil from the project site. After demolition is complete, soils will be leveled using heavy machinery including disks, graders, and/or ring-rollers.

REMOVAL OF ELECTRICAL CABLING

All underground conduits housing electrical cabling will be left in place, but the conduits shall be cut off below ground level and all trenches or holes will be filled with soil from the project site. Electrical cabling contained within the conduits will be removed.

REMOVAL OF SOLAR SYSTEMS

Solar infrastructure removal will include the removal of rack system, tracking system and motors, PV panels, inverter/transformer and control room structures, electrical conduits and wiring, switch yards, inverter pad and pads such as tracking motor pads. Concrete pads and foundations will be broken up into smaller pieces and hauled away from the project site for disposal. The removal of infrastructure and facilities will be conducted in a manner that minimizes ground disturbance and dust, and disturbed soil from removal of support structures and trenches will be replaced.

VEGETATION AND WEED MANAGEMENT

During the decommissioning phase, all planted ornamental vegetation and irrigations systems will be removed.

Description of the Conservation Measures

The following is excerpted from the Draft HCP, dated August 2013, which is contained in Appendix B. Refer to the Draft HCP for additional information.

The Draft HCP provides for 1) Management and maintenance activities associated with movement corridors and conservation sites, including monitoring and reporting activities and 2) Activities associated with implementation of the conservation program described in the Draft HCP.

Activities to preserve and enhance habitat and to avoid and minimize Covered Species are included as Covered Activities. These activities may be conducted during all phases of the project as well as management and monitoring activities conducted on Conservation Sites as indicated within the descriptions below. These activities may be conducted on both the Solar Sites and the Conservation Sites.

ON-SITE HABITAT PRESERVATION

Movement Corridors totaling 33.8 acres will be preserved. Currently, these Movement Corridors contain disked lands that have little value for wildlife. The purpose for providing Movement Corridors is to encourage wildlife to move through the region by providing corridors of habitat that can be successfully used by wildlife, particularly the San Joaquin kit fox. By enhancing the habitat within the Movement Corridors, not only can movements of the San Joaquin kit fox and other wildlife be facilitated, but habitat can be provided to encourage occupancy by all other Covered Species (blunt-nosed leopard lizard, Tipton kangaroo rat, Nelson's antelope squirrel, and western burrowing owl).

HABITAT ENHANCEMENTS

Habitat enhancements will be provided within the Movement Corridors to facilitate their use by Covered Species. Enhancements will be installed during the construction phase of the project and will be monitored and maintained during the operations and maintenance phase of the project. During the decommissioning phase these Movement Corridors and their enhancements will be protected. Subsequent to decommissioning, the Movement Corridors will be incorporated into the conservation easement placed on the abandoned Solar Sites and management will follow the Habitat Management Plan, Maricopa Sun Solar Complex (Appendix C of the Draft HCP).

Habitat enhancements provided within the Movement Corridors are as follows:

Artificial raised earthen berms will be created to provide refugia for small mammals during flooding events, and to provide burrowing, denning, and perching opportunities for a variety of species. San Joaquin kit fox dens, including escape dens and pupping dens, and burrowing owl perches will be installed. The raised earthen berms will be created along Movement Corridors. All berms shall be created using topsoil from the project site. A general access dirt road may be maintained alongside the ditch. The berms shall be linear to facilitate construction by

mechanical means, but they will not necessarily be continuous; gaps will be provided at strategic locations to allow flood waters to pass without causing undue damage to the berms.

ARTIFICIAL SAN JOAQUIN KIT FOX (*VULPES MACROTIS MUTICA*) DENS

Artificial dens shall be placed at a rate of eight per mile along Movement Corridors. One in ten dens shall be of a natal den (or pupping den) design while the remainder shall be of the more simple escape den design. Dens shall be constructed following standardized configurations as detailed in Appendix D of the Draft HCP (Appendix B).

BURROWING OWL (*ATHENE CUNICULARIA*) PERCHES

T-posts shall be driven into the top of the earthen berms at a rate of eight per linear mile along Movement Corridors. A two foot long section of t-post shall be welded at a right angle to the top of the main t-post to provide a suitable perching surface. Burrowing owls are expected to use artificial dens constructed for kit fox and so additional burrows specifically constructed for the burrowing owl would not improve the Movement Corridors for that species.

RESTORATION OF VEGETATION USING NATIVE SPECIES

There is sufficient evidence to conclude that lands along the Movement Corridors will not need to be restored; in periods between disking, many of the sites naturally revegetate with a variety of native species including alkali seepweed (*Sueada* sp), saltbush (*Atriplex* sp.), cheeseweed (*Isocoma acradenia*), and various other native and non-native annuals. Initial revegetation is likely to consist of weedy and somewhat invasive species such as London rocket (*Sisymbrium ireo*) and five-hooked bassia (*Bassia hyssopifolia*), although over time these would diminish as other species become established. The natural revegetation of these areas, even with weedy species, is anticipated to support native wildlife species, including the Covered Species. Nonetheless, there may be specific instances where seeding will be needed to re-establish a semblance of native habitat. All Movement Corridors shall be evaluated annually for a period of three years. If after three years, the species composition and vegetation cover is less than desired, a revegetation program shall be developed and implemented at that time. The desired vegetative cover is from 500 to 1,200 pounds of residual dry matter consisting of a minimum of five native species per acre. Long-term management of these lands through managed grazing and restoration, where needed, shall be implemented as described in Section 5 of the Draft HCP, *Conservation Program*. Enhancements, management, and monitoring of the Conservation Sites shall follow the Habitat Management Plan, Maricopa Sun Solar Complex (Appendix C of the Draft HCP).

Third-party Biological Consultant

Prior to the start of any Covered Activities, Maricopa Sun, LLC shall submit to the Service for their review and approval, the qualifications of all third-party biological monitors (biological

monitors) that will be involved with the Maricopa Sun Solar Complex. The biological monitors will be given the authority to stop any work that may result in the take of listed. The project lead biological monitor will be the contact for any employee or contractor who may inadvertently kill or injure a Covered Species, or anyone who finds a dead, injured, or entrapped individual of a Covered Species. The project lead biological monitor shall possess a working cellular telephone whose number shall be provided to the Service. In the event of take of an individual (capture or kill) of a Covered Species, the project lead biological monitor will contact the Service by phone within 24 hours of the incident and by writing within 5 working-days of the incident.

Pre-construction Surveys

Pre-construction surveys are a requirement under the Draft HCP to provide information used to minimize or avoid the impacts of solar development on Covered Species. Pre-construction surveys shall be conducted 14 days prior to the inception of any project related activity that involves on-site work (e.g., staking and surveying, compacting, grading, etc.). In the event a break in work occurs for a period of 14 days or more, pre-construction surveys will have to be repeated before work may resume in that specific area. Portions of the Permit Area that are not scheduled for developed will not require pre-construction surveys until such time as they are scheduled for development. Pre-construction surveys will be conducted by biological monitors affiliated with a third-party biological consultant and approved by the Service prior to the start of any biological monitoring.

Biological monitors will conduct transect surveys with transects spaced 30 meters apart and with the assistance of binoculars to ensure 100% coverage of the Solar Site. Biological monitors will be focus on detection of Covered Species or their sign, but will also note the presence of other plant and wildlife species. If individuals or sign of Covered Species are detected, the biological monitor will document the observation with the following data:

- Species,
- Type of observation (individual(s), sign, or other),
- Written location and GIS waypoint of observation,
- General physical conditions of observation (e.g., size of burrow, condition of burrow, number of openings of burrow, etc.),
- Time of observation,
- Date of observation,

- Any ongoing work in the vicinity of the observation (in the event that the pre-construction survey is being performed due to a 14-day break in work), and
- Photographs of the individual or sign, as possible.

Appropriate measures, as outlined in the Draft HCP, will be implemented to ensure that project impacts are minimized or avoided to the extent possible. Such measures may involve establishing an Ecologically Sensitive Area (ESA) and associated buffers to separate Covered Species from project activities, restriction of high impact activities that generate significant ground vibration or noise at or above 120 dBA (A-weighted), and a reduction in speed limits in the vicinity or the ESA. ESAs will be staked and/or flagged to prevent inadvertent trespass. The presence of the ESA will be reported and uploaded to the geo-database.

Pre- and Post-activity Sweeps

Daily pre- and post-activity sweeps (sweeps) are a requirement under the Draft HCP to provide information used to ensure project impacts to Covered Species are minimized or avoided to the extent possible. Sweeps will be performed by biological monitors prior to commencement of daily work (pre-activity) and directly after daily work has been completed (post-activity).

Pre-activity sweeps will involve a morning tailboard meeting with the construction foreman to inform the biological monitor of the location of planed work for the day. The biological monitor will then arrive at the work location to perform the pre-activity sweep no more than 30 minutes prior to work crews arriving. Pre-activity sweeps will be performed in daylight and biological monitors will plan for enough time to complete a thorough sweep before work crews arrive. A pre-activity sweep will involve a thorough inspection of the work site focusing on the following:

- detecting any new sign of Covered Species (e.g., newly constructed burrows, dens or nest, scat, tracks);
- detecting individuals of Covered Species;
- inspecting all staged materials and vehicles for the presence of Covered Species that may have taken up shelter in the material or vehicle over night;
- identifying proper installation of BMPs according to SWPPP guidelines;
- identifying any ESAs already present in the area and ensuring that buffers are well demarcated;
- identifying any potential hazards to Covered Species that need to be addressed;

Once a pre-activity sweep has been completed, information from the sweep will be documented in the daily report and the crew foreman will be notified of any finds and/or ESA present in the work area. If any Covered Species or ESAs are present, the biological monitor will provide an on-site tailboard meeting to inform work crews of the species discovered/present, the need to delay or stop work in the event that and individual is present, and/or the ESA avoidance buffer(s) established in the area.

Post-activity sweeps will involve a detailed inspection of the work site as soon as possible upon completion of work. Post-activity sweeps will be performed before work crews leave for the day so that crews will be available to address any remedial actions necessary. Post-activity surveys will involve the following inspections of the work site:

- presence of any trash items;
- presence of any vehicle or other equipment spills or discharge;
- correct installation of BMPs according to SWPPP requirements;
- if present, proper upkeep of ESA buffers;

The biological monitor is responsible for ensuring that any and all issues discovered during the post-activity sweep are reported to the crew foreman and that the issue is corrected before crews leave for the day. Findings of post-activity sweeps will be documented in daily reports.

Construction Monitoring

Daily construction monitoring is a requirement under the Draft HCP to ensure project impacts to Covered Species are minimized or avoided to the extent possible. During all phases of the project, a biological monitor will accompany work crews while conducting work on site. Biological monitors will be responsible for aiding work crews in avoiding ESAs and will watch for potential impacts to Covered Species during work activities. The biological monitor will have the authority under the Draft HCP to stop work in the event that a Covered Species is detected in proximity of the work site or in the event that an ESA is or is threatened with being encroached on. If work must be stopped the construction supervisor and project lead biologist will be notified to assess the severity of the situation. Work may continue one it has been determine that no take will occur by proceeding. Daily reporting for construction monitoring will be as outlined in Chapter 7 of the Draft HCP.

General Avoidance and Minimization

The following general avoidance and minimization measures will be implemented during construction activities to minimize potential incidental take of Covered Species:

1. Where construction activities will occur (including any ground disturbance), pre-construction surveys (see Pre-construction Surveys, this section) will be conducted by authorized biological monitors no more than 14 days prior to the beginning of such activities. Immediately prior to construction, additional clearance surveys will be conducted. If discovered, Covered Species will be avoided to the extent possible; construction activities will always be suspended to avoid take of San Joaquin kit fox and blunt-nosed leopard lizard. A biological monitor will be on-site at all times during construction activities (discussed in section 2.3.2) to ensure that impacts of Covered Activities on Covered Species are minimized or avoided to the extent possible.

2. Trapping and holding (or relocating) Covered Species, which will involve handling, could be required to avoid lethal take of Tipton kangaroo rats, Nelson's antelope squirrels, or western burrowing owls during the decommissioning phase of the project. Trapping will only be conducted by a Service-approved biologist with appropriate handling permits. Blunt-nosed leopard lizards and San Joaquin kit fox will be avoided entirely through implementation of avoidance measures outlined below. The trapping and relocation of Covered Species shall adhere to methodologies specified in the Relocation Plan contained in the Draft HCP (Appendix B) for the western burrowing owl and the relocation plan for the Tipton kangaroo rat and Nelson’s antelope squirrel.

3. Maricopa Sun, LLC shall develop and implement an Employee Education Program in which each of its employees and leasees, including employees of contractors and subcontractors, who work on the construction sites, are informed about the sensitive biological resources associated with the project. This program shall be developed by the third-party biological consultant and will consist of an on-site or training center presentation including a slide show and written materials for each participant. The program shall discuss the locations and types of sensitive biological resources on and near the Solar Sites, Conservation Sites, and Movement Corridors; present an overview of the laws and regulations governing the protection of biological resources and the reasons for protecting these resources; discuss the various protection measures to be implemented; and identify official points of contact should questions or issues arise. Each participant shall sign a statement declaring that the individual understands and will abide by the guidelines set forth in the program materials. The program shall be presented annually and as needed to ensure that all workers receive training prior to being allowed to work on the sites, and to ensure compliance with all protection measures. Separate trainings will be conducted for the construction, operations and maintenance, and decommissioning phases. A list of all participants shall be maintained and provided to wildlife agency representatives upon request. Workers will be trained and directed to recognize Covered Species (live or dead) that have been killed or injured. Workers will

coordinate with project biologists to assure accurate records of the locations of any Covered Species that was injured or killed.

4. Any incidence of take of individuals of Covered Species will be reported to the Service by phone within 24 hours and in writing within five business days. Take of individuals includes capture (accidental entrapment and intentional trapping) and lethal take.

5. Construction activities shall generally be restricted to daylight hours to avoid impacts to Covered Species. Only upon prior approval by the Service and California Department of Fish and Wildlife (CDFW, formerly California Department of Fish and Game) may work be performed during hours of darkness and permitted work will be limited to the use of handheld tools, such as hand-operated power tools. Vehicle use during hours of darkness will be limited to a light-weight, pick-up truck style vehicle. Biological monitors will be required to escort all personnel and transport vehicles after dark. Daytime speed limit will be 10 miles per hour. Speed limit will be reduced to 5 miles per hour during all night time activities on the project site.

6. Due to noise susceptibility of species such as the Tipton kangaroo rat, noise levels at a distance of 300 ft. from the edge of work areas shall be measured with noise meters. These measurements need only be taken in construction areas that are located within 300 feet or less of areas known to be occupied by Covered Species. Occupancy by Tipton kangaroo rats will be determined by trapping in the vicinity of observed kangaroo rat burrows or, more conservatively, may be assumed based on the presence of burrows fitting the description of a kangaroo rat burrow. Occupancy by Covered Species is determined by pre-project biological surveys, pre-construction surveys, pre-activity sweeps, and on-going biological monitoring. Biological monitors will coordinate with construction foremen during pre-activity sweeps to identify activities involving high levels of noise that will occur in close proximity to known locations of Covered Species and will ensure measurements are taken to monitor noise levels. The measured noise levels shall not exceed 120 decibels on the A-weighted scale (dBA) for a period of more than one hour with any eight-hour period. Where noise exceeds these levels, construction personnel shall erect temporary noise barriers to reduce noise levels to 120 dBA or less. This measure shall be implemented during all phases of the project

7. All materials staged on the project site, and especially in staging areas, shall be spaced so as to not provide areas suitable for Covered Species to seek shelter. At no time shall materials be haphazardly piled on the project sites. All materials shall be inspected thoroughly by the biological monitor prior to being moved.

8. Perimeter security fencing shall be inspected throughout the life of the solar facility project. Perimeter security fencing employing the raised fence design will be inspected at six month intervals and perimeter security fencing designed with wildlife pass-through

channels will be inspected once per month. All maintenance/repairs will be made within two weeks of being reported. Wildlife pass-through channels that are found to be blocked will be cleared as soon as possible to prevent interference with permeability of the fencing.

9. All trash generated, including packaging materials from equipment and supplies, food-related trash items (such as used sandwich wrappers, cans, bottles, and food scraps), and un-used or discarded equipment and supplies, shall be disposed of in covered containers and removed on at least a weekly basis.

10. Dogs and other pets shall not be allowed within the Permit Area.

11. No firearms shall be permitted in the Permit Area. Exceptions include agents of public law enforcement and security personnel.

12. A Stormwater Pollution Prevention Plan (SWPPP) shall be prepared for all project sites. The plan(s) shall include specific measures to be performed during construction periods that will prevent discharge into sensitive biological resource areas including wetlands, sensitive natural communities, or habitats occupied by Covered Species. Specific measures may include installation of hay bales, detention basins, or other means of intercepting excess runoff from the construction areas. Prior to final adoption, the SWPPP shall be reviewed by the project's lead biologist to ensure that adequate measures are included. The SWPPP shall not include lands or activities not covered in the Draft HCP.

13. No plants or wildlife shall be collected, taken, or removed, except as necessary for Covered Activities and then only by a permitted biologist. Salvage of native species that are to be removed is encouraged, but shall only be performed by a permitted biologist or other personnel trained to identify sensitive species and permitted to remove those species. Relocation of wildlife shall only be performed by biologists approved by the Service under the conditions specified in the Draft HCP and in the Relocation Plan for the western burrowing owl and the relocation Plan for the Tipton kangaroo rat and Nelson's antelope squirrel (Appendices E and F of the Draft HCP). Biologists shall possess appropriate animal-handling permits and all trapping and relocations will be conducted with prior approval of the Service and will be followed up with a written report within five business days.

14. Project-related vehicles shall observe a 10-mph speed limit in all project areas, except on county roads and State and federal highways. Nighttime construction traffic shall be prohibited except under prior agency approval. Off-road traffic outside of designated driving areas shall be prohibited.

15. Covered Activities shall generally be restricted to daylight hours to avoid impacts to Covered Species. During the operations and maintenance phase it will be necessary for some activities to occur at night. Vehicle use during hours of darkness shall be limited to only those vehicles necessary to perform the given work or to conduct necessary deliveries. Biological monitors shall be required to escort all personnel and their transport vehicles after dark. Speed limits shall be reduced to 5 miles per hour during all night time activities on the project site.

16. Covered Species may be attracted to den-like structures such as pipes, culverts, pallets, wire bales, and construction equipment. All materials and equipment that are stored on a construction site shall be securely capped or covered to prevent use by Covered Species. Materials and equipment should be thoroughly inspected for Covered Species before being buried, capped, or otherwise used or moved in any way. If Covered Species are discovered within staged materials or equipment, all activity in the immediate area shall stop until the Covered Species has left the material or equipment, and the biological monitor has determined that it is safe to resume work.

17. Perimeter security fencing shall be designed to be permeable to Covered Species and shall be inspected throughout the life of the Project. The perimeter security fence shall leave a minimum 4- to 6-inch opening between the base of the fence and the ground surface. The bottom of the fencing materials or other materials having sharp edges shall be knuckled (wrapped back to form a smooth edge) to protect wildlife that passes under the fence. Raised fencing shall be inspected at six-month intervals and any repairs necessary to maintain the permeability of the fencing shall be made within two weeks of being reported. Where raised fencing cannot be installed, passageways having openings of 4 to 8 inches in diameter constructed of PVC pipe or other suitable materials shall be installed every 100 feet along the fence perimeter. Perimeter security fencing designed with wildlife pass-through channels shall be inspected once per month. All fencing maintenance/repairs shall be made within two weeks of being reported. Wildlife pass-through channels that are found to be blocked shall be cleared as soon as possible to prevent interference with permeability of the fencing. No Project fencing shall be fitted with slats, which may entrap wildlife attempting to pass through it.

18. Temporary impermeable fencing or “barrier” fencing will be installed between work areas and areas where Covered Species have been documented to occur to prevent species from becoming exposed to adverse effects from Covered Activities. Occurrence of Covered Species will be documented during pre-project reconnaissance and protocol level surveys, pre-activity surveys, pre- and post-activity sweeps, and during on-going biological monitoring. Barrier fencing will be constructed of 36-inch-tall metal flashing

buried six inches below grade. The barrier fencing will be supported on one side (on the construction side of the fence) by stakes, posts of reinforcing bar, or T-posts. The fencing will be affixed to the supports in a manner that will not allow Covered Species to climb the fence (e.g., bolts or fasteners must be a minimum of 18 inches apart).

19. Trapping and holding (or relocating) Covered Species, which will involve handling, could be required to avoid lethal take of Tipton kangaroo rats or Nelson's antelope squirrels during the operations and maintenance and decommissioning phases of the Project. Trapping shall only be conducted by a USFWS-approved biologist with appropriate trapping/handling permits. Blunt-nosed leopard lizards and San Joaquin kit fox shall be avoided entirely through implementation of avoidance measures outlined below. The trapping and relocation of Covered Species shall adhere to methodologies specified in the Relocation Plan for the Tipton kangaroo rat and Nelson’s antelope squirrel.

20. All trapping and relocations shall be conducted with prior approval of the USFWS, shall only be performed by USFWS-approved biologist with appropriate animal handling permits, and shall be followed up with a written report within five business days.

Construction supervisors shall notify the Service immediately if take of a Covered Species or listed species occurs.

Avoidance and Minimization of Habitat Disturbance

Solar Sites will be kept relatively clear of vegetation so that the sites are suitable for solar use. Management of vegetation within the Solar Development Footprints will include mowing and grazing on an as needed basis to lessen the risk of fire and to facilitate solar operations. Vegetation and habitat within the Solar Development Footprints will not be managed specifically for the benefit of Covered Species, but it is anticipated that Covered Species may become established within some portions of some or all of the Solar Development Footprints over time, and while operations and maintenance activities are occurring. The Solar Development Footprints will be monitored to gauge the distribution and occurrence of Covered Species, and to ensure maximum avoidance of Covered Species during operations. Vegetation and habitat within the Solar Development Footprint will be managed to meet the needs of the solar operations, however, and will not specifically be managed for habitat.

Within Movement Corridors and Conservation Sites, habitat will generally improve for Covered Species through the cessation of disking and if vegetation is not allowed to become extremely dense. As discussed further in Section 5.2.1of the Draft HCP, vegetation density should be managed to maintain a 20% or less cover of shrubs, and a cover of annual forbs and grasses that is between 500 and 1,200 pounds per acre of residual dry matter. In addition to providing habitat

for Covered Species, preventing vegetation from becoming "dense" will reduce fire risks and the potential for vegetation to interfere with project operations. Mowing (and managed grazing if appropriate) shall be used to maintain vegetation in a condition that optimizes its habitat value for Covered Species (as discussed further in Section 5.2.1 of the Draft HCP) and is suitable for project operations. As discussed in Section 5.2.3 of the Draft HCP (Monitoring), vegetation management may be adjusted to reflect the results of biological monitoring.

Species Specific Avoidance and Minimization

The following avoidance and minimization measures will be implemented during Covered Activities to minimize potential incidental take of individual Covered Species:

Avoidance and Minimization Measures for San Joaquin Kit Fox

To protect the San Joaquin kit fox, standard protection measures (Service 2011) shall be implemented prior to and during construction. These protection measures will also reduce the potential for project impacts to the American badger. These measures shall be implemented during construction, maintenance, and operations.

1. Pre-construction surveys shall be conducted within 14 days prior to the beginning of ground disturbance or construction activities, or any project activity likely to impact the San Joaquin kit fox. If any evidence of site occupation by Covered Species or other special-status species is observed, an exclusion zone shall be established by an approved biologist. Exclusion zones shall be placed in accordance with Service recommendations at the following radii:

    - Potential Den: 50 ft.
    - Known Den: 100 ft.
    - Natal/Pupping Den (Occupied and Unoccupied): Contact Service
    - Atypical Den: 50 ft.

    If dens must be removed, they must be monitored for a minimum of three consecutive nights using cameras or tracking medium to determine kit fox use. If there is no kit fox activity for three consecutive nights, dens may be collapsed. If dens are actively being used by kit fox, no collapse of the den is permitted until the kit fox(es) have vacated the den. Destruction of natal dens and other "known" kit fox dens must not occur until authorized by the Service. Once kit foxes have been confirmed to have vacated the den, and Service approval has been obtained, dens may subsequently be hand excavated by a trained wildlife biologist. Replacement dens must be constructed in suitable habitat outside of the construction area;

2. Project-related vehicles shall observe a 10-mph speed limit during daylight hours in all project areas, except on county roads and State and Federal highways. Nighttime speed limit shall be reduced to 5 mph. Because kit foxes are most active at night, nighttime construction shall occur only with Service approval. Off-road traffic outside of designated driving areas shall be prohibited;

3. To prevent inadvertent entrapment of kit foxes or other animals during the construction phase of the project, all excavated, steep-walled holes or trenches more than five feet deep shall be covered at the close of each working day by plywood or similar materials. Holes and trenches less than five feet deep may either be covered or be provided with escape ramps at a rate of one ramp every 100 feet. Escape ramps may be constructed of earth fill or wooden planks with a slope no steeper than 45 degrees and, if wooden planks are used, perpendicular groves or rungs shall be proved to aid in traction. All holes and trenches more than two feet. Deep shall be inspected daily for trapped animals regardless of whether work is occurring in that area. Before holes or trenches are filled, they shall be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the procedures described under points 5 and 6 of this section will be followed.

4. Kit foxes are attracted to den-like structures such as pipes and culverts, and may enter stored pipes, becoming trapped or injured. All construction pipes, culverts, or similar structures with a diameter of 4 inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for kit foxes before the pipes are subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe shall not be moved until the Service has been consulted;

5. The solar operator shall appoint a representative to be the point of contact for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured or entrapped individual. The point of contact's name and telephone number shall be provided to the Service. If any kit fox is inadvertently injured or killed during construction or operations, all work shall be immediately stopped until the cause of injury is determined and a plan to avoid any additional injury has been implemented in consultation with an approved biologist and the Service;

6. In the case of trapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape, or the Service shall be contacted for advice;

7. Any solar operator, or representative, contractor or subcontractor of a solar operator who inadvertently kills or injures a San Joaquin kit fox shall immediately report the incident to their point of contact. The point of contact shall contact the Service and CDFW

immediately in the case of a dead, injured or entrapped kit fox. The CDFW contact for immediate assistance is State Dispatch at (916) 445-0045. State Dispatch will contact the local warden or biologist;

8. The Sacramento Fish and Wildlife Office and CDFW shall be notified in writing within three working days of the accidental death or injury to a San Joaquin kit fox during Covered Activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal, and any other pertinent information;

9. All food-related trash items such as wrappers, cans, bottles, and food scraps should be disposed of in securely closed containers and removed at least once a week from a construction or project site;

10. No firearms shall be allowed on the project site;

11. No pets, such as dogs or cats, should be permitted on the project site to prevent harassment, mortality of kit foxes, or destruction of dens;

12. Use of rodenticides and herbicides in project areas should be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. All uses of such compounds should observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other State and Federal legislation, as well as additional project-related restrictions deemed necessary by the Service. If rodent control must be conducted, zinc phosphide should be used because of a proven lower risk to kit fox;

13. Upon completion of the project, all areas subject to temporary ground disturbances including, for example, storage and staging areas, temporary roads, and pipeline corridors, should be re-contoured if necessary, and revegetated to promote restoration of the area to pre-project conditions. An area subject to "temporary" disturbance means any area that is disturbed during the project, but after project completion will not be subject to further disturbance and has the potential to be revegetated. Appropriate methods and plant species used to revegetate such areas should be determined on a site-specific basis in consultation with the Service, CDFW, and revegetation experts; and

14. To allow for continued use by San Joaquin kit foxes and other species once construction has been completed, any and all perimeter security fencing shall be permeable fencing that does not create any barrier to species movement. Periodic monitoring of the fence shall occur to ensure that the fence remains permeable to allow San Joaquin kit foxes access to the Solar Sites, Conservation Sites and Movement Corridors. Periodic

monitoring shall occur on an annual basis, and after major flood events. Actions shall be taken to correct inadequacies in fencing within 14 days of their discovery.

Avoidance and Minimization Measures for Blunt-nosed Leopard Lizard

To ensure that there is no lethal take of a blunt-nosed leopard lizard, the following measures shall be implemented:

1. Barrier fencing shall be provided during all phases of construction between project activity sites and native habitat areas adjacent to those. The fencing shall be buried a minimum of six inches below grade and extend a minimum of 36 inches above grade. This barrier fencing shall be constructed of metal flashing, plastic sheeting, or other materials that cannot be climbed by blunt-nosed leopard lizards, and will be supported on one side (on the construction side of the fence) by stakes, posts of reinforcing bar, or T-posts. The fencing will be affixed to supports in a manner that will prohibit blunt-nosed leopard lizards from climbing the fence. (i.e., bolts or fasteners must be a minimum of 18 inches apart).

2. The fencing shall be inspected by a qualified biological monitor on a weekly basis to ensure fence integrity. Any needed repairs to the fence shall be made on the day of their discovery. Fencing shall be installed and maintained during all phases of construction, but is only required when project activities occur within 200 feet of habitat suitable for supporting the blunt-nosed leopard lizard. Fencing may be removed once construction activities are complete.

3. Annual surveys shall be conducted on all developed Solar Sites during the blunt-nosed leopard lizard adult activity period (April 14 to July 15) to identify areas inhabited by the species.

4. In areas identified as occupied by blunt-nosed leopard lizards, Covered Activities will be restricted to the species active period to ensure that no blunt-nosed leopard lizards aestivating in burrows are crushed. Environmentally Sensitive Areas shall be established and signs shall be posted indicating increased sensitivity of the area. A biological monitor shall be required to accompany all work crews in the vicinity of ESAs. No ground disturbing activities shall occur within identified ESAs. Qualified biological monitors shall inspect ESAs during the adult and juvenile activity period to ensure that all blunt-nosed leopard lizard avoidance measures are being adhered to.

5. All vehicular traffic occurring during construction and during operations and maintenance activities, and occurring on all dirt and graveled roads in areas identified as occupied by blunt-nosed leopard lizards shall be limited to 5 mph or less to reduce

the potential for mortalities of blunt-nosed leopard lizards from vehicular strikes. Vehicles entering a blunt-nosed leopard lizard occupied area shall require accompaniment by a biological monitor.

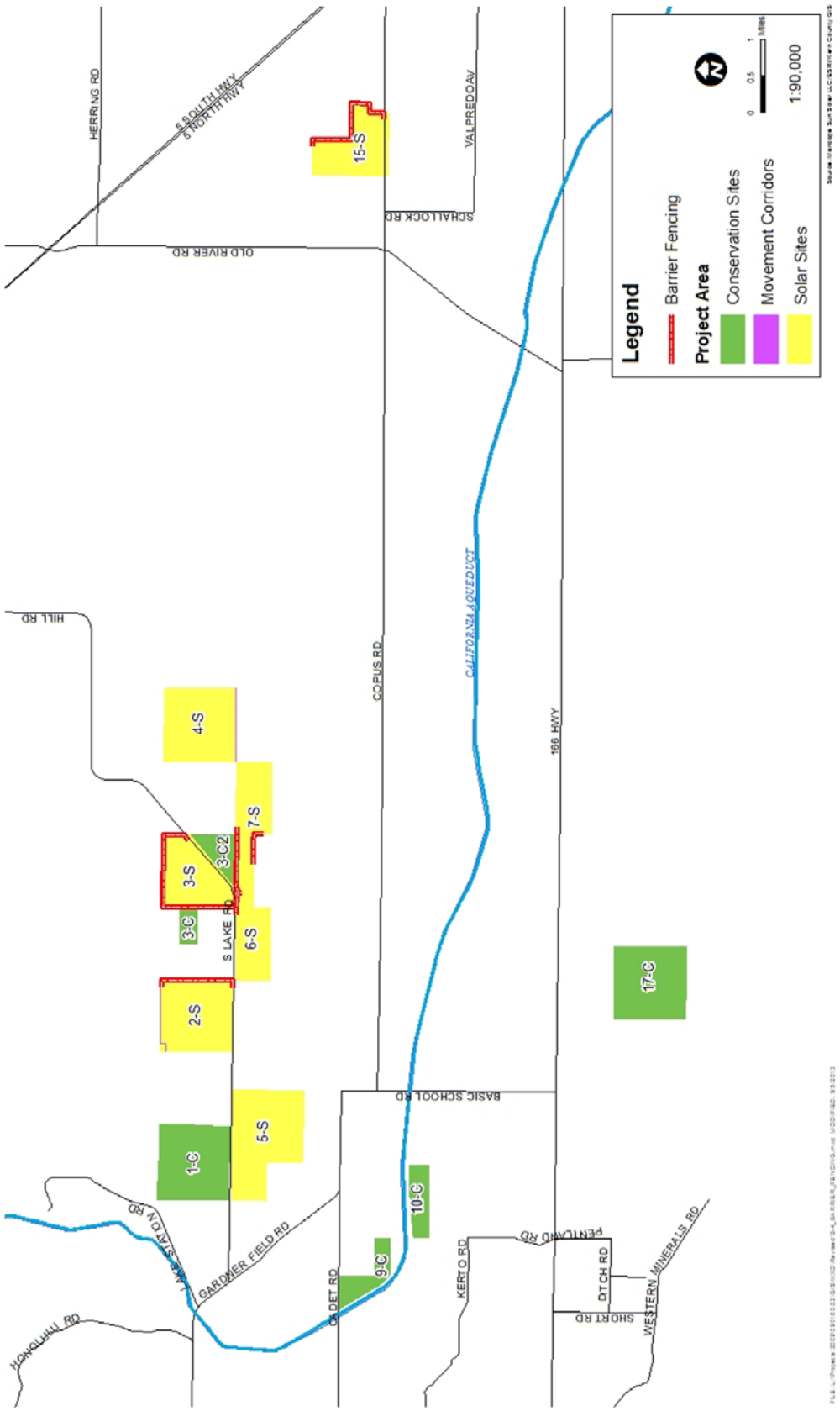


Figure 2 – 4

BARRIER FENCING
MARICOPA SUN SOLAR LLC

Quad Knopf

This page intentionally left blank.

Avoidance and Minimization Measures for the Tipton Kangaroo Rat and Nelson's Antelope Squirrel

To ensure that incidental take of Tipton kangaroo rat and Nelson's antelope squirrel are minimized, the following shall be implemented:

1. All areas of the construction sites where there is a potential for Tipton kangaroo rat burrows and Nelson's antelope squirrel burrows to occur, as determined by a qualified biologist, shall be inspected for the presence of burrows within 14 days of construction (see Pre-construction Surveys, this Section). Given current site conditions (Chapter 3), it is not anticipated that Tipton kangaroo rats, Nelson's antelope squirrel, or other special status species will occur on the Solar Sites during the construction phase of the solar project. If, however, they do become present, ESA buffers will be established and biological monitors will ensure that work activities avoid impacting the species. In the event that project activities must occur within areas that have become occupied by Tipton kangaroo rats or Nelson's antelope squirrels, the Relocation Plan (Appendix F of the Draft HCP -Appendix B of this EIS) will be implemented upon prior approval by the Service. The Relocation Plan will be carried out by a permitted biologist and all results will be proved to the Service in writing within five business days.

2. Given current site conditions, it is not anticipated that the Tipton kangaroo rat, Nelson's antelope squirrel, or other special-status species will occur on the Solar Sites during the pre-construction or construction phases of the Project. If they do become present, ESA buffers shall be established and biological monitors shall ensure that project activities avoid impacting the species. In the event that project activities must occur within areas that have become occupied by Tipton kangaroo rats or Nelson's antelope squirrels, the Relocation Plan (Appendix F of the Draft HCP – Appendix B of this EIS) shall be implemented upon prior approval by the USFWS. The Relocation Plan shall be carried out by a permitted and USFWS-approved biologist and all results shall be provided to the USFWS in writing within five business days. Trapping shall be conducted in a manner that ensures no Tipton kangaroo rats or Nelson's antelope squirrels are predated on or otherwise injured during trapping events.

3. Tipton kangaroo rats and Nelson's antelope squirrels will be temporarily housed when possible to avoid additional stress and disruption to other population through relocation. Temporary housing will be possible in the event that project activities resulting in the need for trapping the species do not occur over a period longer than ten days. If temporarily housed, Tipton kangaroo rats and Nelson's antelope squirrels will be held in ventilated containers of at least 12 inches long by 12 inches wide by 4 inches high. The containers will be partially filled with substrate material and will be kept in the shade or indoors where ambient temperature will not exceed 35° Celsius (C) or be allowed to drop lower than 20°C. Likewise, temperatures will not exceed 35°C during transport.

Appropriate food items will be provided. The animals shall be relocated in accordance with the relocation plan (Appendix F of the Draft HCP).

4. During operations and maintenance, no small mammal burrows shall be removed without first being inspected by a qualified biologist. If removal is essential, then trapping will occur at each burrow for three consecutive nights. Trapping shall proceed as discussed in the above sections and outlined in Appendix F of the Draft HCP (Appendix B). Once rodents have been removed, all burrows will be excavated by hand under the direct supervision of a qualified biologist and in compliance with Service requirements.

Minimization and Avoidance Measures for Burrowing Owls

To ensure protection of the western burrowing owl, the standard protection measures provided in CDFW]) March 7, 2012 *Staff Report on Burrowing Owl Mitigation* shall be implemented (CDFG 2012). Under circumstance where measures recommended in CDFG 2012 cannot reasonably be implemented without significant interference to project activities, the Project's lead biological monitor may seek approval from USFWS to implement the reduced buffers recommended under the October 17, 1995 *Staff Report on Burrowing Owl Mitigation* (CDFG 1995) (See table below). These measures shall be implemented prior to any pre-construction, construction, operation and maintenance, or decommissioning activities. These are summarized as follows:

1. Pre-construction surveys of the construction area and a 500 foot perimeter of the construction area will be conducted no more than 14 days prior to the start of construction. If more than 14 days lapse between the time of the pre-construction survey and the start of ground-disturbing activities, another pre-construction survey must be completed (see Pre-construction Surveys, this Section).

Recommended Restricted Activity Dates and Standard Buffer Distances – Burrowing Owls

		Level of Disturbance*		
Location	**Time of Year**	**Low**	**Medium**	**High**
Breeding burrow/nest	Feb 1-Aug 31	250 ft	500 ft	500 ft
Non-breeding burrow	Sept 1 – Jan 31	160 ft	250 ft	500 ft

* Levels of disturbance are defined as follows:
Low disturbance – Light vehicle (pick-up trucks or similar) traffic at intervals of 12 or fewer per day.
Medium disturbance – light vehicle traffic and construction work consisting of fewer than 10 workers using hand tools with noise levels greater than 95 dbA for a period of 1 hr. or more, measured 100 feet from work area.
High disturbance – Heavy equipment operations, greater than 10 workers per day, noise levels exceeding 95 dbA for over 1 hr in duration.

2. If burrowing owls are present on the construction sites (or within 250 feet of the construction sites) during the breeding season (April 15 through July 15), and appear to be engaged in nesting behavior, a fenced ESA buffer shall be installed between the nest site or active burrow and any earth-moving activity or other potential disturbance according to the buffer recommendations presented in the table above. This buffer may be removed once it is determined by the lead biologist that the young have fledged and are no longer dependent on the nest or burrow for survival. Typically, the young fledge by August 31. Actual fledging dates may be earlier or later, and shall be determined by the lead biologist. Standard buffer distances shall be maintained as recommended in CDFG 1995. These buffer distances may be reduced on a case-by-case basis and with the guidance of the lead biologist and prior approval by the USFWS. The standard buffer distances shall only be reduced to a size that retains "no disturbance" to burrowing owls.

Management of Conservation Sites

Management of the Conservation Sites may include a range of the following Covered Activities: a) Annual monitoring of Covered Species, b) Annual reporting of findings to agencies, and c) Habitat enhancements to increase sustainability of Covered Species. Habitat management will include: 1) Appropriate fencing where no fencing exists, or repair of existing fencing to prohibit trespassing, unauthorized off road vehicles, and trash dumping; 2) Trash removal and signage installation; 3) Improving vegetation appropriate for Covered Species (for example, enhance saltbush, improve grasslands through managed grazing, utilize natural revegetation, etc.); 4) Limiting road use and abandoning roads no longer needed; and 5) Implementation of adaptive management actions in accordance with the Conservation Site Management Plan.

Annual monitoring of Covered Species and their habitat on the Conservation Sites will include the following types of survey activities: a) Vegetation sampling, b) Small mammal trapping, c) Bird surveys, d) Reptile surveys, e) Track and camera stations, and f) Spotlighting. Annual monitoring for both Covered Species and other special-status species will be conducted.

2.3.4 Reduced Permit Area Alternative

Under the Reduced Permit Area Alternative, the Permit Area would be reduced from 5,784.3 acres to 3,682 acres by removing from the Project: Sites 4-S/4-M (652.5 acres), 6-S (320.9 acres), 7-S/7-M (481.2 acres) and 17-C (647.7 acres). The lands excluded from the Permit Area would likely remain vacant and would continue to be disked on a regular basis for weed control. If water became available, these lands would likely be converted to active agricultural production.

Under this alternative, there would be fewer disturbances of the Covered Species than under the Proposed Action because construction, operations, maintenance and decommissioning activities would occur over a smaller area. However, less land would be permanently conserved and managed, likely resulting in fewer benefits to the Covered Species.

The Reduced Permit Area Alternative has the following key characteristics, compared to the Proposed Action Alternative:

- The Reduced Permit Area Alternative would reduce the total 5,784.3 acres of Covered Lands by 2,102.3 acres, a reduction of 63.6%.

- The Reduced Permit Area Alternative would reduce the 3798.3 acres devoted to power generation (i.e., solar sites) by 1,428.3 acres, a reduction of 62.4%. This would correlate to a comparable percent reduction in electrical power generation from 700 MW to approximately 437 MW.

- The Reduced Permit Area Alternative would reduce the 1,894.4 acres of land devoted to conservation by 647.7 acres, a reduction of 65.8%

A comparison of development characteristics of the three alternatives are described below:

Comparison of Development Characteristics of Alternatives

	No Action	Proposed HCP	Reduced Permit Area
Land Use (acres)			
Agriculture	5,784.3	N/A	N/A
Solar Sites	N/A	3,798.3	2,370.0
Conservation Sites	N/A	1,894.4	1,246.7
Electrical Power (MW)	N/A	700	437

Chapter 4 Environmental Consequences provides an analysis of the potential environmental effects of the Reduced Permit Area alternative and describes how the potential environmental effects of the Reduced Permit Alternative compare to the Proposed Action for each resource area analyzed in this EIS.

2.3.5 Alternatives Eliminated From Further Consideration

The certified EIR prepared for the Maricopa Sun Solar Complex (SCH#2010031034) analyzed alternatives to the Proposed Action and also identified several alternatives that were initially considered in the analysis but were eliminated from further consideration. Alternatives analyzed in the EIR were the following:

- No Project/ No Build Alternative
- No Utility-scale Solar Development – Distributed Commercial and Industrial Rooftop Only Alternative
- Alternative Oilfield Sites Alternative

Alternatives eliminated from further analysis in the EIR were the following:

General Plan Buildout Alternative - Under this alternative, the project site could be developed to the maximum intensity allowed under the existing Kern County General Plan land use designations, zoning, and other existing applicable restrictions (i.e., Williamson Act).

Under this alternative, no solar PV panels would be developed. This alternative would not result in the creation of renewable power and would fail to meet any of the applicant's objectives for the proposed project.

Wind Energy Alternative - The Wind Energy Project Alternative would involve the use of wind energy as an alternative to development of solar sites. As with solar power, power from the wind is an alternative to energy production from coal, oil, or nuclear sources.

This alternative was eliminated from further consideration because of the following reasons:

- It would result in additional/greater impacts than the proposed project (aesthetics and biological resources).
- It would not substantially reduce the significant environmental impacts associated with GHG emissions.
- This area is not the most conducive to wind production and would not generate as much electricity as solar equipment.
- It would fail to meet the applicant's objectives for the proposed project.

Industrial Power Plan Alternative - This alternative would involve the development of a natural gas–fired power plant (equivalent to 32.5 MW) in Kern County. Fossil fuel–powered plants are designed on a large scale for continuous operation.

This alternative was eliminated from further consideration because of the following reasons:

- It would result in additional/greater impacts than the proposed project (air quality, GHG emissions, aesthetics, land use and planning, noise, traffic, and public utilities).It would not reduce the significant environmental impacts associated with GHG emissions and aesthetics.

- It would fail to meet the applicant's objectives for the proposed project.

Alternative Sites – Desert Area Alternative - This alternative would involve the development of the proposed project on other sites within Kern County. Although undetermined at this time, the alternative project sites would likely be located in the desert region of the County rather than the valley.

This alternative was eliminated from further consideration because of the following reasons:

- Although other large areas of land could be found, based on the known general conditions in the desert area and the magnitude of the proposed project, alternative sites in the desert area are likely to have the same significant impacts after mitigation as the project, including impacts related to aesthetics and biological resources.

- Alternative sites for the proposed project are not considered to be "potentially feasible." There are no suitable sites within the control of the project applicant.

- An unknown at this time would be the likelihood of the availability of transmission lines for this project if relocated, including the availability of substations, both of which are needed to transmit the generated electricity.

Inasmuch as these alternatives were addressed in the certified EIR, they are not further addressed in this EIS.

3.0 AFFECTED ENVIRONMENT

3.0.1 Introduction to the Affected Environment

This chapter describes the environment that may be affected by the proposed action. As described in Chapter 1, Purpose and Need for Action, the proposed action considered in this EIS is the U.S. Fish and Wildlife Service's (Service) response to the application for an incidental take permit (ITP) submitted by Maricopa Sun, LLC for the Covered Activities associated with the Maricopa Sun Soar Complex HCP.

Thirteen resource areas are described in the individual sections of this chapter, as follows:

- Aesthetics/Visual Resources
- Agriculture
- Air Quality/Greenhouse Gas
- Biological Resources
- Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Public Services
- Traffic and Transportation
- Environmental Justice

Each section includes a summary of the sources of information used to describe the affected environment and a detailed description of both the regulatory and environmental setting in the study area pertinent to the resource area. This information forms the basis for the description of potential effects of the Proposed Action and Alternatives provided in Chapter 4, Environmental Consequences.

As was indicated in Section 2.0 of this Draft EIS, the project description for the Maricopa Sun Solar Complex project was analyzed in an Environmental Impact Report (EIR) prepared for the County of Kern (Kern County, 2010). Subsequent to certification of the EIR, the project proponent for the Solar Complex has elected to reduce the amount of land within the project for which the draft HCP has been prepared. The Permit Area described in the EIR totaled 6,046 acres, whereas the Permit Area in the draft HCP and this EIS totals 5,784.3 acres. The description of the Affected Environment in this section of the EIS is based on the Environmental

Setting and Regulatory Setting sections of the EIR, updated where appropriate to reflect changed regulations, conditions, and circumstances.

3.0.2 Covered Lands and Study Area

A description of the Covered Lands and Covered Activities is contained in Chapter 2.0. The Covered Lands reflect the area where activities associated with the Proposed Action and Alternatives considered in this EIS would be implemented. The study area, as the term is used in this chapter, represents the area considered in characterizing the affected environment, and varies by resource topic (as listed above). In some cases, the study area is the same as the Covered Lands. For other resource areas, the study area extends beyond the boundary of the Covered Lands to account for potential effects on resources affected by the Covered Activities. For example, the study area for the air quality section encompasses the entire airshed where the proposed action would occur. For resource topics that require evaluation of a study area that is different from the Covered Lands, a description of that study area is provided in the introduction to that section.

3.1 AESTHETICS/VISUAL RESOURCES

This section describes the existing conditions pertaining to aesthetics and visual resources. Because this is a highly specialized area of analysis, a discussion of concepts and terminology precedes the descriptions of the regulatory and environmental setting.

3.1.1 Concepts and Terminology

Identifying a project area's visual resources and conditions involves three steps:

1. Objective identification of the visual features (visual resources) of the landscape;
2. Assessment of the character and quality of those resources relative to overall regional visual character; and
3. Determination of the importance to people or sensitivity, of views of visual resources in the landscape.

According to the U.S. Department of Transportation, Federal Highway Administration, the aesthetic value of an area is a measure of its visual character and quality, combined with the viewer response to the area. The U.S. Bureau of Land Management states that scenic quality can best be described as the overall impression that an individual viewer retains after driving through, walking through, or flying over an area. Viewer response is a combination of viewer exposure and viewer sensitivity. Viewer exposure is a function of the number of viewers, number of views seen, distance of the viewers, and viewing duration. Viewer sensitivity relates to the extent of the public's concern for a particular viewshed. These terms and criteria are described in detail below.

3.1.1.1 Visual Character

Natural and artificial landscape features contribute to the visual character of an area or view. Visual character is influenced by geologic, hydrologic, botanical, wildlife, recreational, and urban features. Urban features are those associated with landscape settlements and development. Included are roads, utilities, structures, earthworks, and the results of other human activities. The perception of visual character can vary significantly seasonally and even hourly, as weather, light, shadow, and elements that compose the viewshed change. According to the Federal Highway Administration, the basic components used to describe visual character for most visual assessments are the elements of form, line, color, and texture of the landscape features. The appearance of the landscape is described in terms of the dominance of each of these components.

3.1.1.2 Visual Quality

Visual quality is evaluated using the well-established approach to visual analysis adopted by the Federal Highway Administration, employing concepts of vividness, intactness, and unity, which are described below:

- Vividness is the visual power or memorability of landscape components as they combine in striking and distinctive visual patterns.
- Intactness is the visual integrity of the natural and human-built landscape and its freedom from encroaching elements; this factor can be present in well-kept urban and rural landscape, and in natural settings.
- Unity is the visual coherence and compositional harmony of the landscape considered as a whole; it frequently attests to the careful design of individual components in the landscape.

The evaluation of visual quality is based on the relative degree of vividness, intactness, and unity, as modified by visual sensitivity. High-quality views are highly vivid, relatively intact, and exhibit a high degree of visual unity. Low-quality views lack vividness, are not visually intact, and possess a low degree of visual unity.

3.1.1.3 Viewer Exposure and Sensitivity

The measure of the quality of a view must be tempered by the overall sensitivity of the viewer. Viewer sensitivity or concern is based on the visibility of resources in the landscape, proximity of viewers to the visual resource, elevation of viewers relative to the visual resource, frequency and duration of views, number of viewers, and type and expectations of individuals and viewer groups.

The importance of a view is related in part to the position of the viewer to the resource; accordingly visibility and visual dominance of landscape elements depend on their placement within the viewshed. According to the Federal Highway Administration, a viewshed is defined as all of the surface area visible from a particular location (e.g., an overlook) or sequence of locations (e.g., a roadway). To identify the importance of views of a resource, a viewshed must be broken into distance zones. The following distance zones (foreground, middle ground, and background) are used to characterize the dominant visual character from each vantage point and describe views in terms that can be analyzed and compared. As discussed below, sensitivity of views modified from the natural environment is defined in order to establish thresholds for analysis of potential visual impacts resulting from the implementation of the proposed project.

- **Foreground Views**. These views include elements that can be seen at a close distance and that dominate the entire view. Impacted views at this distance are generally considered potentially adverse when viewed by a sensitive viewer group, such as surrounding residents, workers, pedestrians, or regular motorists;

- **Middle Ground Views**. These views include elements that can be seen at a middle distance and that partially dominate the view. Impacted views at this distance are generally considered potentially adverse when viewed by a sensitive viewer group; and,

- **Background Views**. These views include elements that are seen at a long distance and typically do not dominate the view, but they are part of the overall visual composition of the view. Impacted views at this distance are generally considered not to be an adverse impact when viewed by a sensitive viewer group.

3.1.2 Regulatory Setting

3.1.2.1 Federal

National Scenic Byways Program

The National Scenic Byways (NSB) Program is part of the Federal Highway Administration. The NSB Program was established under the Intermodal Surface Transportation Efficiency Act of 1991, and was reauthorized in 1998 under the Transportation Equity Act for the 21st Century. Under the program, the U.S. Secretary of Transportation recognizes certain roads as National Scenic Byways or All-American Roads based on their archaeological, cultural, historic, natural, recreational, and scenic qualities.

3.1.2.2 State

California Scenic Highway Program

The California Department of Transportation (Caltrans) manages the California Scenic Highway Program, which was created in 1963 by the California legislature to preserve and protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to highways. The program includes a list of highways that are eligible for designation as scenic highways or that have been designated as such. A highway may be designated as scenic based on how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes on the traveler's enjoyment of the view. State laws governing the Scenic Highway Program are found in the Streets and Highways Code, Sections 260 through 263.

3.1.2.3 Local

Kern County General Plan

The Kern County General Plan includes the following policies goals and policies which are relevant to the project:

Chapter 1. Land Use, Open Space, and Conservation Element (page 71)

1.10.7 Light and Glare

Policy 47. Ensure that light and glare from discretionary new development projects are minimized in rural as well as urban areas.

Policy 48. Encourage the use of low-glare lighting to minimize nighttime glare effects on neighboring properties.

Kern County Zoning Ordinances

19.80.030 Development and performance Standards – Commercial and industrial districts. All development in the CO, C-1, C-2, CH, M-1, M-2, and M-3 districts, and, where specified, in the A and NR districts, shall comply with the following standards:

J. All exterior lighting shall be directed away from adjacent properties and roads. When lighting will be visible from a residential district or adjacent public roads, the lighting standards shall be equipped with glare shields or baffles and shall not exceed 40 feet in height above grade.

Chapter 19.81 Outdoor Lighting "Dark Skies Ordinance": In order to maintain the existing character of Kern County, a minimal approach shall be taken to outdoor lighting, as excessive illumination can create a glow that may obscure the night sky and excessive illumination or glare may constitute a nuisance. The purpose of this chapter is to provide requirements for outdoor lighting within specified unincorporated areas of Kern County in order to accomplish the following objectives:

1. Encourage a safe, secure, and less light-oriented nighttime environment for residents, businesses, and visitors.

2. Promote a reduction in unnecessary light intensity and glare, and to reduce light spillover onto adjacent properties.

3. Protect the ability to view the night sky by restricting unnecessary upward projections of light.

4. Promote energy conservation and a reduction in the generation of greenhouse gases by reducing wasted electricity that can result from excessive or unwanted outdoor lighting.

19.81.040 General Requirements.

A. Shielding. All outdoor lighting fixtures which utilize one hundred (100) watts or more (based on a incandescent bulb), or emit one thousand six hundred (1,600) lumen or more per fixture shall be fully fielded per the definition listed in this chapter, unless the fixture is exempted by this chapter. All floodlights which utilize less than one hundred (100) watts per fixture must be at least partially shielded to reduce light spillover onto adjacent properties.

Additionally, the light source within all lighting fixtures shall be oriented downward to prevent direct lighting, except as permitted by Section 19.81.040(F).

B. Prohibited light source types: The following exterior light source types shall be prohibited in and within twenty five (25) feet of all residential zone districts: metal halide, mercury vapor, and quartz.

C. Maintenance: Outdoor light fixtures shall be kept in good working order and shall be continuously maintained in a manner that serves the original design intent of the system and ensures continued compliance with this chapter.

D. Fixture Height: All light fixtures that are mounted on a building or structure, and all lighting fixtures that are not attached shall conform to mounting height limitations as listed in this chapter. Freestanding lighting within a non-residential zone shall not exceed 30 feet in height, and attached lighting shall not exceed the height of the building.

3.1.3 Environmental Setting

3.1.3.1 Regional Setting

The Covered Lands consist of approximately 5,784 acres of currently vacant, undeveloped agricultural land fashioned in clusters of noncontiguous parcels in the Westside Subarea of the San Joaquin Valley within Kern County's Valley Region. The Covered Lands are situated within the Maricopa Flat near the foothills of the San Emigdio Mountains. The San Emigdio Mountains form the southern wall of the San Joaquin Valley and connect the Temblor Range to the northwest with the Tehachapi Mountain to the northeast. The Carrizo and Elkhorn plains are located to the distant west; the Cuyama Valley is located to the southwest, past the Emigdio Mountains and Temblor Range. The Los Padres National Forest surrounds the program area to the south, and to the north, a long, flat expanse of the southern San Joaquin Valley dominates the landscape.

The aesthetic features of the regional visual environment are relatively uniform, with expansive, flat landscapes leading to nearby mountains to the south and more distant mountains to the east and west. Because there is little topographic variation to the north and the large topographic features of the San Emigdio Mountains surround the program area to the south, the regional visual environment extends approximately 40 miles around the Covered Lands. This landscape area is referred to herein as the Maricopa Flat Viewshed.

The Maricopa Flat Viewshed, which trends west to east, is an expansive area that encompasses approximately 40 square miles and is dominated by agricultural uses and oil and natural gas extraction activities. This viewshed affords visual receptors minor topographic relief (in the form of Buena Vista Hills) and a variety of vegetative over-covers (i.e., grazing grasses, native shrubs, and croplands). The views in this type of visual setting are sometimes described as "big-sky country." Because the viewshed lacks foreground and middle ground focal points that would capture a viewer's attention, the landscape is classified as panoramic.

Several local travel ways and regional thoroughfares provide motorists with visual access to the project sites. State Route (SR) 33, which generally trends northwest to southeast approximately 2.5 miles west of the Covered Lands, provides regional access to the unincorporated community of Maricopa and the city of Taft. This route also links the Los Angeles Basin and the southern San Joaquin Valley. SR-166, which runs west to east and intersects with Interstate (I) 5, West Side Freeway) also provides regional access to and from Maricopa. SR-166 borders the Covered Lands to the south and SR-119 (Taft Highway), which trends southwest to northeast approximately 7 miles north–northwest of the Covered Lands, provides regional access to the communities of Dustin Acres and Valley Acres and to the city of Taft. Finally, northwest to southeast-trending I-5 runs diagonally approximately 1.25 miles east–northeast of the Covered Lands and provides regional access to the southern San Joaquin Valley.

3.1.3.2 Local Setting

The Covered Lands occupy approximately 5,784 acres in unincorporated, southwestern Kern County and extend from west to east in a fairly contiguous and predictable pattern. The Covered Lands extend from approximately 6 to 20 miles east–southeast of the city of Taft and from approximately 5 to 17.5 miles northeast of the unincorporated community of Maricopa.

Surrounding land uses are active and inactive farmland, residential communities and scattered rural residences, small- and large-scale agricultural operations (mostly nut trees), ecological preserves, utility easements, oil and natural gas production, a prison, manufacturing and industrial production facilities, and streets and roadways.

Offsite anthropogenic changes to the area are similar to those surrounding the Covered Lands. The most common and notable modifications are agricultural infrastructure, such as storage

tanks and accessory buildings; oil extraction infrastructure, such as pump jacks and pipelines; and roadways. These are noticeable elements that interrupt the continuous natural landscape created by the area's topographic and vegetative characteristics.

North Views

Views to the north of the Covered Lands include the following uses: vacant land (land that has not been utilized for farming, residential, commercial or other use), active farmland (currently under cultivation) and inactive farmland (fallow farmland not currently under production), agricultural production infrastructure, oil extraction activities, an electrical transmission corridor, industrial operations at the South Kern Industrial Center, the Buena Vista Golf Course; the Buena Vista Aquatic Recreation Area (BVARA), scattered residences, and roadways.

East Views

Views to the east of the Covered Lands include active and inactive farmland; a few rural residences; infrastructure and equipment for agriculture, electrical, and oil production activities; and roadways.

South Views

Views to the south of the Covered Lands include active and inactive farmland, agricultural infrastructure, rural residences, vacant land, electrical transmission lines, a quarry, roadways, and the Wind Wolves Preserve at the base of the San Emigdio Foothills and Mountains, approximately six miles distant.

West Views

Western views from the Covered Lands include a mixture of active and inactive farmland, disturbed land used for oil and natural gas production, residential development, infrastructure and equipment for agriculture, electrical, and oil production activities, a prison, a manufacturing facility, and the Temblor Range.

Lighting Environment

The Covered Lands are currently vacant and undeveloped agricultural land. A few structures, such as electrical transmission and distribution poles and lines, as well agricultural accessory infrastructure, are located on some of the lands, however, few emit light. Existing onsite lighting results almost exclusively from the widely scattered residential structures, security and safety lighting at well pads, and industrial agriculture operations.

The Covered Lands are surrounded by the following land uses: (1) vacant, undeveloped farmland; (2) small- and large-scale agricultural operations; (3) oil and natural gas extraction activities; (4) the Taft Correctional Institution; (5) the Johnny Cat Litter manufacturing facility; (6) the communities of Maricopa, Taft, Valley Acres, and Dustin Acres; (7) ecological preserves; (8) scattered rural residential uses; (9) the BVARA; (10) industrial uses within the South Kern Industrial Center (SKIC); and (11) highly used highways and roadways. As such, there are multiple sources of light and glare throughout the Maricopa Flat Viewshed.

The largest contributors to nighttime lighting are the communities of Maricopa, Taft, Valley Acres, and Dustin Acres. After nightfall, these communities appear as clusters of bright yellow and white lights to the southwest, west, northwest, and north; and their lights can be seen from over 12 miles away. Additionally, security lighting at the Taft Correctional Institution, Johnny Cat Litter plant, and South Kern Industrial Center contributes to ambient light conditions in the Covered Lands, as does small-scale security lighting used by the scattered rural residences and farming activities. Finally, motor vehicles on SR-166, SR-33, I-5, Cadet Road, Copus Road, Old River Road, Gardner Field Road, Kerto Road, and South Lake Road create sporadic bidirectional moving nighttime light.

Daytime glare conditions are less prevalent and far-reaching than nighttime lighting conditions in the Covered Lands, but include the California Aqueduct, Lake Webb, and Lake Evans; agricultural accessory structures; moving vehicles; oil and natural gas pipelines; and holding ponds and water retention basins. Sunlight reflecting off the California Aqueduct, Lake Webb, Lake Evans, and other holding ponds and water retention basins is easily detectable at various times of day, depending on the elevation and proximity of the viewer. However, from a distance, their glare diminishes significantly. Also, the luminosity of the metallic oil and natural gas pipelines in the program area reflect sunlight and create concentrated glare conditions from certain perspectives. Finally, cars and trucks traveling on roadways cause bidirectional moving daytime glare.

Visual Character and Scenic Quality

The 2010 EIR evaluation of the visual impacts of the Maricopa Sun PV facility identified the existing scenic quality of the visual setting (County of Kern, 2010, page 4.1-19). For this evaluation, the Bureau of Land Management (BLM) Visual Resources Management (VRM) methodology was used so that various landscape elements could be quantified and rated, reducing ambiguity or subjectivity. Seven landscape features; landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications are used in the inventory process. The landscape features were rated numerically on a comparative basis with similar features within the viewshed. A maximum of 32 points is possible, and lands are given an A, B, or C rating based on the total score. Views that scored 19 points or more were considered to have an A rating and

an overall "very high level" of scenic quality; those that scored 12 to 18 points were considered a B rating, and a "high level" of scenic quality; and views at scored 11 or fewer points were considered to have a C rating and an "average to low" scenic quality.

The visual integrity of the Covered Lands has been compromised by various anthropogenic alterations to the natural landscape. As described under "Local Character" and "Landscape Character Units" above, numerous modifications throughout the project area have compromised the intactness and unity of the viewshed. The project area is largely disturbed, with no unique aesthetic features, scenic vistas, or focal points. The landscape in which the proposed project resides is expansive, with few distinctive natural features that provide scenic quality. While the expansive agricultural lands create a somewhat bucolic ambiance, there is a lack of visual diversity. Because the views of the Covered Lands lack vividness, and possess, to some degree, a low degree of visual unity, the visual quality and scenic quality would be considered low.

This page intentionally left blank.

3.2 AGRICULTURE

This section describes the affected environment and regulatory setting for agricultural resources. The description of the Affected Environment in this section of the EIS is based on the Environmental Setting and Regulatory Setting sections of the Maricopa Sun Solar Complex EIR (Kern County, 2010), updated where appropriate to reflect changed regulations, conditions, and circumstances.

3.2.1 Regulatory Setting

3.2.1.1 Federal

Farmland Protection Act

The Farmland Protection Policy Act (FPPA) is intended to minimize the impact that federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It ensures that, to the extent possible, federal programs are administered to be compatible with state and local units of government and with private programs and policies and procedures to implement the FPPA.

For the purposes of the FPPA, farmland comprises prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not need to be currently used for cropland (it can be forest land, pastureland, cropland, or other land), but it cannot be water or urban built-up land.

The FPPA does not cover private construction subject to federal permitting and licensing on non-federal land or projects proposed on land already in or committed to urban development or water storage.

3.2.1.2 State

Farmland Mapping and Monitoring Program (FMMP)

In 1975, the Soil Conservation Service (since renamed Natural Resources Conservation Service [NRCS]) of the United States Department of Agriculture began farmland mapping efforts across the nation, with the goal of producing agricultural resource maps based on soil quality and land use. As part of this nationwide agricultural land use mapping effort, the NRCS developed a series of definitions known as Land Inventory Monitoring (LIM) criteria. The LIM criteria classify the land's suitability for agricultural production; suitability includes both the physical and clinical characteristics of soils and the actual land use. In the early 1980s, to continue these farmland mapping efforts in California, the Farmland Mapping and Monitoring Program (FMMP) was created within the California Department of Conservation (DOC). The FMMP

maintains these mapping activities on a continuing basis and with a continually greater level of detail using a modified LIM criteria. These criteria utilize the NRCS and soils ratings (Storie Index Rating Systems), but also consider physical conditions such as a dependable water supply for agricultural production, soil temperature range, depth of the ground water table, flooding potential, rock fragment content, and rooting depth. The FMMP prepares Important Farmlands maps for all counties in California, using the modified LIM criteria as well as current land use information.

The Important Farmlands maps identify four agriculture listings and three additional land use designations: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, Grazing Land, Urban Land, and Other Land. Other land includes wetlands, timber/brush, borrowpits, and other uses that fit no other category.

- Prime Farmland: Land with the best combination of physical and chemical features able to sustain the long-term production of agricultural crops. These lands have the soil quality, growing season, and moisture supply needed to produce sustained high yields;

- Unique Farmland: Land of lesser-quality soils used for the production of the State's leading agricultural crops. This land is usually irrigated, but it may include non-irrigated orchards or vineyards, as are found in some climactic zones in California;

- Farmland of Statewide Importance: Land similar to Prime Farmland, but with minor shortcomings, such as greater slopes or less ability to hold and store moisture; and,

- Farmland of Local Importance: Land of importance in the local agricultural economy, as determined by each county's Board of Supervisors and a local advisory committee.

Williamson Act

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, is promulgated in California Government Code Sections 51200–51297.4, and therefore is applicable only to specific land parcels within the State of California. The Williamson Act enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space uses in return for reduced property tax assessments. Private land within locally designated agricultural preserve areas is eligible for enrollment under Williamson Act contracts. However, an agricultural preserve must consist of no fewer than 100 acres, but, in order to meet this requirement two or more parcels may be combined if they are contiguous, or if they are in common ownership.

The Williamson Act program is administered by the DOC, in conjunction with local governments, which administer the individual contract arrangements with landowners. The

landowner commits the parcel to a 10-year period wherein no conversion from agricultural use is permitted. Each year the contract automatically renews unless a notice of non-renewal or cancellation is filed. In return, the land is taxed at a rate based on the actual use of the land for agricultural purposes, as opposed to its unrestricted market value. An application for immediate cancellation can also be requested by the landowner, provided that the proposed immediate cancellation application is consistent with the cancellation criteria stated in the California Land Conservation Act and those adopted by the affected county or city. Non-renewal or immediate cancellation does not change the zoning of the property. Participation in the Williamson Act program is dependent on county adoption and implementation of the program and is voluntary for landowners.

As defined by the Williamson Act, prime agricultural land includes: (1) Class I and II soils as classified by the NRCS; (2) land that qualifies for rating 80 through 100 in the Storie Index Rating by the University of California, Division of Agricultural Sciences; (3) land that supports livestock used for the production of food and fiber and with at least one animal unit per acre; 4) land planted with fruit or nut-bearing crops that yield not less than $200 per acre annually during commercial bearing periods; or (5) land that has returned from the production of unprocessed agricultural plant products and annual gross value of not less than $200 per acre for three of the previous five years (Government Code, Section 51201(c)(1)-(5)).

The Williamson Act states that a board or council by resolution shall adopt rules governing the administration of agricultural preserves. The rules of each agricultural preserve specify the uses allowed. Generally, any commercial agricultural use will be permitted within any agricultural preserve. In addition, local governments may identify compatible uses permitted with a use permit.

California Government Code Section 51238 states that, unless otherwise decided by a local board or council, the erection, construction, alteration, or maintenance of electric and communication facilities, as well as other facilities, are determined to be compatible uses within any agricultural preserve. Also, Section 51238 states that board of supervisors may impose conditions on lands or land uses to be placed within preserves to permit and encourage compatible uses in conformity with Section 51238.1.

Further, California Government Code Section 51238.1 allows a board or council to allow as compatible any use that without conditions or mitigations would otherwise be considered incompatible. However, this may occur only if that use meets the following conditions:

- The use will not significantly compromise the long-term productive agricultural capability of the subject contracted parcel or parcels on other contracted lands in agricultural preserves;

- The use will not significantly displace or impair current or reasonably foreseeable agricultural operations on the subject contracted parcel or parcels or on other contracted lands in agricultural preserves. Uses that significantly displace agricultural operations on the subject contracted parcel or parcels may be deemed compatible if they relate directly to the production of commercial agricultural products on the subject contracted parcel or parcels or neighboring lands, including activities such as harvesting, processing, or shipping; and,

- The use will not result in the significant removal of adjacent contracted land from agricultural or open-space use.

Farmland Security Zone Act

The Farmland Security Zone Act is similar to the Williamson Act and was passed by the California State Legislature in 1999 to ensure that long-term farmland preservation is part of public policy. Farmland Security Zone Act contracts are sometimes referred to as "Super Williamson Act Contracts." Under the provisions of this act, a landowner already under a Williamson Act contract can apply for Farmland Security Zone status by entering into a contract with the county. Farmland Security Zone classification automatically renews each year for an additional 20 years. In return for a further 35 percent reduction in the taxable value of land and growing improvements (in addition to Williamson Act tax benefits), the owner of the property promises not to develop the property into nonagricultural uses.

Senate Bill 618

In October 2011, Governor Brown signed Senate Bill 618, which authorizes parties already entered into a Williamson Act contract, to, under certain circumstances, rescind the contract on agricultural lands of limited agricultural value in order to simultaneously enter into a solar-use easement. In most cases, the easement will require that the land be used for solar photovoltaic facilities for a term no less than 20 years. To qualify, the landowner must submit an application to the county or city in which the proposed solar use easement is to be located. The agency will forward the application materials to the DOC. The application must include:

a) A written narrative factually demonstrating that even under the best currently available management practices, continued agricultural practices would be substantially limited on the solar-use easement land due to the soil's reduced agricultural productivity from chemical or physical limitations;

b) A soil test conducted no more than six (6) months immediately prior to submission of the application demonstrating that the characteristics of the soil on the solar-use easement land significantly reduce the soil's agricultural productivity;

c) An analysis of water availability for the solar-use easement land demonstrating the insufficiency of water supplies for continued agricultural production on the land;

d) An analysis of water quality available to the solar-use easement land demonstrating that continued agricultural production on that land would, under the best currently available management practices, be significantly reduced;

e) Crop and yield information regarding the solar-use easement land for the immediately preceding six (6) years;

f) A soil management plan (including FMMP designations, a description of activities to mitigate the project's impacts, and a site restoration plan); and,

g) A copy of the proposed Solar-Use Easement Agreement.

If the DOC, in consultation with the Department of Food and Agriculture, agree that lands are eligible to be included in a solar-use easement, the city or county will include, as conditions of approval or acceptance of the solar-use easement and requirements of the easement, all recommendations regarding the soil management plan that are made by DOC. The city or county will also require implementation of the soil management plan that includes a site restoration plan, describing how the solar-use easement land will be restored to the same general condition that existed at the time of approval of the solar-use easement once the easement has terminated.

Public Resources Code Section 21060.1

PRC Section 21060.1 defines agricultural land for the purposes of assessing environmental impacts using the FMMP. The FMMP was established in 1982 to assess the location, quality, and quantity of agricultural lands and the conversion of these lands. The FMMP provides analysis of agricultural land use and land use changes throughout California.

3.2.1.3 Local

Kern County General Plan

The Kern County General Plan states that agriculture is vital to the future of Kern County and sets the goals of protecting important agricultural lands for future use and preventing the conversion of prime agricultural lands to other uses (e.g., industrial or residential). The Kern County General Plan includes three designations for agricultural land:

- 8.1 Intensive Agriculture (minimum parcel size 20 acres gross)—devoted to the production of irrigated crops or having potential for such use;

- 8.2 Resource Reserve (minimum parcel size 80 acres gross)—devoted to areas of mixed natural resource characteristics including rangeland; and,

- 8.3 Extensive Agriculture (minimum parcel size 20 acres gross except lands subject to a Williamson Act contract/Farmland Security Zone contract, in which case the minimum parcel size shall be 80 acres gross)—devoted to uses involving large amounts of land with relatively low value-per-acre yields such as livestock grazing, dry-land farming, and woodlands.

The policies, goals, and implementation measures in the Kern County General Plan for agricultural resources applicable to the project are provided below.

Chapter 1. Land Use, Open Space, and Conservation Element

1.9 Resource (pages 52 through 57)

Goal 1. To contain new development within an area large enough to meet generous projections of foreseeable need, but in locations which will not impair the economic strength derived from the petroleum, agriculture, rangeland, or mineral resources, or diminish the other amenities which exist in the County.

Goal 2. Protect areas of important mineral, petroleum, and agricultural resource potential for future use.

Goal 5. Conserve prime agriculture lands from premature conversion.

Policy 1. Appropriate resource uses of all types will be encouraged as desirable and consistent interim uses in undeveloped portions of the County regardless of General Plan designation.

Policy 12. Areas identified by the Natural Resources Conservation Service (NRCS) (formerly Soil Conservation Service) as having high range-site value should be conserved for Extensive Agriculture uses or as Resource Reserve, if located within a County water district.

Chapter 5. Energy (page 209)

5.4.5 Solar Energy Development

Goal. Encourage safe and orderly commercial solar development

Policy 1. The County shall encourage domestic and commercial solar energy uses to conserve fossil fuel and improve air quality.

Policy 3. The County should permit solar energy development in the desert and valley planning regions that does not pose significant environmental or public health and safety hazards.

Policy 4. The County should encourage solar development in the desert and valley regions previously disturbed, and discourage development of energy projects on undisturbed land supporting State or federally protected plant and wildlife species.

Kern County Zoning Ordinance

The Kern County Zoning Ordinance establishes the basic regulations under which land is developed. This includes allowable uses, building setback requirements, and development standards. Pursuant to State law, the zoning ordinance must be consistent with the Kern County General Plan. The basic intent of the Kern County Zoning Ordinance is to promote and protect the public health, safety, and welfare via the orderly regulation of land uses throughout the unincorporated area of the County. This zoning code applies to all property in unincorporated Kern County, except land owned by the United States or any of its agencies.

Zoning Districts

A description of the zoning district within the Covered Lands is provided below:

Exclusive Agriculture (A): The purpose of an A zone is to designate areas suitable for agricultural uses to prevent the encroachment of incompatible uses onto agricultural lands and premature conversion of such lands to nonagricultural uses. Allowable land uses within the A zone are set forth in Sections 19.12.020 and 19.12.030 of the Kern County Code and include those associated with growing and harvesting of crops, breeding and raising animals, agricultural industries, residential uses to house farm workers or the landowner, Christmas tree farms, utility corridors, resource extraction, waste facilities, institutional/educational uses, and various miscellaneous uses such as animal shelters and clubs. Solar facilities are permitted on properties zoned for exclusive agricultural use with approval of a conditional use permit (CUP).

Williamson Act Standard Uniform Rules

The County of Kern has adopted a set of Agricultural Preserve Standard Uniform Rules that identify land uses that are considered compatible uses within agricultural preserves established under the Williamson Act. These rules are designed to restrict the uses of land enrolled in a Williamson Act contract to agriculture or other compatible uses. Agricultural uses include crop cultivation, grazing operations, commercial wind farms, livestock breeding, dairies, and uses that are incidental to agricultural uses. Other compatible uses include the erection of gas, electric, communications, water, and other similar public utilities.

3.2.2 Environmental Setting

3.2.2.1 State

In 2010, the State of California contained 25.4 million acres of land that were dedicated to farm and ranch use, with 81,700 farms in operation at the time. This number represents less than 4 percent of the nation's total farming operations. However, these farms account for approximately 12.3 percent of the national gross cash receipts from crops and 6.5 percent of the receipts from livestock and livestock products, representing $34.8 billion in revenue.

The California Department of Food and Agriculture (CDFA) reported in it 2010-2011 Resource Directory that the average farm size in California is 311 acres. Approximately 400 crops are grown in the State, including seeds, flowers, and ornamentals. California's top 20 crop and livestock commodities were valued at more than $27.3 billion in 2009.

State Farmland Conversions

According to the DOC's most recent Farmland Conversion Report, irrigated farmland in California decreased by more than 317 square miles (203,011 acres) between 2006 and 2008. The 203,011-acre net loss in irrigated land in 2008 was 30 percent higher than the 2006 total. The highest-quality agricultural soils, known as Prime Farmland, comprised 49 percent of the decrease (98,471 acres). Urban land increased by 72,548 acres, a 29 percent decrease relative to the 2004-2006 reporting period. This was the lowest urbanization rate since the late 1990s, reflecting the onset of the recent economic recession. Long-term land idling was the largest factor contributing to irrigated land decreases, primarily in the San Joaquin Valley, where the net decrease tallied 129,788 acres or 64 percent of the net loss. The south Valley counties of Fresno, Kings, and Kern absorbed most of the loss. Agreements to idle land within Westlands Water District (in Fresno and Kings Counties) and water distribution issues affecting the Sacramento-San Joaquin Delta have the potential to accelerate this trend.

During the 12 biennial reporting cycles since FMMP was established, more than 1.3 million acres of agricultural land in California were converted to nonagricultural purposes. This represents a rate of about one square mile every four days.

Statewide, nearly 79 percent of this land was urbanized, while 19 percent became one of the miscellaneous land uses grouped into the Other Land category. Less than two percent of the conversion represents new water bodies—primarily Diamond Valley Lake, Lake Sonoma, and Los Vaqueros Reservoir (in Riverside, Sonoma, and Contra Costa counties, respectively) or flooding of San Joaquin Delta islands for habitat (Contra Costa and Solano counties). The largest losses from agricultural land categories have been from Prime Farmland and Grazing Land (559,743 and 386,525 acres, respectively). Urbanization at the periphery of California

cities, many of which are located in agricultural valleys and coastal zones, is the primary reason these categories are most affected. Unique Farmland showed a small net increase over the 24-year period (19,279 acres) due to expansion of high value crops—mostly orchards and vineyards—on hilly terrain.

3.2.2.2 Kern County

Agriculture in Kern County makes a significant contribution to the economy of California. Kern County has consistently maintained its position as one of the top five agricultural economies in the state since 2005. In 2011, Kern County was the fourth-largest producer of agricultural products in California, with agricultural production valued at $5.36 billion.

According to the 2011 Agricultural Crop Report prepared by the Kern County Agricultural Commissioner's Office, there are approximately 2.35 million acres of farmland in Kern County, of which approximately 874,559 acres were harvested in 2011. Kern County produces more than 250 different crops, including more than 30 types of fruits and nuts, 40 types of vegetables, and 20 field crops, as well as lumber, nursery stock, livestock, poultry, and dairy products.

Local Farmland Conversions

Kern County ranks high on the list of California counties with respect to urbanization and loss of farmland. From 2006 to 2008, 34,762 acres of important farmland and 51,410 acres of agricultural land were converted to another use, while from 2008 to 2010, 28,753 acres of Important Farmland and a total of 32,866 acres of agricultural lands were converted to another use. Overall, there was a 5.0 percent decrease in Important Farmland acreage between 2006 and 2010. The loss of acreage, coupled with unfavorable market prices, resulted in a decrease in value for crop categories such as fruits and nuts, nursery and seed crops, and livestock and poultry products in the County for 2008. The conversion of agricultural land to urban uses is affected by other factors. Actual production is dependent on commodity prices, water prices and supply, labor, proximity of processing and distribution facilities, and pest management. Factors outside the United States, such as weather, trade agreements, and labor disputes, can also affect decisions regarding what crops are grown and which lands go in and out of production. According to the DOC's California Land Conservation (Williamson) Act 2010 Status Report, a large number of property owners decided not to renew contracted acreage, which contributed to a loss of 14,009 acres of prime and non-prime property.

Also, in 2008 the factors that affected the decrease in value of crop production and the loss of acreage were somewhat mitigated by 2010. According to the 2011 Agricultural Crop Report, total permanent acres in agriculture increased from 2010 to 2011 by 21,722 acres (5.6 percent), while productive or bearing acres increased in 2011 from 2010 by 23,300 acres (6.26 percent).

3.2.2.3 Covered Lands

The Covered Lands include approximately 5,784 acres of nearly flat land, some of which were previously cultivated for agricultural production. The land in the immediate vicinity of the Covered Lands is cultivated and uncultivated farmland, industrial, residential, and a vacant mineral resource area. The Covered Lands have the following land use designations in the Kern County General Plan: 8.1 (Intensive Agriculture); 8.1/2.5 (Intensive Agriculture/Flood Hazard); 8.3/2.5 (Extensive Agriculture/Flood Hazard); 8.5/2.5 (Resource Management/Flood Hazard); and 8.1/2.3 (Intensive Agriculture/Shallow Groundwater). The Covered Lands are zoned A (Exclusive Agriculture) or A-1 (Limited Agriculture) by the Kern County Zoning Ordinance.

The Covered Lands are designated under the FMMP as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Grazing Land, and a small amount of Vacant or Disturbed Land and Nonagricultural and Natural Vegetation. Farmland designations are determined by a number of factors, including aerial photography and comment letters, GIS data, and field verification. In order for farmlands to be considered as "Prime" they must receive irrigation, meet soil classification requirements, and have been farmed within four years of the latest FMMP date (2010). Portions of three parcels of land adjacent to the Covered Lands are under cultivation of almond and cherry orchards, using allocated irrigation water. However, none of the Covered Lands receive irrigation water, as water in that vicinity is allocated to other parcels with planted acreage. The Covered Lands have not been farmed for at least 10 years and would not be farmed in the foreseeable future because of the lack of a developed, dependable irrigation water supply. Consequently, the lack of water for crop irrigation limits the potential agricultural productivity of the land, and the cultivation of crops is infeasible.

Additionally, soils and water play an important role in agricultural production in the vicinity of the Covered Lands. The Covered Lands are not irrigated, and the soils, according to the Class 7 description (see Table 3.2-1), "have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland or wildlife habitat." Therefore, the "farmlands" do not meet the NRCS criteria for Prime farmlands.

The Covered Lands are within the boundaries of Agricultural Preserve No. 12. The Project site was granted a certificate of cancellation of the Williamson Act land use contracts (Resolution No. 2011-078) by the Kern County Board of Supervisors on March 29, 2011 (County of Kern 2010). The landowner plans to pay associated taxes, fees, and penalties to complete the cancellation process.

Land Capability Classification

Irrigation and the availability of water play a major role in the success of agricultural production. However, in addition to water availability, another limitation on agriculture is the buildup of harmful salts in the soil.

The Land Capability Classification System is used by the NRCS to determine a soil's agricultural productivity. The Land Capability Classification indicates the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops and the way they respond to management. Soils are rated from Class I to Class VIII, with soils having the fewest limitations receiving the highest rating (Class I). The "prime" soil classification indicates the absence of soil limitations, which if present, would require the application of management techniques (e.g., drainage, leeching, special fertilizing practices) to enhance production. Specific subclasses are also utilized to further characterize soils. A general description of soil classifications, as defined by NRCS, is provided below in Table 3.2-1.

Table 3.2-1
Land Capability Classification

Soil Classification	Description
1	Soils have few limitations that restrict their use.
2	Soils have moderate limitations that reduce the choice of plants, or that require special conservation practices.
3	Soils have severe limitations that reduce the choice of plants, require conservation practices, or both.
4	Soils have very severe limitations that reduce the choice of plants, require very careful management, or both.
5	Soils have little or no hazard of erosion but have other limitations, impractical to remove, that limit their use largely to pastures or range, woodland, or wildlife habitat.
6	Soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture, or range, woodland, or wildlife habitat.
7	Soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland or wildlife habitat.
8	Soils and landforms have limitations that preclude their use for commercial plant production and restrict their use to recreation, wildlife habitat, or water supply, or to aesthetic purposes.

Source: United States Department of Agriculture, NRCS, National Soil Survey Handbook Part 622, (2013).

The majority of the Covered Lands are made up of a soil mix of Cerini and Excelsior loam (approximately 75 percent), while the remaining 25 percent of the site area is a blend of sandy loams. Soils are described individually below:

Calflax Loam, 0 to 1 percent slopes (Soil No. 132). Calflax loam is the most commonly occurring soil, accounting for about 33 percent of the soils surveyed for all Covered Lands. Calflax loam is classified as a well-drained soil that generally occurs in fan skirt landforms formed from alluvium derived from mixed mineralogy rock and typically includes slopes ranging from 0 to 1percent. Calflax loam includes loam within the first 6 inches of the surface, underlain by about 2.5 feet of stratified clay loam, followed by a mix of sandy loam and loam soils. The soil is well drained, available water capacity is moderate, percolation rates are slow, and the threat of flooding is low. Plasticity index for Calflax loam ranges from 6–29, which indicates low to moderate plasticity. These soils are in NRCS capability Class 2 irrigated (moderate limitations that restrict their use or require moderate conservation practices in order to be used for cultivation) and capability Class 7 non-irrigated.

Cerini Loam, 0 to 2 percent slopes (Soil No. 132). Cerini loam is classified as a well-drained soil and generally occurs in alluvial fans. The Cerini loam is formed from alluvium derived from granitoid rock and typically includes slopes ranging for 0 to 2 percent. Cerini loam is made of loams within the first two feet, followed by stratified fine sandy loam to silty clay loam for another two feet, underlain by another two feet of stratified sandy loam to sandy clay loam. The soil is well-drained, available water capacity is high, percolation rates are slow, and the threat of flooding is low. Plasticity index for Cerini loam ranges from 20–50, which indicates moderate to high plasticity. These soils are in NRCS capability Class 2 irrigated (moderate limitations that restrict their use or require moderate conservation practices in order to be used for cultivation) and capability Class 7 non-irrigated.

Excelsior Sandy Loam, saline-sodic, 0 to 2 percent slopes (Soil No. 150). The excelsior sandy loam consists of well-drained soil and generally occurs in the southern end of the San Joaquin Valley. The soil type is formed from alluvium derived from sedimentary rock and generally includes fine sandy loam and sandy loam within the first 2 feet of soil, underlain by stratified fine sandy loam to silt loam mixed with fine sandy loam. Available water capacity for excelsior sandy loam is high, percolation rates are slow, and the threat of flooding is low. Plasticity index for Excelsior sandy loam ranges from 0–31, which is considered a moderate to high risk, and indicates low to high plasticity. These soils are in NRCS capability Class 2 irrigated and capability Class 7 non-irrigated.

Excelsior Fine Sandy Loam, saline-sodic, 0 to 1 percent slopes (Soil No. 151). The Excelsior fine sandy loam consists of well-drained soil and generally occurs in fan skirt landforms in the southern end of the San Joaquin Valley. The soil type is formed from alluvium derived from

sedimentary rock and generally includes fine sandy loam and sandy loam within the first two feet of soil, underlain by stratified fine sandy loam to silt loam mixed with fine sandy loam. Available water capacity for excelsior fine sandy loam is high, percolation rates are slow, and the threat of flooding is low. Plasticity index for Excelsior fine sandy loam ranges from 0–33, which indicates low to high plasticity. These soils are in NRCS capability Class 2 irrigated and capability Class 7 non-irrigated

Excelsior Loam, saline-sodic, 0 to 2 percent slopes (Soil No. 152). The Excelsior loam consists of well-drained soil and generally occurs in the southern end of the San Joaquin Valley. The soil type is formed from alluvium derived from sedimentary rock and generally includes loam and sandy loam within the first two feet of soil, underlain by stratified fine sandy loam to silt loam. Available water capacity for Excelsior sandy loam is high, percolation rates are slow, and the threat of flooding is low. Plasticity index for Excelsior loam ranges from 0–33, which indicates low to high plasticity. These soils are in NRCS capability Class 2 irrigated and capability Class 7 non-irrigated.

Fages Clay, 0 to 1 percent slopes (Soil No. 160). The Fages clay consists of moderately well-drained soils and generally is found near the south and west sides of Buena Vista Lake Bed in the south end of the San Joaquin Valley. The soil type is formed from lacustrine deposits over alluvium derived from rocks of mixed mineralogy and generally includes clays within the first four feet of soil, underlain by silty clay, loam, and clay loam. Available water capacity is very low, percolation rates are slow, and annual flooding is rare. Plasticity index for Fages clay ranges from 19–67, which indicates moderate to high plasticity. These soils are in NRCS capability Class 4 irrigated (very severe limitations that restrict their use or require very careful management in order to be used for cultivation) and capability Class 7 non-irrigated. These soils are in NRCS capability Class 4 irrigated (very severe limitations that restrict their use or require very careful management in order to be used for cultivation) and capability Class 7 non-irrigated.

Posochanet Silt Loam, saline-sodic, 0 to 1 percent slopes (Soil No. 350). Posochanet silt loam accounts for 33 percent of the soils in the Covered Lands. This soil type is a moderately well-drained soil and is found south of the Kern River near the edge of the Buena Vista Lake Bed in the south end of the San Joaquin Valley. The soil type is formed from alluvium derived from granitoid and/or sedimentary rock and generally includes a mixture of silt loam, silt clay loam, and clay loams. Available water capacity is moderate, annual flooding is considered rare, and percolation rates are slow. The plasticity index for Posochanet silt clay loam ranges from 20–61, which indicates moderate to high plasticity. These soils are in NRCS capability Class 2 irrigated and capability Class 7 non-irrigated.

Posochanet Silty Clay Loam, saline-sodic, 0 to 1 percent slopes. Posochanet silty clay loam occurs in very small amounts within the Covered Lands. See the discussion for Posochanet Silt Loam, above.

3.3 AIR QUALITY AND GREENHOUSE GAS

This section addresses existing air quality and greenhouse gas conditions as well as regulation and primary sources of air pollution applicable to Covered Lands and the air basin.

3.3.1 Regulatory Setting

Air pollutants in California are regulated at the national, state, and air basin level. The U.S. Environmental Protection Agency (EPA) regulates at a national level, while California Air Resources Board (CARB) regulates at a state level, and the San Joaquin Valley Air Pollution Control District (SJVAPCD) regulates at an air basin level. Applicable ambient air quality standards administered by these agencies are described in Section 3.3.2.

Each of these agencies develops rules and/or regulations to attain compliance with applicable federal and state air quality goals and other statutory requirements. Generally, EPA regulations establish minimum requirements, and state and local regulations may be more stringent. In California, mobile sources of air pollutants (e.g., cars and trucks) are largely controlled through U.S. EPA and CARB, while most stationary sources are regulated by local air districts (i.e., SJVAPCD). The Covered Lands are subject to air quality regulations developed and implemented at the federal, State, and local levels. Plans, policies, and regulations that are relevant to the alternatives evaluated in this EIS are discussed next.

3.3.1.1 National Ambient Air Quality Standards

The EPA is responsible for implementation of the federal Clean Air Act (CAA). Some portions of the CAA (e.g., certain mobile source requirements) are implemented directly by the EPA, while others (i.e., stationary source requirements) are applied through delegation of authority to state and local agencies. The CAA establishes federal air quality standards, known as National Ambient Air Quality Standards (NAAQS), for designated pollutants as described below, specifies dates for achieving compliance with these standards, and regulates various categories of hazardous air pollutants. The CAA also mandates that the state submit and implement a State Implementation Plan (SIP) for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met. In 1990, amendments to the CAA identified specific emission-reduction goals for basins not meeting the NAAQS. These amendments require both a demonstration of reasonable progress toward attainment of emission-reduction goals and incorporation of additional sanctions for failure to attain or to meet interim milestones.

The federal action addressed in this EIS is issuance of a Federal Endangered Species Act 10(a)(1)(B) permit for take authorization of Covered Species as a result of the Proposed Action.

This federal action would result in emissions of criteria pollutants. Thus, a conformity determination is required for this federal action.

3.3.1.2 State Ambient Air Quality

CARB is a California agency responsible for coordination and administration of both State and federal air pollution control programs within the state. A key function of CARB is to coordinate and guide regional and local air quality planning efforts required by the California Clean Air Act (CCAA) and to prepare and submit the SIP to the EPA. CARB also establishes emission standards for motor vehicles. The CAA allows California to adopt more stringent vehicle emission standards than the rest of the nation due to the state's severe ozone nonattainment status. Other portions (e.g., stationary source requirements) of the federal CAA are implemented through delegation of authority to local and regional agencies and through federally approved SIPs. The CCAA requires all areas of the state to achieve and maintain the CAAQS by the earliest practical date. The CAAQS incorporate additional standards for most of the criteria pollutants and include set standards for other pollutants recognized by the state.

3.3.1.3 San Joaquin Valley Air Pollution Control District

The SJVAPCD is responsible for controlling emissions primarily from stationary sources in the San Joaquin Valley Air Basin (SJVAB). In coordination with the eight countywide transportation agencies, the SJVAPCD is also responsible for developing, updating, and implementing air quality attainment plans for the SJVAB. The GAMAQI sets forth recommended thresholds of significance, analysis methodologies, and provides guidance on mitigating significant impacts. In order to comply with regulatory requirements, attainment plans to achieve state and federal air quality standards have been adopted. The SJVAPCD must monitor its progress in implementing attainment plans and must periodically report to CARB and the U.S. EPA. Implementing air quality plans and policies occurs through adoption and enforcement of rules and regulations. The SJVAB is in nonattainment for federal ozone and particulate matter (PM2.5), which means that concentrations of those pollutants currently exceed the NAAQS. The SJVAB is in nonattainment of state ambient air quality standards for ozone, PM10, and PM2.5.

3.3.1.4 Local

Kern County General Plan

The Kern County General Plan includes goals and policies applicable to the project. Regulation presented in the General Plan, which is applicable to air quality is included in the Land Use, Open Space, and Conservation Element. The following relevant policies are contained in Section 1.10.2 Air Quality (page 65):

Policy 18. The air quality implications of new discretionary land use proposals shall be considered in approval of major developments. Special emphasis will be placed on minimizing air quality degradation in the desert to enable effective military operations and in the valley region to meet attainment goals.

Policy 19. In considering discretionary projects for which an Environmental Impact Report must be prepared pursuant to the California Environmental Quality Act, the appropriate decision making body, as part of its deliberations, will ensure that:

(a) All feasible mitigation to reduce significant adverse air quality impacts have been adopted; and

(b) The benefits of the proposed project outweigh any unavoidable significant adverse effects on air quality found to exist after inclusion of all feasible mitigation. This finding shall be made in a statement of overriding considerations and shall be supported by factual evidence to the extent that such a statement is required pursuant to the California Environmental Quality Act.

Policy 20. The County shall include fugitive dust control measures as a requirement for discretionary projects and as required by the adopted rules and regulations of the San Joaquin Valley Unified Air Pollution Control District and the Kern County Air Pollution Control District on ministerial permits.

Policy 21. The County shall support air districts' efforts to reduce PM10 and PM2.5 emissions.

Policy 22. Kern County shall continue to work with the San Joaquin Valley Unified Air Pollution Control District and the Kern County Air Pollution Control District toward air quality attainment with federal, State, and local standards.

Policy 23. The County shall continue to implement the local government control measures in coordination with the Kern Council of Governments and the San Joaquin Valley Unified Air Pollution Control District.

Policy 24. Kern County shall consult with transit providers to determine project effects and ensure that impacts are mitigated.

Federal and State Air Quality Standards

Both the federal government and State of California have established ambient air quality standards for several different pollutants (Table 3.3-1). For some pollutants, separate standards

have been set for different periods of time (i.e.., 1 hour, 8 hours, and 24 hours). Most standards have been set to protect public health. For some pollutants, standards have been based on other values, such as protection of crops, protection of materials, or avoidance of nuisance conditions.

Table 3.3-1
Federal and State Ambient Air Quality Standards

Air Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O_3)	1 hour	—	0.09 ppm
	8 hour	0.075 ppm	0.070 ppm
Respirable particulate matter (PM_{10})	24 hour	150 µg/m^3	50 µg/m^3
	Mean	—	20 µg/m^3
Fine particulate matter ($PM_{2.5}$)	24 hour	35 µg/m^3	—
	Mean	15.0 µg/m^3	12 µg/m^3
Carbon monoxide (CO)	1 hour	35 ppm	20 ppm
	8 hour	9 ppm	9.0 ppm
Nitrogen dioxide (NO_2)	1 hour	188 µg/m^3****	0.18 ppm
	Mean	0.053 ppm	0.030 ppm
Sulfur dioxide (SO_2)	1 hour	—	0.25 ppm
	24 hour	0.14 ppm	0.04 ppm
	Mean*	0.030 ppm	—
Lead	30-day	—	1.5 µg/m^3
	Rolling 3-month	0.15 µg/m^3**	—
	Quarter	1.5 µg/m^3	—
Sulfates	24 hour	No Federal Standard	25 µg/m^3
Hydrogen sulfide	1 hour		0.03 ppm
Vinyl chloride***	24 hour		0.01 ppm
Visibility-reducing particles	8 hour		Extinction coefficient of 0.23 per kilometer, visibility of 10 miles or more from particles when relative humidity is less than 70%.

Source: California Air Resources Board, 2010.
Notes: * Mean = Annual Arithmetic Mean Abbreviations: ppm = parts per million, µg/m^3 = micrograms per cubic meter, 30-day = 30, day average, Quarter = Calendar quarter.
** Federal lead standard, rolling 3-month average: final rule signed October 15, 2008.
*** CARB 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.
**** EPA set a new one-hour standard for nitrogen dioxide (NO2) at a level of 188 µg/m^3 or 100 parts per billion (ppb) on January 25, 2010, which will become effective April 12, 2010. EPA expects to identify or designate areas not meeting the new standard, based on the existing community-wide monitoring network, by January 2012.

Areas that do not meet the standards shown in Table 3.3-1 are classified as nonattainment areas in Table 3.3-2. Attainment areas are those with air quality that meets the relevant standards. The determination of whether an area meets a state and/or federal standard is based on air quality monitoring data collected and maintained by the air districts. Some areas are unclassified, which means no monitoring data are available. Unclassified areas are typically treated as being in attainment. Because the attainment/nonattainment designation is pollutant specific, an area may be classified as nonattainment for one pollutant and attainment for another. Similarly, because the state and federal standards differ, an area could be classified as attainment for the federal standard and as nonattainment for the state standard for the same pollutant.

Table 3.3-2
San Joaquin Valley Air Basin Attainment Status

Pollutant	Designation Status	
	Federal[a]	**State**[b]
Ozone – One Hour	No Federal Standard[f]	Nonattainment/Severe
Ozone – Eight Hour	Nonattainment/Extreme[e]	Nonattainment
PM_{10}	Attainment[c]	Nonattainment
$PM_{2.5}$	Nonattainment[d]	Nonattainment
Carbon monoxide	Attainment/Unclassified	Attainment/Unclassified
Nitrogen dioxide	Attainment/Unclassified[g]	Attainment
Sulfur dioxide	Attainment/Unclassified	Attainment
Lead	No Designation/Classification	Attainment
Sulfates	No federal standards	Attainment
Hydrogen sulfide		Unclassified
Visibility-reducing particles		Unclassified
Vinyl Chloride		Attainment

Source: San Joaquin Valley Air Pollution Control District, 2011.
Notes: a See 40 CFR Part 81.
b See CCR Title 17 Sections 60200-60210.
c On September 25, 2008, EPA redesignated the San Joaquin Valley to attainment for the PM10 National Ambient Air Quality Standard (NAAQS) and approved the PM10 Maintenance Plan.
d The Valley is designated nonattainment for the 1997 PM2.5 NAAQS. EPA designated the Valley as nonattainment for the 2006 PM2.5 NAAQS on November 13, 2009 (effective December 14, 2009).
e Though the Valley was initially classified as serious nonattainment for the 1997 8-hour ozone standard, EPA approved Valley reclassification to extreme nonattainment in the Federal Register on May 5, 2010 (effective June 4, 2010).
f Effective June 15, 2005, the U.S. Environmental Protection Agency (EPA) revoked the federal 1-hour ozone standard, including associated designations and classifications. EPA had previously classified the SJVAB as extreme nonattainment for this standard. EPA approved the 2004 Extreme Ozone Attainment Demonstration Plan on March 8, 2010 (effective April 7, 2010). Many applicable requirements for extreme 1-hour ozone nonattainment areas continue to apply to the SJVAB.
g EPA set a new one-hour standard for nitrogen dioxide (NO2) at a level of 188 µg/m3 or 100 parts per billion (ppb) on January 25, 2010, which will become effective April 12, 2010. EPA expects to identify or designate areas not meeting the new standard, based on the existing community-wide monitoring network, by January 2012.

Ambient Air Monitoring

Ambient pollutant levels are monitored by both CARB and the SJVAPCD. Monitoring occurs at sampling stations which are set up in numerous locations around California. While some stations monitor for the same pollutant, others may keep track of one that is different. There are four monitoring stations in Kern County that measure the amounts of ozone, PM10, PM2.5, CO, and NOX. No data are available for SOX, lead (Pb), H2S, vinyl chloride, or other toxic air contaminants (TACs).

CARB and the SJVAPCD monitor air quality in Kern County through a network of eight monitoring stations. Monitoring stations on California Avenue in Bakersfield and in Edison and Oildale are all maintained by CARB. The SJVAPCD maintains the stations on Planz Road and US 99 in Bakersfield and Maricopa. The stations in Arvin and Shafter are operated jointly by CARB and the SJVAPCD.

Table 3.3-3 identifies the background concentrations for ozone, PM10, PM2.5, CO, and NOX. No data are available for SOX, lead (Pb), H2S, vinyl chloride, or other toxic air contaminants (TACs) in Kern County. Data for analysis of the proposed project relied on the CARB monitoring stations that are closest to the project site.

Table 3.3-3
Three Year Summary of Days Exceeding NAAQS and CAAQS Pollutant Standards

Pollutant	Bakersfield — California Avenue			Bakersfield — US 99			Maricopa — Stanislaus Street			Oildale		
	2006	2007	2008	2006	2007	2008	2006	2007	2008	2006	2007	2008
Ozone 1-Hour (Number of Days Exceeding NAAQS (0.12 ppm)	0	0	1	0	1	0	0	0	0	0	0	0
Ozone 1-Hour (Number of Days Exceeding CAAQS (0.09 ppm)[1]	52	4	15	15	1	9	4	3	2	38	11	23
Ozone 8-Hour (Number of Days Exceeding NAAQS (0.075)	79	25	40	38	14	18	45	23	20	70	41	49
Ozone 8-Hour (Number of Days Exceeding CAAQS (0.07 ppm)	104	49	60	62	26	30	64	47	40	87	74	81
PM_{10} Days Exceeding NAAQS (50 µg/m3)	0	0	0	0	1	0	-	-	-	0	1	0
PM_{10} Days Exceeding CAAQS (>50 µg/m3)	14	22	24	20	27	28	-	-	-	14	19	21
$PM_{2.5}$ Days Exceeding 24-hour NAAQS (65.5 µg/m3)	32	49	30	13	17	4	-	-	-	-	-	-
$PM_{2.5}$ Days Exceeding CAAQS (>50 µg/m3)	-	-	-	-	-	-	-	-	-	-	-	-

Pollutant	Bakersfield — California Avenue			Bakersfield — US 99			Maricopa — Stanislaus Street			Oildale		
	2006	2007	2008	2006	2007	2008	2006	2007	2008	2006	2007	2008
CO Number of Days Exceeding 8-Hour NAAQS (>9.0 ppm)	0	0	0	-	-	-	-	-	-	-	-	-
CO Number of Days Exceeding 8-Hour CAAQS (>9.0 ppm)	0	0	0	-	-	-	-	-	-	-	-	-
Number of Days Exceeding CAAQS (0.25 ppm)	0	0	0	0	0	0		-	-	-	-	-

Source: California Air Resources Board, 2009.
Note: NAAQS = National Ambient Air Quality Standard; CAAQS = California Ambient Air Quality Standard.
Note: All numbers have been rounded. – is defined as not reported.

According to the results in Table 3.3-3, the NAAQS ozone 1-hour was exceeded for zero days between 2006 and 2008 at the Maricopa Stanislaus Street monitoring location which is closest to the proposed project site. However, at this same location, it exceeded CAAQS ozone 1-hour for 4 days during 2006, but has decrease over the next two years. Ozone 8-hour NAAQS and CAAQS were both exceeded at this location for all three years, but this pollutant has also decreased during 2007 and 2008. There was insufficient or no data available to determine results for SO_X or lead.

3.3.1.5 Greenhouse Gas Regulatory Framework

International and Federal

On February 18, 2010, the CEQ released a draft guidance memorandum. Specifically, the document addresses two categories of climate change considerations that can arise from a proposed action before an agency: the effect of GHG emissions from the action on climate change, and the link between the action (or its alternatives) and the effects of climate change in relation to the Proposed Action's design, environmental impacts, mitigation, and adaptation measures. Importantly, the draft guidance suggests that climate change analysis should only be conducted to the degree relevant to the decision at hand in terms of providing meaningful and useful information. This includes identifying a direct emissions threshold of 25,000 metric tons or more of CO2-equivalent GHG on an annual basis, as an "indicator" for projects where an assessment may be meaningful. International and federal agreements have been enacted to deal with climate change issues.

California

There have been significant legislative and regulatory activities that affect climate change and greenhouse gases in California. Relevant legislation is discussed next.

Renewable Portfolio Standard: In 2002, SB 1078 required electric utilities to increase procurement of power generated by eligible renewable energy sources to 20 percent of total generation by 2017. In 2006, SB 107 accelerated the timetable to require 20 percent renewable energy by 2010. Then, in 2008, the Governor signed Executive Order S-14-08, which increased the required renewables content to 33 percent by 2020. In September 2009, the Governor signed Executive Order S-21-09, which directed the Air Resources Board to adopt regulations consistent with the 33 percent renewable energy target in Executive Order S-14-08 by July 31, 2010.

Title 24: Although it was not originally intended to reduce greenhouse gas emissions, California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. The 2008 Standards went into effect January 1, 2010, and supersede the 2005 Standards. Projects that apply for a building permit on or after this date must comply with the 2008 Standards. Energy-efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas emissions.

Executive Order S-3-05: California Governor Arnold Schwarzenegger signed Executive Order S 3 05 on June 1, 2005, which established the following reduction targets for greenhouse gas emissions:

- By 2010, reduce greenhouse gas emissions to 2000 levels;
- By 2020, reduce greenhouse gas emissions to 1990 levels; and
- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.

The 2050 reduction goal represents what scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be an aggressive, but achievable, mid-term target. To meet these targets, the Governor directed the Secretary of the California EPA to lead a Climate Action Team made up of representatives from the Business, Transportation, and Housing Agency; the Department of Food and Agriculture; the Resources Agency; the CARB; the Energy Commission; and the Public Utilities Commission. The Climate Action Team's Report to the Governor in 2006 contains recommendations and strategies to help ensure the targets in Executive Order S-3-05 are met.

AB 32: In 2006, the California State Legislature enacted AB 32, the California Global Warming Solutions Act of 2006. Assembly Bill 32 focuses on reducing greenhouse gas emissions in California. Greenhouse gases, as defined under AB 32, include carbon dioxide, methane, nitrous

oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Assembly Bill 32 requires that greenhouse gases emitted in California be reduced to 1990 levels by the year 2020. The CARB is the state agency charged with monitoring and regulating sources of emissions of greenhouse gases that cause global warming in order to reduce emissions of greenhouse gases.

SB 97: was passed in August 2007 and added Section 21083.05 to the Public Resources Code. The code states "(a) On or before July 1, 2009, the Office of Planning and Research shall prepare, develop, and transmit to the Resources Agency guidelines for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption. (b) On or before January 1, 2010, the Resources Agency shall certify and adopt guidelines prepared and developed by the Office of Planning and Research pursuant to subdivision (a)." The SB 97 CEQA Guidelines Amendments were proposed in 2009 and took effect on March 18, 2010.

Local

The SJVAPCD has adopted the guidance document entitled: "Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA" and the policy document entitled: "District Policy – Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency". The guidance and policy documents rely on the use of performance based standards, otherwise known as Best Performance Standards (BPS) to assess significance of project specific greenhouse gas emissions on global climate change during the environmental review process, as required by CEQA. Use of BPS is a method of streamlining the CEQA process of determining significance and is not a required emission reduction measure. Projects implementing BPS would be determined to have a less than cumulatively significant impact. Otherwise, demonstration of a 29 percent reduction in GHG emissions, from business-as-usual, is required to determine that a project would have a less than cumulatively significant impact. The guidance does not limit a lead agency's authority in establishing its own process and guidance for determining significance of project related impacts on global climate change. The guidance document, however, did not address determining significance for temporary greenhouse gas emissions, such as construction of the project.

3.3.2 Environmental Setting

The CARB has divided California into regional air basins according to topographic drainage features. The project site is located in the San Joaquin Valley Air Basin (SJVAB) and is under the jurisdiction of the SJVAPCD. The SJVAB, which is approximately 250 miles long and 35 miles wide (93,118 acres), is the second largest air basin in the State.

3.3.2.1 San Joaquin Valley Air Basin Characteristics

Regional Air Quality

Air quality is a function of both the rate and location of pollutant emissions under the influence of meteorological conditions and topographic features. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal and, consequently, their effect on air quality. The combination of topography and inversion layers generally prevents dispersion of air pollutants in the SJVAB.

Topography

The SJVAB is generally shaped like a bowl. It is open in the north and is surrounded by mountain ranges on all other sides. The Sierra Nevada mountains are along the eastern boundary (8,000 to 14,000 feet in elevation), the Coast Ranges are along the western boundary (3,000 feet in elevation), and the Tehachapi Mountains are along the southern boundary (6,000 to 8,000 feet in elevation). The mountains surrounding the SJVAB form natural horizontal barriers to the dispersion of air contaminants.

Climate and Meteorology

The SJVAB has an "inland Mediterranean" climate and is characterized by long, hot, dry summers and short, foggy winters. Sunlight is a catalyst in the formation of some air pollutants (such as ozone), and the Air Basin averages more than 260 sunny days per year. The SJVAB enjoys an inland Mediterranean climate, averaging more than 260 sunny days per year. The valley floor is characterized by warm, dry summers and cooler winters. Average daily temperatures in the basin range from a low of 41.7 Fahrenheit (°F) in December to a high of 98.7°F in July. Summer highs often exceed 100°F, averaging in the low 90s in the northern valley and high 90s to the south. Although the SJVAB enjoys a high percentage of sunshine, a reduction in sunshine occurs during December and January because of fog and intermittent stormy weather. Nearly 90 percent of the annual precipitation falls in the six months between October and May. Precipitation is low because the mountains to the west and south produce a rain shadow effect by intercepting prefrontal, moisture-laden western and southern winds. The southern valley receives precipitation primarily from cold, unstable, northwesterly flows that usually follow a frontal passage.

Dominant Airflow

Dominant airflows provide the driving mechanism for transport and dispersion of air pollution. Marine air moves into the SJVAB from the San Joaquin River Delta. The wind generally flows

south-southeast through the valley, through the Tehachapi Pass and into the Mojave Desert Air Basin portion of Kern County. As the wind moves through the SJVAB, it mixes with the air pollution generated locally, generally transporting air pollutants from the north to the south in the summer and in a reverse flow in the winter.

Inversions

Inversions are also an important component of regional air quality. In general, air temperature decreases with distance from the earth's surface, creating a gradient from warmer air near the ground to cooler air at elevation. Under normal circumstances, the air close to the earth warms as it absorbs surface heat and begins to rise. Winds occur when cooler air rushes in to take the place of the rising warm air. The wind and upward movement of air causes "mixing" in the atmosphere and can carry away or dilute pollution. Inversions occur when a layer of warm air sits over cooler air, trapping the cooler air beneath. These inversions trap pollutants from dispersing vertically and the mountains surrounding the Air Basin trap the pollutants from dispersing horizontally. Strong temperature inversions occur throughout the Air Basin in the summer, fall, and winter. Daytime temperature inversions occur at elevations of 2,000 to 2,500 feet above the San Joaquin Valley floor during the summer and at 500 to 1,000 feet during the winter. The result is a relatively high concentration of air pollution in the valley during inversion episodes. These inversions cause haziness, which, in addition to moisture, may include suspended dust, a variety of emissions from vehicles, particulates from wood stoves, and other pollutants.

3.3.2.2 Pollutants of Concern

The criteria pollutants of greatest concern for the project area are ozone, PM10, and PM2.5. Although the SJVAB is in attainment of the federal and state carbon monoxide standards, carbon monoxide is a pollutant of concern, due to the potential for localized "hotspots" to occur. Other pollutants of concern are toxic air contaminants and greenhouse gases. The following provides a summary of the pollutants of concern in the area of the Covered Lands.

Ozone

Ozone is not emitted directly into the air but is formed by a photochemical reaction in the atmosphere. Ozone precursors, which include ROG and NOx (ozone precursors are discussed below), react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. Often, the effects of emitted ROG and NOx are felt a distance downwind of the emission sources. Ozone is subsequently considered a regional pollutant. Ground-level ozone is a respiratory irritant and an oxidant that increases

susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials.

Ozone can irritate lung airways and cause inflammation much like a sunburn. Other symptoms include wheezing, coughing, pain when taking a deep breath, and breathing difficulties during exercise or outdoor activities. People with respiratory problems are most vulnerable, but even healthy people who are active outdoors can be affected when ozone levels are high. Chronic ozone exposure can induce morphological (tissue) changes throughout the respiratory tract, particularly at the junction of the conducting airways and the gas exchange zone in the deep lung. Anyone who spends time outdoors in the summer is at risk, particularly children and other people who are more active outdoors. Even at very low levels, ground-level ozone triggers a variety of health problems, including aggravated asthma, reduced lung capacity, and increased susceptibility to respiratory illnesses like pneumonia and bronchitis.

Ozone also damages vegetation and ecosystems. It leads to reduced agricultural crop and commercial forest yields; reduced growth and survivability of tree seedlings; and increased susceptibility to diseases, pests, and other stresses such as harsh weather. In the United States alone, ozone is responsible for an estimated $500 million in reduced crop production each year. Ozone also damages the foliage of trees and other plants, affecting the landscape of cities, national parks and forests, and recreation areas. In addition, ozone causes damage to buildings, rubber, and some plastics.

Ozone is a regional pollutant, as the reactions forming it take place over time, and it materializes downwind from the sources of the emissions. As a photochemical pollutant, ozone is formed only during daylight hours under appropriate conditions, but it is destroyed throughout the day and night. Thus, ozone concentrations vary, depending upon both the time of day and the location. Even in pristine areas, some ambient ozone forms from natural emissions that are not controllable. This is termed background ozone. The average background ozone concentrations near sea level are in the range of 0.015 to 0.035 parts per million (ppm), with a maximum of about 0.04 ppm.

Reactive Organic Gases

Reactive organic gases (ROG) are defined as any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participate in atmospheric photochemical reactions. ROG consist of nonmethane hydrocarbons and oxygenated hydrocarbons. Hydrocarbons are organic compounds that contain only hydrogen and carbon atoms. It should be noted that there are no state or federal ambient air quality standards for ROG because they are not classified as criteria pollutants. They are regulated, however, because a reduction in ROG emissions reduces certain chemical

reactions that contribute to the formulation of ozone. ROG are also transformed into organic aerosols in the atmosphere, which contribute to higher PM10 levels and lower visibility.

Because ROG is an ozone precursor, the health effects associated with ROG emissions are due its role in ozone formation and, as discussed above, not due to direct effects.

Nitrogen Oxides

During combustion of fossil fuels, oxygen reacts with nitrogen to produce nitrogen oxides or NOx. This occurs primarily in motor vehicle internal combustion engines, and fossil fuel-fired electric utility facilities and industrial boilers. The pollutant NOx is a concern because it is an ozone precursor, which means that it helps form ozone. When NOx and ROG are released in the atmosphere, they can chemically react with one another in the presence of sunlight and heat to form ozone. NOx can also be a precursor to PM10 and PM2.5.

One of the most important health effects associated with NOx emissions is related to its role in ozone formation, as discussed above. Its role in the secondary formation of ammonium nitrate results in particulate health effects described in the next section. Nitrogen dioxide (NO2) is the largest and most important component of NOx. NO2 acts mainly as an irritant affecting the mucosa of the eyes, nose, throat, and respiratory tract. Extremely high-dose exposure (as in a building fire) to NO2 may result in pulmonary edema and diffuse lung injury. Continued exposure to high NO2 levels can contribute to the development of acute or chronic bronchitis. Low level NO2 exposure may cause increased bronchial reactivity in some asthmatics, decreased lung function in patients with chronic obstructive pulmonary disease and increased risk of respiratory infections, especially in young children.

Sulfur Dioxide

Sulfur dioxide is a colorless, pungent gas. At levels greater than 0.5 ppm, the gas has a strong odor, similar to rotten eggs. Sulfur oxides include SO_2 and sulfur trioxide. Sulfuric acid is formed from sulfur dioxide, which can lead to acid deposition and can harm natural resources and materials. Although SO_2 concentrations have been reduced to levels well below State and national standards, further reductions are desirable because SO_2 is a precursor to sulfate and PM_{10}. Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma. Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO_2 levels. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless gas that is formed when carbon in fuel is not burned completely. It is a component of motor vehicle exhaust, which contributes about 56 percent of all CO emissions nationwide. Other non-road engines and vehicles (such as construction equipment and boats) contribute about 22 percent of all CO emissions nationwide. Higher levels of CO generally occur in areas with heavy traffic congestion. In cities, 85 to 95 percent of all CO emissions may come from motor vehicle exhaust. Other sources of CO emissions include industrial processes (such as metals processing and chemical manufacturing), residential wood burning, and natural sources such as forest fires. Woodstoves, gas stoves, cigarette smoke, and unvented gas and kerosene space heaters are sources of CO indoors.

Motor vehicles are the dominant source of CO emissions in most areas. CO is described as having only a local influence because it dissipates quickly. High CO levels develop primarily during winter, when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Because CO is a product of incomplete combustion, motor vehicles exhibit increased CO emission rates at low air temperatures. High CO concentrations occur in areas of limited geographic size, sometimes referred to as hot spots. Since CO concentrations are strongly associated with motor vehicle emissions, high CO concentrations generally occur in the immediate vicinity of roadways with high traffic volumes and traffic congestion, active parking lots, and in automobile tunnels. Areas adjacent to heavily traveled and congested intersections are particularly susceptible to high CO concentrations.

CO is a public health concern because it combines readily with hemoglobin, reducing the amount of oxygen transported in the bloodstream. The health threat from relatively low levels of CO is most serious for those who suffer from such heart-related diseases as angina, clogged arteries, or congestive heart failure. For a person with heart disease, a single exposure to CO at low levels may cause chest pain and reduce that person's ability to exercise; repeated exposures may contribute to other cardiovascular effects. High levels of CO can affect even healthy people. People who breathe high levels of CO can develop vision problems, reduced ability to work or learn, reduced manual dexterity, and difficulty performing complex tasks. At extremely high levels, CO is poisonous and can cause death.

Particulate Matter

Particulate matter is the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small that they can only be detected using an electron microscope.

The size of particles is directly linked to their potential for causing health problems. Small particles less than 10 micrometers (µm) in diameter pose the greatest problems, because they can get deep into lungs and the bloodstream. The United States Environmental Protection Agency (EPA) health standards have been established for two categories of particulate matter:

1. PM10 – "inhalable coarse particles" with diameters larger than 2.5 micrometers and smaller than 10 micrometers and

2. PM2.5 – "fine particles," with diameters that are 2.5 micrometers and smaller. For reference, PM2.5 is approximately one-thirtieth the size of the average human hair.

Although the PM10 standard is intended to regulate "inhalable coarse particles" that ranged from 2.5 to 10 micrometers in diameter, PM10 measurements contain both fine and coarse particles. These particles come in many sizes and shapes and can be made up of hundreds of different chemicals. Some particles, known as primary particles, are emitted directly from a source, such as construction sites, unpaved roads, fields, smokestacks, or fires. Others form in complicated reactions in the atmosphere from chemicals such as sulfur dioxides and nitrogen oxides that are emitted from power plants, industrial activity, and automobiles. These particles, known as secondary particles, make up most of the fine particle pollution in the United States.

Particle exposure can lead to a variety of health effects. For example, numerous studies link particle levels to increased hospital admissions and emergency room visits—and even to death from heart or lung diseases. Both long- and short-term particle exposures have been linked to health problems. Long-term exposures, such as those experienced by people living for many years in areas with high particle levels, have been associated with problems such as reduced lung function, the development of chronic bronchitis, and even premature death. Short-term exposures to particles (hours or days) can aggravate lung disease, causing asthma attacks and acute bronchitis, and may increase susceptibility to respiratory infections. In people with heart disease, short-term exposures have been linked to heart attacks and arrhythmias. Healthy children and adults have not been reported to suffer serious effects from short-term exposures, although they may experience temporary minor irritation when particle levels are elevated.

3.3.2.3 Toxic Air Contaminants

A toxic air contaminant is defined as an air pollutant which may cause or contribute to an increase in mortality or serious illness, or which may pose a hazard to human health. Toxic air contaminants are usually present in minute quantities in the ambient air. However, their high toxicity or health risk may pose a threat to public health even at very low concentrations. In general, for those toxic air contaminants that may cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse

health impacts are not expected to occur. This contrasts with the criteria pollutants for which acceptable levels of exposure can be determined and for which the state and federal governments have set ambient air quality standards.

Diesel Particulate Matter

The CARB identified the PM emissions from diesel-fueled engines as a toxic air contaminant in August 1998 under California's toxic air contaminant program. In California, diesel engine exhaust has been identified as a carcinogen. Most researchers believe that diesel exhaust particles contribute the majority of the risk.

Both mobile and stationary sources emit DPM. In California, on-road diesel-fueled vehicles contribute approximately 40 percent of the statewide total, with an additional 57 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and transport refrigeration units. Stationary sources, contributing about 3 percent of emissions, include shipyards, warehouses, heavy equipment repair yards, and oil and gas production operations. Emissions from these sources are from diesel-fueled internal combustion engines. Stationary sources that report diesel PM emissions also include heavy construction (except highway) manufacturers of asphalt, paving materials and blocks, and electrical generation.

DPM is a subset of PM2.5—diesel particles are typically 2.5 microns and smaller. In a document published in 2002, the EPA noted that in 1998, diesel PM made up about 6 percent of the total PM2.5 inventory nationwide. The chemical composition and particle sizes of DPM vary among different engine types (heavy-duty, light-duty), engine operating conditions (idling, accelerating, decelerating), expected load, engine emission controls, fuel formulations (high/low sulfur fuel), and engine year.

Some short-term (acute) health effects of diesel exhaust exposure include eye, nose, throat, and lung irritation, and exposure can cause coughs, headaches, light-headedness, and nausea. Diesel exhaust is a major source of ambient PM pollution in urban environments. In a 2002 report from the Office of Environmental Health Hazard Assessment (OEHHA) titled "Health Effects of Diesel Exhaust Report," it was noted that numerous studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems. The National Toxicology Program asserted that more serious, long-term health effects of diesel exhaust have demonstrated an increased risk of lung cancer, although the increased risk cannot be clearly attributed to diesel exhaust exposure in its 2005 Report on Carcinogens, Eleventh Edition.

Valley Fever

The following information was taken from the Centers for Disease Control (CDC) for Coccidioidomycosis (Valley Fever).

The CDC defines Valley Fever as:

> *Coccidioides* is a fungus found in the soil of dry, low rainfall areas. It is endemic (native and common) in many areas of the southwestern United States, Mexico and, Central and South America. Coccidioidomycosis, also known as Valley Fever, is a common cause of pneumonia in endemic areas. At least 30% – 60% of people who live in an endemic region are exposed to the fungus at some point during their lives. In most people the infection will go away on its own, but for people who develop severe infections or chronic pneumonia, medical treatment is necessary. Certain groups of people are at higher risk of developing severe disease. It is difficult to avoid exposure to *Coccidioides*, but people who are at higher risk should try to avoid breathing in large amounts of dust if they are in endemic areas.

CDC defines Valley Fever symptoms as:

> Most people who are exposed to the fungus do not develop symptoms, or have very mild flu-like symptoms that go away on their own. Some people may develop a more severe infection, especially those who have a weakened immune system, are of African-American or Filipino descent, or are pregnant in their third trimester.

Symptoms of coccidioidomycosis include:

- Fever
- Cough
- Headache
- Rash on upper trunk or extremities
- Muscle aches
- Joint pain in the knees or ankles

Symptoms of advanced coccidioidomycosis include:

- Skin lesions
- Chronic pneumonia
- Meningitis
- Bone or joint infection

Symptoms of coccidioidomycosis may appear between 1 and 3 weeks after exposure to the fungus. Some patients have reported having symptoms for 6 months or longer, especially if the infection is not diagnosed right away. If the symptoms last for more than a week, a healthcare provider should be contacted (Centers for Disease Control and Prevention 2012).

Statistics on Valley Fever were recently released by the Kern County Public Health Department. Table 3.3-4 lists the top six cities with Valley Fever cases from 2007 to 2011.

Table 3.3-4
Kern County Coccidioidomycosis (Valley Fever) Cases by City

Table 6. Top Five Cities	2007	2008	2009	2010	2011
Taft Cases	32	17	19	114	154
1. Rate per 100,000	196.3	104.1	116.6	701.1	939.5
Wasco Cases	154	51	32	121	186
2. Rate per 100,000	624.3	203.3	125.6	477.5	728.2
Delano Cases	99	110	100	201	227
3. Rate per 100,000	246.9	269.6	242.8	483.9	542.2
Arvin Cases	34	16	2	54	65
4. Rate per 100,000	243.3	113.5	14.0	376.5	449.6
Lamont Cases	29	18	11	57	71
5. Rate per 100,000	150.5	93.1	56.8	294.3	363.6
Bakersfield Cases	757	557	299	1,292	1,727
6. Rate per 100,000	154.6	112.6	60.0	257.5	341.4

Source: Kern County Public Health Services Department, 2012.

According to the results in Table 3.3-4, in 2007 the greatest number of Valley Fever cases occurred in Bakersfield, followed by Wasco. A decline of the disease followed in 2008. In 2009, the decline continued. However, in 2010 there was a significant increase of cases occurring in Bakersfield, and in the cities of Taft, Wasco, and Delano. Increases continued through 2011 for all of these cities.

Currently there are no mandated federal, State, or Local regulations for addressing Valley Fever at the workplace. A brochure prepared by the Kern County Public Health Department states that studies are underway for methods on how to treat dust (Kern County Public Health Services Department, 2012). According to the "Epidemiologic summaries of Selected General Communicable Diseases in California, 2001-2008" the California Code of Regulations, Title 17, requires care providers to report all cases of Valley Fever to local health departments. Kern County has the highest incidence rates for the disease (California Department of Public Health 2011).

3.3.2.4 Greenhouse Gases

Gases that trap heat in the atmosphere are greenhouse gases. The effect is analogous to the way a greenhouse retains heat. Common greenhouse gases include water vapor, carbon dioxide, methane, nitrous oxides, chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, ozone, and aerosols. Natural processes and human activities emit greenhouse gases. The presence of greenhouse gases in the atmosphere affects the earth's temperature. Without the natural heat trapping effect of greenhouse gases, the earth's surface would be about 34°C cooler. However, it is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

The global warming potential is one type of simplified index based upon radiative properties that can be used to estimate the potential future impacts of emissions of different gases upon the climate system in a relative sense. Global warming potential is based on a number of factors, including the radiative efficiency (heat-absorbing ability) of each gas relative to that of carbon dioxide, as well as the decay rate of each gas (the amount removed from the atmosphere over a given number of years) relative to that of carbon dioxide.

The U.S. EPA defines global warming potential as the "cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas," the reference gas in this case being CO2.

The global warming potential of a gas is essentially a measurement of the greenhouse gas compared with the reference gas, carbon dioxide; carbon dioxide has a global warming potential of one. The greenhouse gases of concern from the project are summarized in Table 3.3-5.

Table 3.3-5
Greenhouse Gases

Greenhouse Gas	Description and Physical Properties	Sources
Water vapor	Water vapor is the most abundant, important, and variable greenhouse gas. In the atmosphere, it maintains the climate necessary for life.	Sources include evaporation from the ocean and other water bodies, sublimation of ice and snow, and transpiration from plants.
Ozone (O_3)	Ozone is a short-lived local greenhouse gas and photochemical pollutant. Tropospheric ozone changes contribute to radiative forcing on a global scale. Global warming potential for short-lived greenhouse gases, such as ozone and aerosols, are not defined by the IPCC.	Ozone is formed from reactions of ozone precursors (nitrogen oxides [NO_x] and volatile organic compounds [VOC]) and sunlight in the atmosphere. VOC and NO_x are emitted from automobiles, solvents, and fuel combustion.

Greenhouse Gas	Description and Physical Properties	Sources
Aerosols	Aerosols are particulate matter suspended in the air. They are short-lived and remain in the atmosphere for about a week. Aerosols warm the atmosphere by absorbing heat and cool the atmosphere by reflecting light, with radiative forcing cooling effects of –1.2 Wm^{-2}. There is a low scientific understanding of the radiative forcing of individual aerosols, such as black carbon. Black carbon can cause warming from deposition on snow (+0.1 Wm-2) and from suspensions in air (+0.2 Wm-2). A global warming potential of 761 for black carbon has been identified in a journal article. Global cooling potentials for other aerosols in a metric similar to the global warming potential are not available.	Sulfate aerosols are emitted when fuel containing sulfur is burned. Black carbon (or soot) is emitted during biomass burning and incomplete combustion of fossil fuels (such as diesel fuel).
Methane (CH4)	Methane is a flammable gas and is the main component of natural gas. Global warming potential = 21. Atmospheric lifetime = 12 (±3) years	A natural source of methane is from the anaerobic decay of organic matter. Methane is extracted from geological deposits (natural gas fields). Other sources are from landfills, fermentation of manure, and cattle.
Nitrous oxide (N2O)	Nitrous oxide is a colorless greenhouse gas. Global warming potential = 310. Atmospheric lifetime = 120 years	Microbial processes in soil and water, fuel combustion, and industrial processes.
Carbon dioxide (CO2)	Carbon dioxide is an odorless, colorless, natural greenhouse gas. Global warming potential = 1. Atmospheric lifetime = 50 – 200 years.	Carbon dioxide is emitted from natural and anthropogenic sources. Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood. The concentration in 2005 was 379 ppm, which is an increase of about 1.4 ppm per year since 1960.
Chlorofluorocarbons (CFCs)	CFCs are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). Global warming potentials range from 3,800 to 8,100.	CFCs were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone; therefore, the Montreal Protocol on Substances that Deplete the Ozone Layer stopped their production in 1987.

Greenhouse Gas	Description and Physical Properties	Sources
Hydrofluorocarbons (HFCs)	The HFCs with the largest measured atmospheric concentrations are HFC-23 and HFC-134a (10 ppt) and HFC-152a (1 ppt). Global warming potentials: HFC-23 = 11,700, HFC-134a = 1,300, HFC-152a = 140. HFC-23 has an atmospheric lifetime of 264 years. HFC-124a has an atmospheric lifetime of 14.6 years. HFC-152a has an atmospheric lifetime of 1.5 years.	HFCs are synthetic chemicals that are used as a substitute for CFCs in applications such as automobile air conditioners and refrigerants.
Perfluorocarbons (PFCs)	PFCs have stable molecular structures and only break down by ultraviolet rays about 60 kilometers above Earth's surface. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. Global warming potentials range from 6,500 to 9,200.	Two main sources of PFCs are primary aluminum production and semiconductor manufacturing.
Sulfur hexafluoride	Sulfur hexafluoride is an inorganic, odorless, colorless, and nontoxic, nonflammable gas. Concentrations in the 1990s were about 4 ppt. It has the highest global warming potential of any gas evaluated, 23,900. The atmospheric lifetime of sulfur hexafluoride is 3,200 years.	It is manmade and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas.

Source: United States Environmental Protection Agency, 2011.
Note: ppm = parts per million; ppt = parts per trillion (measure of concentration in the atmosphere).

Kern County Emissions Inventories

Following completion of its 1990 and 2020 GHG inventory, the CARB identified that the state will need to reduce GHG emissions by approximately 30 percent from business-as usual by 2020 to achieve AB 32 2020 target. At that time, the agency recommended that cities and counties adopt a similar GHG reduction goal. In response to reducing transportation emissions which account for 38% of GHG emissions in California, Senate Bill 375 was adopted. This bill requires Metropolitan Planning Organizations (MPOs) to reduce GHG emissions, from the 2005 base year, to targets of 7% to 8% in 2020, and between 13% to 16% in 2035. The MPOs will address how they will achieve these targets in a Sustainable Communities Strategy by identifying strategies to reduce vehicle miles traveled (VMT). If the agencies are not able to achieve the targets, then they will have to provide an Alternative Planning Strategy to identify other land use planning methods that would reduce VMT. Since local agencies have the final say on land use development, cooperation between regional and local agencies will be essential (Garner et al., 2012).

In May of 2012, the SJVAPCD completed GHG inventories for the County of Kern with a baseline year of 2005 and a forecast year of 2020. The County's inventory serves two purposes: (1) "To create an emissions baseline against which your jurisdiction can set emissions reduction targets and measure future progress" and (2) "To provide insight into the scale of emissions from

the various sources within the community, underpinning informed and strategic emissions reductions, commonly called "climate action planning".

Table 3.3-6 lists the GHG emissions inventories for nine primary sectors which include the following: Electricity Production and Consumption, Residential/Commercial/Industrial Combustion, Transportation, Fossil Fuels Industry, Industrial Processes, Waste Management, Agriculture, Forestry and Land Use, and Other Sources. Under each primary sector is a breakdown of the subsectors that contribute to MT of CO_2^e for base year 2005 and forecast year 2020. This is followed by the projected increase or decrease for each source after the base year is deducted from the forecast year. According to the report, heavy oil production is predicted to decrease which will offset the projected increase of GHG emissions that are related to population increase (San Joaquin Valley Air Pollution Control District 2012).

Table 3.3-6
Kern County 2005 Base Year and 2020 Forecasted Year by Sector and Subsector

Sector Name and Subsector ID			MT of CO2e		Increase/Decrease 2005 to 2020	
			2005	2020	MT of CO_2^e	Percent
Total County*			27,045,617	27,272,709	227,092	0.8%
Electricity**			**6,039,114**	**8,572,261**	**2,533,147**	**41.9%**
1.	In-County Electricity Production***		13,002,127	18,455,958	5,453,831	41.9%
	a.	Coal/Coke	1,017,625	1,444,475	426,850	41.9%
	b.	Natural Gas	11,974,819	16,997,739	5,022,920	41.9%
	c.	Petroleum	0	0	0	0 0.0%
	d.	Waste/Biogas	9,683	13,744	4061	41.9%
	e.	Renewable	0	0	0	0 0.0%
2.	In-County Electricity Consumption		6,039,114	8,572,261	2,533,147	41.9%
Residential/Commercial/Industrial Combustion			**1,281,498**	**1,689,414**	**407,916**	**31.8%**
1.	Residential					
	a.	Coal/Coke	85	121	36	42.4%
	b.	Natural Gas	517,238	734,197	216,959	41.9%
	c.	Oil	421	598	177	42.0%
	d.	Wood	1,350	1,435	85	6.3%
	e.	LPG	51,863	73,617	21,754	41.9%
	f.	Kerosene	787	1,117	330	41.9%
2.	Commercial					
	a.	Coal/Coke	462	634	172	37.2%
	b.	Natural Gas	304,138	417,246	113,108	37.2%
	c.	Oil	10,249	14,061	3,812	37.2%
	d.	Wood	63	86	23	36.5%
	e.	LPG	7,300	10,015	2,715	37.2%
3.	Industrial					
	a.	Coal/Coke	66,723	75,115	8,392	12.6%
	b.	Natural Gas	212,590	239,329	26,739	12.6%

Sector Name and Subsector ID			MT of CO2e		Increase/Decrease 2005 to 2020	
			2005	2020	MT of CO_2^e	Percent
	c.	Oil	92,836	104,513	11,677	12.6%
	d.	Wood	998	1,124	126	12.6%
	e.	LPG	14,395	16,206	1,811	12.6%
Transportation			**4,569,913**	**4,823,756**	**253,843**	**5.6%**
1.	On-road Gasoline		2,169,003	2,082,460	-86,543	-4.0%
2.	On-road Diesel		2,037,828	2,291,179	253,351	12.4%
3.	Off-road Gasoline		34,578	44,174	9,596	27.8%
4.	Off-road Diesel		See B.1.c, B.2.c, B.3.c (refer to entire report)			
5.	On-road CNG		30,130	40,412	10,282	34.1%
6.	On-road LPG		5,472	7,339	1,867	34.1%
7.	Marine Vessels/Water Craft		21,879	27,951	6,072	27.8%
8.	Rail		169,150	185,637	16,487	9.7%
9.	Airports		101,873	144,604	42,731	41.9%
Fossil Fuels Industry			**10,928,153**	**7,002,009**	**-3,926,144**	**-35.9%**
1.	Oil & Gas Industry - Refining					
	a.	Natural gas & waste gas	9,031,180	5,685,541	-3,345,639	-37.0%
	b.	Residual oil	361	227	-134	-37.1%
	c.	LPG	115	72	-43	-37.4%
2.	Fugitives - Oil & Gas Refining		1,263,434	829,832	-433,602	-34.3%
3.	Venting - Petroleum Production		429,036	288,986	-140,050	-32.6%
4.	Fugitives - Natural Gas Transmission/Distribution		87,234	123,825	36,591	41.9%
5.	Refining Processes		116,793	73,526	-43,267	-37.0%
Industrial Processes			**1,852,124**	**2,348,754**	**496,630**	**26.8%**
1.	Cement Manufacturing		1,503,630	1,854,082	350,452	23.3%
2.	Lime Manufacturing		0	0	0	0.0%
3.	Semiconductor Manufacturing		0	0	0	0.0%
4.	Substitutes for Ozone Depleting Substances		261,351	370,976	109,625	41.9%
5.	SF6 from Electrical Distribution and Transmission		59,128	83,930	24,802	41.9%
6.	CO_2 Consumption		3,337	4,737	1,400	42.0%
7.	Limestone & Dolomite Consumption		18,179	25,804	7,625	41.9%
8.	Soda Ash Consumption		6,499	9,225	2,726	41.9%
9.	Hydrogen Production		0	0	0	0.0%
10	Coal Mining Operations		0	0	0	0.0%
Waste Management			**120,494**	**146,788**	**26,294**	**21.8%**
1.	Landfills		60,509	71,845	11,336	18.7%
2.	Wastewater Management		59,985	74,943	14,958	24.9%
Agriculture* **			**2,024,470**	**2,652,616**	**628,146**	**31.0%**
1.	Fuel Combustion		74,511	69,751	-4,760	-6.4%
2.	Enteric Fermentation		633,214	866,165	232,951	36.8%
3.	Manure Management		741,173	1,107,528	366,355	49.4%
4.	Ag Burning		2,306	2,159	-147	-6.4%

Sector Name and Subsector ID		MT of CO2e		Increase/Decrease 2005 to 2020	
		2005	2020	MT of CO_2^e	Percent
5.	Ag Soils - Livestock	186,310	244,778	58,468	31.4%
6.	Ag Soils - Liming	3,777	3,536	-241	-6.4%
7.	Ag Soils - Fertilizer	241,509	226,080	-15,429	-6.4%
8.	Ag Soils - Crops	141,670	132,619	-9,051	-6.4%
9.	Carbon Flux	-412,957	-386,575	26,382	-6.4%
Forestry and Land Use****		**11,028**	**14,669**	**3,641**	**33.0%**
1.	Forested Landscape	-2,073,706	-2,073,706	0	0.0%
2.	Non-Farm Fertilizer (Settlement Soils)	8,680	12,321	3,641	41.9%
3.	Wildfires	1,828	1,828	0	0.0%
4.	Range Improvement	0	0	0	0.0%
5.	Prescribed Burn	520	520	0	0.0%
6.	Hazard Reduction Burn	0	0	0	0.0%
Other Sources****		**218,823**	**225,455**	**6,632**	**3.0%**
1.	Composting	-494,994	-702,623	-207,629	41.9%
2.	Resource Recovery	-41,681	-59,164	-17,483	41.9%
3.	US Parks/Forests	-50,234	-71,305	-21,071	41.9%
4.	Military Bases (Aircraft)	203,013	203,013	0	0.0%
5.	Nitrogen Deposition	15,810	22,442	6,632	41.9%

Source: Garner et al., 2012.
Note: * Does not include the subtraction of sequestering sectors.
** Does not include the Electricity Production sector as noted previously.
*** Included for completeness only, not included in further descriptions of the County's emissions.
****Does not include sequestering sectors noted by a negative sign.

As shown in Table 3.3-5, GHG emissions from electricity are projected to increase from the base year of 2005 to the forecast year of 2020 by 41.9%. Under the subsectors in this category, GHG emissions from both petroleum and renewable energy, within Kern County, are projected to have 0% growth. The second largest increase in GHG emissions at 33.0% is projected to come from Forestry and Land Use, as seen in the subsector, specifically Non-Farm Fertilizer (Settlement Soils). The third largest projected contributor of GHG emissions will come from Residential/Commercial/Industrial Combustion at 31.8% with coal/coke accounting for 42.4% of the amount. As mentioned before, GHG emissions resulting from the Fossil Fuels Industry are projected to decline by 35.9%. The total increase of GHG emissions in the county is projected to be 0.8% by 2020.

3.4 BIOLOGICAL RESOURCES

This section describes the affected environment and regulatory setting for biological resources of the Covered Lands. The description of the Affected Environment in this section of the EIS is based on the Environmental Setting and Regulatory Setting sections of the Maricopa Sun Solar Complex Project EIR (Kern County 2010), updated where appropriate to reflect changed regulations, conditions, and circumstances.

3.4.1 Regulatory Setting

3.4.1.1 Federal

Federal Endangered Species Act of 1973, as Amended

The Federal Endangered Species Act (ESA) (16 U.S.C. 1531 et seq.) was passed by Congress in 1973 and amended multiple times between 1976 and 2004. The stated purpose of the ESA is "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and to act on specified relevant treaties and conventions"(16 U.S.C. 1531 (b).

The United States Fish and Wildlife Service (USFWS), acting on behalf of the Secretary of Interior, oversees administration of the ESA. With several exceptions, Section 9 of the ESA (16 U.S.C. 1538(a)(1)(B)) prohibits the take of any endangered species and defines take as follows: "[t]he term 'take' means to harass, harm, pursue, hunt, shoot, kill, trap, capture, collect, or to attempt to engage in any such conduct" (16 U.S.C. 1532(19)). USFWS has further defined "harm" to mean "an act which actually kills or injures wildlife. Such acts may include significant habitat modification or degradation, where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering" (50 CFR 17.3). The term "harm" is defined to include "significant habitat modification or degradation where it actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding or sheltering" (64 FR 215).

Section 10 and Habitat Conservation Plans

Amendments to Section 10 of the ESA in 1982 allowed non-federal parties that engage in otherwise lawful activities that are likely to result in the "take" of federally-listed species to obtain incidental take permits under Section 10(a)(1)(B) of the ESA. This would be necessary if their actions are not otherwise covered by an incidental take statement under Section 7 of the ESA. Under Section 10(a)(2)(A) of the ESA, applicants for a Section 10 permit are required to develop and submit a habitat conservation plan (HCP). HCPs are developed by project applicants and/or state and local government entities with advice and guidance from USFWS.

The HCP defines the activities to be addressed, characterizes the extent to which activities may affect federally-listed species and their habitat, and then specifies measures to minimize and mitigate for impacts to the federally-listed species. An HCP is a plan authorized under Section 10 of the ESA (16 U.S.C. 1539) to conserve federally-listed species and the habitat they depend on, as well as unlisted species also covered by the plan. Section 10 authorizes a non-federal applicant to negotiate a conservation plan with USFWS to minimize and mitigate any impact to threatened and endangered species, while conducting otherwise lawful activities for the general welfare of the public. Section 10 authorizes incidental take of individuals of species' populations covered by a Section 10 permit, including those caused by disturbance of the habitat of such species, provided that a Section 10 permit has been issued. Through recent rulings and guidance, the Services have stated that an HCP is intended not only to provide regulatory certainty to applicants, but also to include provisions that will work in the manner intended and meet the conservation goals of the plan through incorporation of clear goals, monitoring, and adaptive management strategies.

Section 7 Consultation

The Section 7 consultation process determines whether the Proposed Action (issuance of the incidental take permit(s) and implementation of the HCP) is likely to jeopardize the continued existence of all affected listed species or is likely to destroy or adversely modify designated critical habitat. The Section 7 consultation on the issuance of a Section 10 permit considers both the direct and indirect effects of the Proposed Action on listed species and critical habitat.

Certain Covered Activities may require additional federal authorization if a federal nexus exists, such as issuance of a permit under Section 404 of the CWA by the U.S. Army Corps of Engineers for actions that may affect Waters of the United States (WOUS). Issuance of this permit, as well as any other federal action or authorization that may be required to make a Covered Activity an otherwise legal action, will be subject to the requirements of Section 7(a)(2) of the ESA.

San Joaquin Valley Upland Species Recovery Plan

The recovery plan covers 34 species of plants and animals that occur in the San Joaquin Valley. The 11 listed species include five federally endangered plants (California jewelflower, palmate-bracted bird's-beak, Kern mallow, San Joaquin woolly-threads, and Bakersfield cactus), 1 threatened plant (Hoover's woolly-star), and five endangered animals (giant kangaroo rat, Fresno kangaroo rat, Tipton kangaroo rat, blunt-nosed leopard lizard, and San Joaquin kit fox). In addition, 23 candidates or species of concern are addressed. The ultimate goal of this recovery plan is to delist the 11 endangered and threatened species and ensure the long-term conservation of the 23 candidates and species of concern. An interim goal is to reclassify the endangered

species to threatened status. USFWS is responsible for the implementation of the recovery plan (USFWS 1998).

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 701-711) was enacted in 1918 between the United States and Great Britain (representing Canada as well), and Mexico in 1936, Japan in 1972 and the area previously known as the Union of Soviet Socialist Republics in 1976. The definition of migratory birds includes virtually all birds found in the United States with the exception of the domestic pigeon, the European starling, the house sparrow and various species of upland game birds. The MBTA established provisions regulating take, possession, transport and import of migratory birds, including nests and eggs. The MBTA prohibits the take of migratory birds and does not include provisions for incidental take. To relieve the permittees from liability under the MBTA for Covered Species, the permits may also serve as a "Special Purpose Permit" authorized under MBTA regulations for the take of migratory birds. Any species to be covered by this type of "Special Purpose Permit" must be listed under the ESA, and the incidental take of such species must be authorized, subject to applicable terms and conditions, under Section 10(a)(1)(B) of the ESA.

Wetlands and Other Waters of the U.S. and State

Aquatic resources, including riparian areas, wetlands, and certain aquatic vegetation communities, are considered sensitive biological resources and can fall under the jurisdiction of several regulatory agencies.

U.S. Army Corps of Engineers (USACOE) exerts jurisdiction over "waters of the U.S.," including all waters that are subject to the ebb and flow of tide; wetlands and other waters such as lakes, rivers, streams (including intermittent or ephemeral streams), mudflats, sandflats, sloughs, prairie potholes, vernal pools, wet meadows, playa lakes, or natural ponds; and tributaries of the above features. The extent of waters of the U.S. is generally defined as that portion that falls within the limits of the "ordinary high water" mark. Typically, the ordinary high water mark corresponds to the 2-year flood event.

Wetlands, including swamps, bogs, seasonal wetlands, seeps, marshes, and similar areas, are defined by USACOE as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 Code of Federal Regulations [CFR] 328.3[b]; 40 CFR 230.3[t]). Indicators of three wetland parameters (hydric soils, hydrophytic vegetation, and wetlands hydrology) as determined by field investigation must be present for a site to be classified as a wetland by USACOE (1987).

Federal Clean Water Act (33 U.S.C. 1251 through 1376)

The federal CWA provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. Section 401 requires that a project proponent for a federal license or permit that allows activities resulting in a discharge to waters of the United States must obtain a State certification that the discharge complies with other provisions of CWA. The Regional Water Quality Boards administer the certification program in California.

Section 402 establishes a permitting system for the discharge of any pollutant (except dredge or fill material) into waters of the United States. Section 404 establishes a permit program administered by USACOE regulating the discharge of dredged or fill material into waters of the United States, including wetlands. Implementing regulations by USACOE are found at 33 CFR Parts 320 330. Guidelines for implementation are referred to as the Section 404(b)(1) Guidelines and were developed by the Environmental Protection Agency (EPA) in conjunction with USACOE (40 CFR Parts 230). The Guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

3.4.1.2 State

California Endangered Species Act (Fish and Game Code 2050 et seq.)

The California Endangered Species Act (CESA) establishes the policy of the State to conserve, protect, restore, and enhance threatened or endangered species and their habitats. CESA mandates that State agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. There are no State agency consultation procedures under CESA. For projects that affect both a State and federal-listed species, compliance with the federal Endangered Species Act (ESA) will satisfy CESA if the CDFW determines that the federal incidental take authorization is “consistent” with CESA under Fish and Game Code Section 2080.1. For projects that will result in a “take” of a State-only listed species, the project proponent must apply for a take permit under Section 2081(b).

3.4.1.3 Kern County

Kern County General Plan

The Kern County General Plan identifies the federal, State, and local statutes, ordinances, or policies that govern the conservation of biological resources that must be considered by the County of Kern (County) during the decision-making process for any project that could impact biological resources.

These details, as they pertain to this EIS, can be found in the Environmental Impact Report prepared for the County of Kern (Kern County 2010, pages 4.4-15, 4.4-16).

Draft Valley Floor Habitat Conservation Plan (VFHCP)

The Permit Area is within the plan area of the draft Valley Floor HCP (Kern County Planning and Community Development Department 2006). It is a long-term program designed to conserve federal and State protected species, and/or other species of concern and to provide compliance with ESA and CESA. Although the VFHCP is not an approved plan, it presents a review of wildlife and habitat use in the plan area, which includes 3,110 square miles of the southern San Joaquin Valley.

The Draft VFHCP would acquire a permit under Section 10(a)(1)(B), of the FESA (hereafter referred to as a 10(a) permit), and a permit under Section 2081 of the CESA (CESA 9322). Although the Valley Floor HCP is not currently adopted, it has been determined that solar energy projects would not be covered under the terms of the agreement for the HCP.

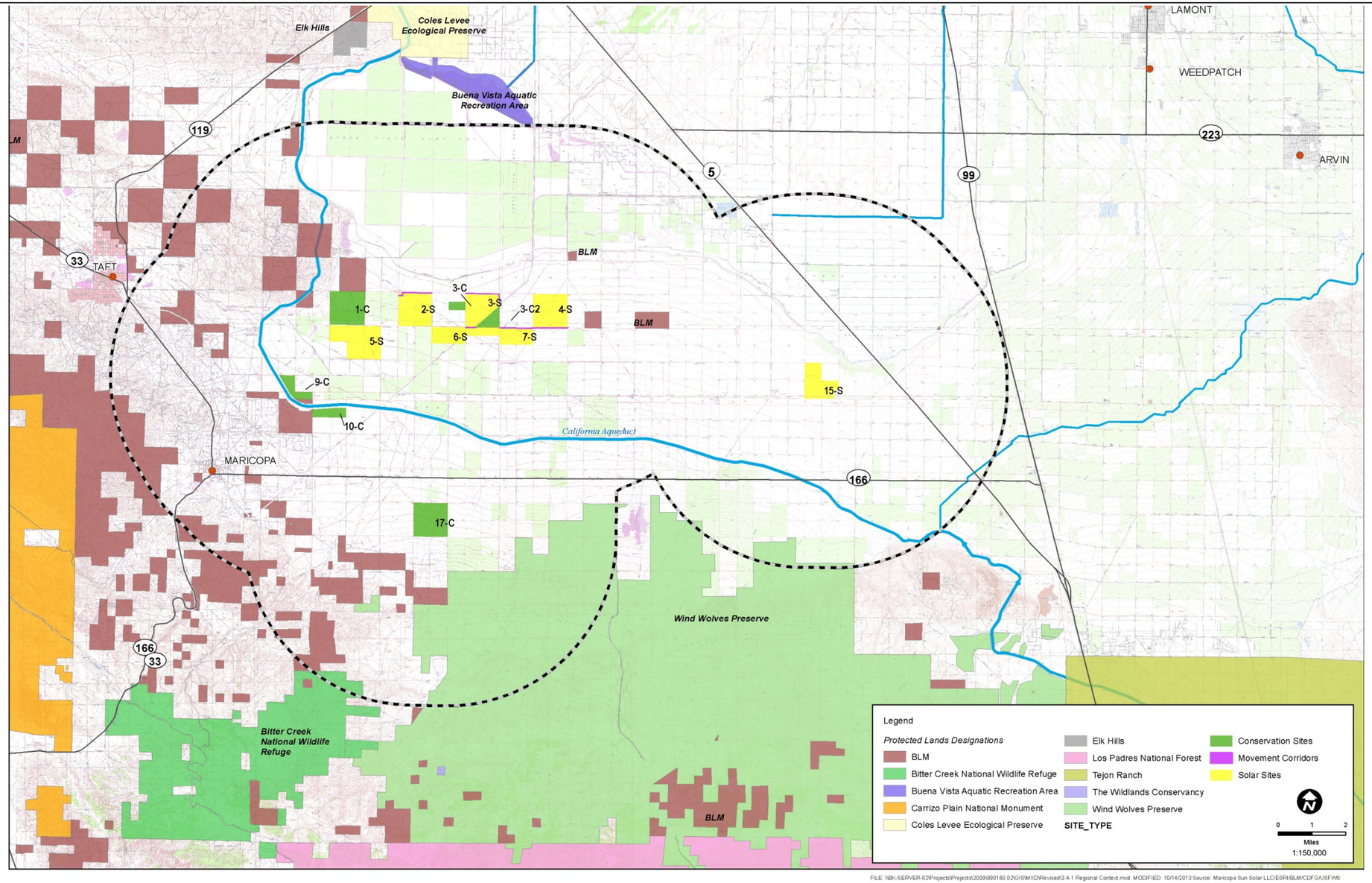
3.4.2 Environmental Setting

3.4.2.1 Regional Setting

Geography

The Covered Lands encompass a total of 5,784.3 acres, and include the following: 1) Solar Sites which consists of 3,798.3 acres (mandatory setbacks and Movement Corridors) and 2) Conservation Sites which encompass 1,894.4 acres. The Covered Lands are primarily located approximately five miles west of Taft along South Lake Road and along Old River Road in Kern County, California (see Figure 2-2). Three of the Conservation Sites are contiguous with the Solar Sites, but three others are located some distance away; one site is located one mile south of Hwy 166 and approximately 8 miles east of Maricopa (Site 17-C) and two are located approximately one-mile southwest of the Solar Sites bordering the north and south sides of the California Aqueduct (Sites 9-C and 10-C). All of the Conservation Sites are within 6 miles of the Solar Sites, except for Solar Site S-15 which is located approximately 7 miles to the east of the remaining Solar Sites and approximately 11 miles to the northeast of the southernmost Conservation Site, Site 17-C (Figure 3.4-1).

This page intentionally left blank.



FILE: \\BK-SERVER-02\Projects\Projects\2009\09160.02\GIS\MXD\Revised\3.4-1 Regional Context.mxd MODIFIED: 10/14/2013 Source: Maricopa Sun Solar LLC/ESRI/BLM/CDFG/USFWS

Quad Knopf

LOCATION OF REGIONAL CONTEXT AND PROTECTED PUBLIC LANDS IN THE VICINITY MAP
MARICOPA SUN SOLAR LLC

Figure 3.4-1

This page intentionally left blank.

Topography

The topography of the area is mainly flat, cultivated or fallow lands with the only relief provided by ditches, levees, canal berms, and roadway berms. The Covered Lands occur to the north of the Transverse Range, near the southeastern base of the San Emigdio Mountains, generally to the south and southeast of the historic south shore of Buena Vista Lake. Elevations on the Covered Lands range from approximately 320 feet AMSL in the eastern portion to approximately 370 feet AMSL in the western portion. Although the properties that comprise the Covered Lands are repeatedly disked for weed control (except 152.9 acres of Site 3-C2, 83.25 acres of Site 9-C, and 647.7 acres of Site 17-C), some low relief occurs because the sites have not been laser-leveled. Conservation Sites 17-C and portions of Site 9-C contain natural topography. Conservation Site 3-C2 has not been disked for a number of years, and retains some low topographic relief.

Climate

The Covered Lands area has a moderate climate with generally mild temperatures throughout the year. It is hot and dry in the summer and cold and moist in the winter. The average temperature in the winter is 48.5 degrees Fahrenheit (F) and the average daily minimum winter temperature is 38.3 degrees F. Winter rains are interspersed with spells of cloudy, foggy, or sunny weather. The average summer temperature is 80.7 degrees and the average daily maximum summer temperature is 94.8 degrees. The annual average precipitation is 6.32 inches, with virtually all of the precipitation falling as rain. In the summer, the sun shines 93 percent of the time and 73 percent of the time in the winter. The prevailing wind is from the west-northwest. Average wind speed is highest in April and May, which averages 7.7 miles per hour. Snowfall has not been recorded at Maricopa and measurable snow is a rare occurrence in Bakersfield (USDA 2009). The growing season is over 350 days per year. Table 3.4-1 provides the monthly maximum, minimum and mean temperature and precipitation recorded for the Maricopa area.

Table 3.4-1
Monthly Maximum, Minimum, and Mean Temperature and Precipitation
(Maricopa climate station: http://www.idcide.com/weather/ca/taft.htm)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Max °F	56.9	63.8	68.6	75.9	83.9	92.2	96.9	95.8	90.0	80.5	66.1	57.2	77.3
Min °F	38.6	42.9	45.7	49.4	56.6	63.9	69.8	68.7	64.7	56.6	45.3	38.0	53.4
Mean °F	47.8	53.4	57.2	62.7	70.3	78.1	83.4	82.3	77.4	68.6	55.7	47.6	65.4
Inches of precipitation	1.16	1.13	1.40	0.51	0.21	0.04	0.00	0.07	0.26	0.20	0.63	0.71	6.32

Land Use

Much of the native habitat in the project region has been converted to agricultural production, oil field development, urban development, and associated infrastructure (e.g., highways, water

conveyance facilities, transmission lines), but remnant stands of native habitat exist at scattered localities. Some of these native lands have subsurface oil reserves, and oil extraction activities have caused varying levels of disturbance. Most of the sites containing native habitats have been disturbed at one time or another by dryland farming, extensive sheep and/or cattle grazing, oil extraction activities, or other causes. Many of these parcels are owned and managed by the BLM. There is extensive public and protected land to the south and west of the project, but land to the north and east is mostly privately owned and not protected.

Several Ecological Reserves and other protected lands are located in the region (see Figure 3.4-1, Location of Regional Context and Protected Public Lands in the Vicinity Map):

- The Lokern and Elk Hills Ecological Reserves, which are administered by the California Department of Fish and Wildlife (CDFW);
- The Tule Elk State Natural Reserve located near Tupman, which is administered by the California Department of Parks and Recreation;
- The Buena Vista Aquatic Recreation Area, which is administered by the County of Kern;
- The Wind Wolves Preserve, which is administered by The Wildlands Conservancy;
- The Bitter Creek National Wildlife refuge, which is administered by the USFWS; and
- The Carrizo Plains National Monument and the Carrizo Plains Ecological Reserve, which are administered by the Department of the Interior (DOI) and CDF.

The Covered Lands are zoned for agricultural uses and are currently under Williamson Act contracts. All sites are disked for weed control on a repeated basis, with the exception of 3-C2, 17-C, and the lower portion of site 9-C. Adequate water for financially viable farm production is not currently available and there are no irrigation systems present on the majority of the parcels. There are, however, scattered wells and ponding basins on some parcels. A petition to remove the parcels from the Williamson Act contracts was approved by the County of Kern on March 29, 2011.

Soils

Soils within the Covered Lands are highly variable. According to the United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) map for Kern County, there are nine different soils within the Covered Lands (Figure 3.4-2, NRCS Soils Map and Table 3.4-2) including:

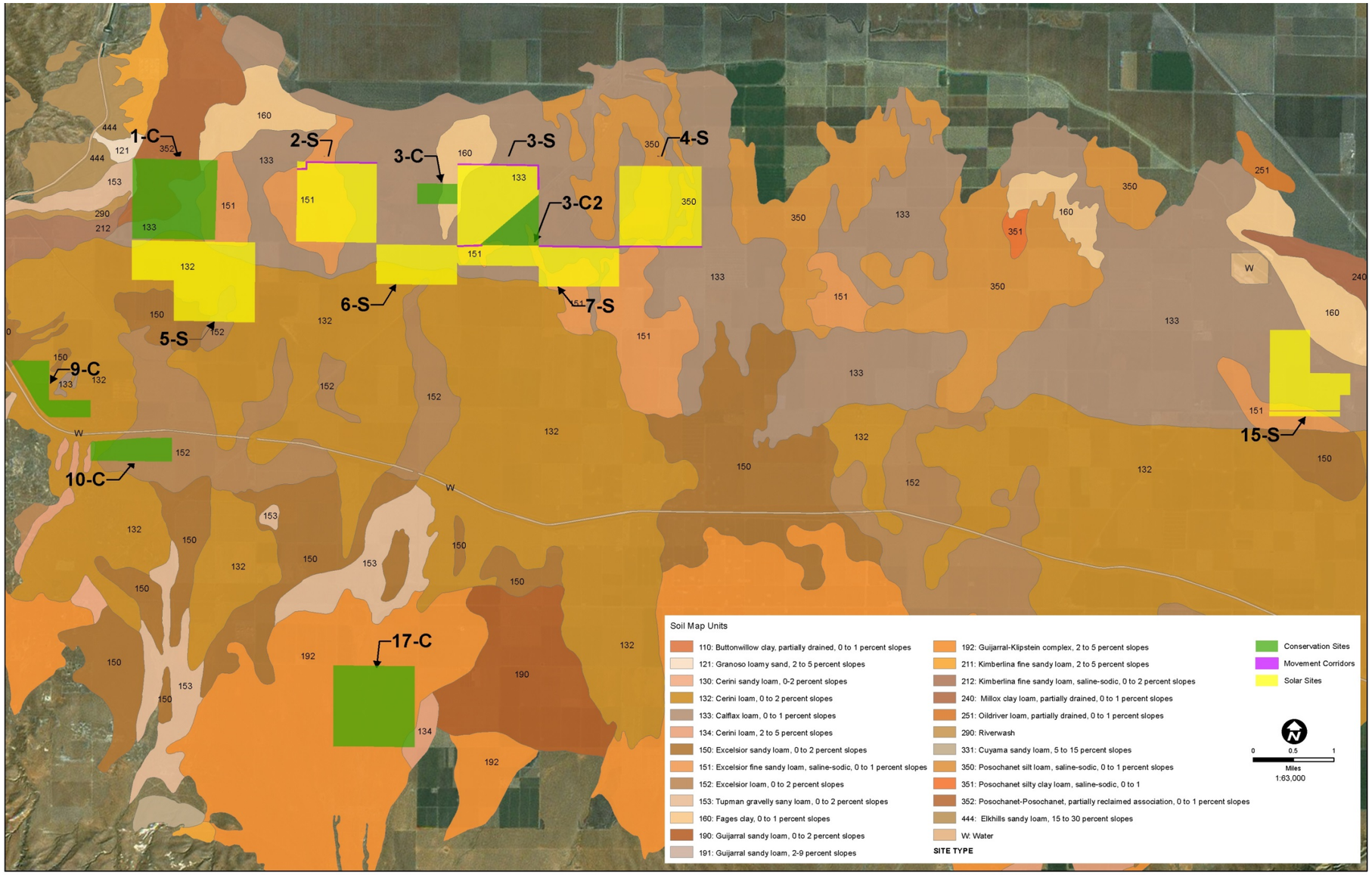
- Cerini loam;
- Calflax loam;
- Excelsior fine sandy loam;

- Excelsior sandy loam;
- Fages clay;
- Posochanet associations;
- Posochanet silt loam (saline-sodic soil);
- Posochanet silty clay loam (saline-sodic soil);
- Tupman gravelly sandy loam, and
- Guijarral-Klipstein complex.

Table 3.4-2
Soil Types Present on the Maricopa Sun Solar Project's Covered Lands

Location	Soil Type Present
Site 1-C	132-Cerini loam (0-2 percent slopes), 133-Calflax loam (0-1 percent slopes), 151- Excelsior fine sandy loam (saline-sodic, 0-1 percent slopes), 153-Tupman gravelly sandy loam (0-2 percent slopes), 160-Fages clay (0-1 percent slopes), and 352-Posochanet-Posochanet (partially reclaimed association, 0-1 percent slopes)
Site 2-S, 2-M	133-Calflax loam (0-1 percent slopes) and 151- Excelsior fine sandy loam (saline-sodic, 0-1 percent slopes)
Site 3-S, 3-M	133-Calflax loam (0-1 percent slopes), 160-Fages clay (0-1 percent slopes)
Site 3-C	133-Calflax loam (0-1 percent slopes), 160-Fages clay (0-1 percent slopes)
Site 3-C2	133-Calflax loam (0-1 percent slopes), 151- Excelsior fine sandy loam (saline-sodic, 0-1 percent slopes)
Site 4-S, 4-M	133-Calflax loam (0-1 percent slopes) and 350-Posochanet silt loam (saline-sodic, 0-1 percent slopes)
Site 5-S	132-Cerini loam (0-2 percent slopes), 133-Calflax loam (0-1 percent slopes), 150-Excelsior sandy loam (0-2 percent slopes), 151- Excelsior fine sandy loam (saline-sodic, 0-1 percent slopes), 152-Excelsior loam (0-2 percent slopes)
Site 6-S	132-Cerini loam (0-2 percent slopes), 133-Calflax loam (0-1 percent slopes), and 152-Excelsior loam (0-2 percent slopes)
Site 7-S, 7-M	133-Calflax loam (0-1 percent slopes), 151-Excelsior fine sandy loam (saline-sodic, 0-1 percent slopes)
Site 9-C	132-Cerini loam (0-2 percent slopes), 133-Calflax loam (0-1 percent slopes), and 150-Excelsior sandy loam (0-2 percent slopes)
Site 10-C	132/134-Cerini loam (0-2 percent slopes/2-5 percent slopes), and 152-Excelsior loam (0-2 percent slopes)
Site 15-S	133-Calflax loam (0-1 percent slopes), 151-Excelsior fine sandy loam (saline-sodic; 0-2 percent slopes), and 160-Fages clay (0-1 percent slopes)
Site 17-C	134-Cerini loam (0-2 percent slopes) and 192-Guijarral-Klipstein complex (2 -5 percent slopes)

This page intentionally left blank.



FILE: \\BK-SERVER-02\Projects\Projects\2009\090160.02\GIS\MXD\3-2_SOILS.mxd MODIFIED: 10/14/2013

Quad Knopf

SOILS MAP
MARICOPA SUN SOLAR LLC

Figure
3.4-2

This page intentionally left blank.

Hydrology

The Maricopa Sun Solar project is located within a semi-arid region, which relies on rainfall, groundwater, and the Kern River for its water supply. Most rainfall occurs in the winter and spring, as is typical for areas with this climate.

The only significant water course in the immediate area of the Covered Lands is the Kern River. The Kern River begins on the western slope of Mount Whitney in the southern Sierra Nevada Mountains and flows in a southwest direction. Several minor streams flow into the Kern River, which exists as a contained basin except during high runoff years. The Kern River is fully diverted and used (Kern County Planning and Community Development 2010); however, during very wet years, the Kern River reaches the flood channel located on the west of the valley floor and carries water into the Buena Vista Lake Basin that is subject to flooding and ponding (USDA, 2009). Other sources of water in the Buena Vista Lake Basin include intermittent streams from the south, such as Bitter Creek, Santiago Creek, Los Lobos Creek, the San Emigdio Creek complex, Pleito and Pleitito Creeks, the Salt Creek complex, and Tecuya Creek, which drain the San Emigdio Mountains portion of the Transverse Ranges. These waters are largely dispersed before reaching the historic Buena Vista Lake Bed. The drainage ways are dry much of the year but carry an extremely heavy flow during thunderstorms and spring runoff (USDA 2009).

A portion of the Covered Lands are currently mapped by the Federal Emergency Management Agency (FEMA) as Flood Zone A, and accordingly is within the 100-year flood zone (Figure 3.4-3, Flood Hazard Map). Kern River flows have been regulated since the completion of Isabella Dam in 1953 (Kern County Planning and Community Development Department, 2010). Based on flood maps flooding is likely related to heavy rain fall in the traverse range which flows down the alluvial slopes via streams to the south.

Jurisdictional Wetlands and Waters

The USACOE has regulatory authority over the CWA, as provided for by the EPA. The USACOE has established specific criteria for the determination of wetlands based upon the presence of wetland hydrology, hydric soils, and hydrophilic vegetation. The presence of wetlands on the Solar Sites was evaluated using these standard wetland delineation criteria. A wetland delineation report was prepared and submitted to the USACOE for verification (Quad Knopf 2010c). The presence of wetlands was also evaluated on most of the Conservation Sites. Wetland surveys were conducted on Conservation Sites 1-C, 3-C2, 9-C, and 10-C including areas within 100 feet of their perimeters (Appendix G). Conservation Sites 3-C and 17-C were not formally surveyed.

Wetlands, streams, reservoirs, sloughs, and ponds typically meet the criteria for federal jurisdiction under Section 404 of the CWA and state jurisdiction under the Porter-Cologne Water Quality Control Act. Streams and ponds typically meet the criteria for state jurisdiction under Section 1602 of the California Fish and Game Code.

There are four types of wetlands and other waters that were identified to occur within, or immediately adjacent to the Solar Sites (Quad Knopf 2010c).

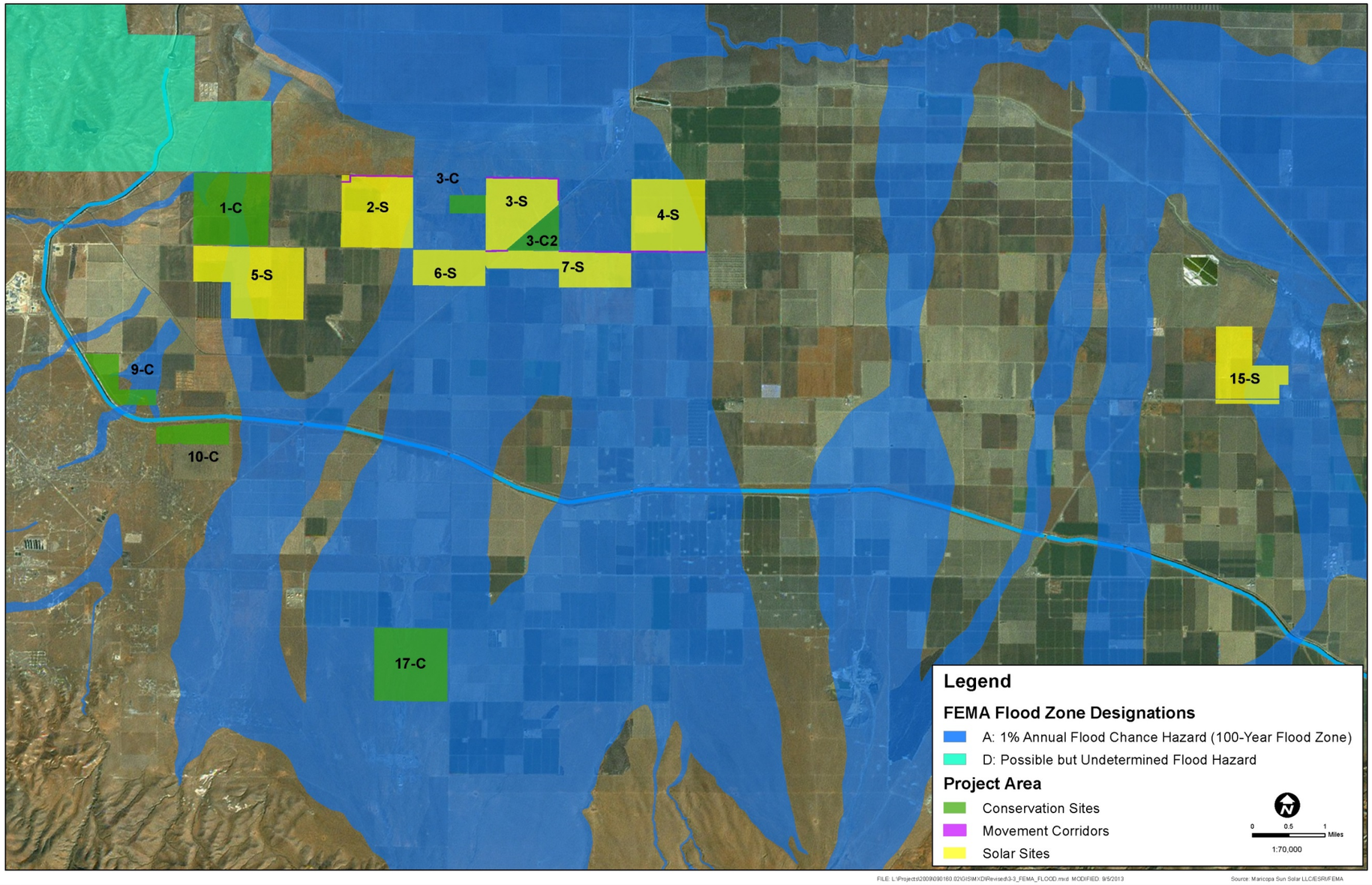
- Freshwater emergent wetland;
- Waters of the US;
- Artificial ponding basins; and
- Unlined canals.

Wetlands that are present on the Solar Sites include one Freshwater Emergent wetland that has been disked (located within Site 2-S). One ponding basin occurs adjacent to the south side of Site 7-S, but this basin is outside of the Covered Lands. Non-wetland features that are present include a tributary, two unlined canals, and one "other water". Within the Conservation Sites there is one tributary and one large intermittent wash. No wetlands were identified within the Conservation Sites.

The wetland and non-wetland features are described in Table 3.4-3 and in the following paragraphs (Quad Knopf 2010c).

Table 3.4-3
Wetlands and Other Waters Identified Within and Adjacent to the Maricopa Sun Solar Project's Covered Lands

Wetland	Location	Type	Acreage/Length
MS 02	Site 2-S, 2-M	Freshwater Emergent (PEMFx)	2.55 acres
MS 05	South of Site 7-S, not in Covered Lands.	Ponding Basin (PUBFX)	3.88 acres
Other Waters			
Sandy Creek tributary	Site 1-C	Tributary	10.45 acres/3,887 feet
Blue-line drainages	Site 1-C Site 2-S Site 3-C Site 3-S Site 3-C2 Site 17-C	Intermittent streams Intermittent streams Intermittent streams Intermittent streams Intermittent streams Intermittent streams	5,564.31 feet 5,882.66 feet 10,858.7 feet 14,849.64 feet 2,827.74 feet 64,666.18 feet
Canal #1	Site 3-S	Unlined Canal	0.97 acres/5,288 feet
Canal # 2	Sites 6-S and 7-S	Unlined canal	2.06 acres/8,964 feet



Quad Knopf

FLOOD ZONE MAP
MARICOPA SUN SOLAR LLC

Figure
3.4-3

This page intentionally left blank.

Freshwater Emergent Wetland

Based upon a review of the Wetland Delineation report (Quad Knopf 2010c, d) and a site visit to verify those findings by USACOE, the only jurisdictional wetland within the Solar Sites is the freshwater emergent wetland in the northwest corner of Site 2-S. This wetland will be incorporated into the Movement Corridor that traverses the north portion of that site. The burned root crowns of common cattails (*Typha latifolia*), an obligate wetland indicator, are clearly visible in the disked soil, and the soil is hydric. This wetland lies within a shallow basin and is approximately 2.55 acres in extent (Table 3.4-3). Immediately adjacent, but outside the project boundary, is an artificially bermed ponding basin which also meets USACE wetland criteria. This ponding basin is all that remains of a once more extensive wetland mapped by the National Wetland Inventory (NWI) at this site. The land around these features is disked. The remnant wetland on Site 2-S and the wetland to the west that occurs off-site are connected by a culvert that crosses under a dirt road that separates these two wetland features. This wetland area will not be impacted by the project and exclusion barrier fencing will be established between the wetland and the work area to eliminate the potential for any adverse affects to the wetland. The wetland area on Site 2-S will be enhanced by cessation of disking.

Artificial Ponding Basin

One artificial ponding basin that meets wetland criteria was found south of Site 7-S, off of but adjacent to the Covered Lands. This basin is classified by the Cowardin System as PUBFx (Palustrine, Unconsolidated Bottom, Semi-permanently flooded, excavated). This feature is a narrow pond running east-west and is 3.88 acres in extent (Table 3.4-3). Upland habitat adjacent to this wetland is ruderal. The outflow of this basin feeds into a channel off-site that runs to the north and has tamarisk (*Tamarix pentandra*) and Fremont cottonwood (*Populus fremontii)* along the banks. Quailbush (*Atriplex lentiformis*) and five-hook bassia (*Bassia hyssopifolia*) are profuse in the basin, and this feature exhibits hydric soils and wetland hydrology. Two similar features were mapped by the NWI immediately to the south, but these have been removed sometime in the past and are no longer present. The pond and its associated habitat will not be impacted by the project, and exclusion barrier fencing will be established between the pond and the work area to eliminate the potential for any impacts to this feature to occur.

Other Waters

There is a Water of the U.S. located within the northwest portion of Site 1-C. This feature is a tributary of Sandy Creek. Site 1-C is a Conservation Site and the jurisdictional waters within Site 1-C will be avoided and not disturbed by construction or conservation activities, improvements or enhancements. There are several blue-line drainages that occur on Sites 3-S, 3-C, 3-C2, 7-S, and 17-C. With the exception of the drainages on Site 17-C, these are isolated waters that currently do not exhibit a bed and bank or other characteristics of Waters of the U.S. Based upon

site verification by the USACE, these were determined not to be under federal jurisdiction. The drainages on Site 17-C are collectively a substantial feature that are considered Waters of the U.S. because they establish connectivity with a navigable water to the south. However, this feature is located on a Conservation Site, and will not be impacted.

Unlined Canals

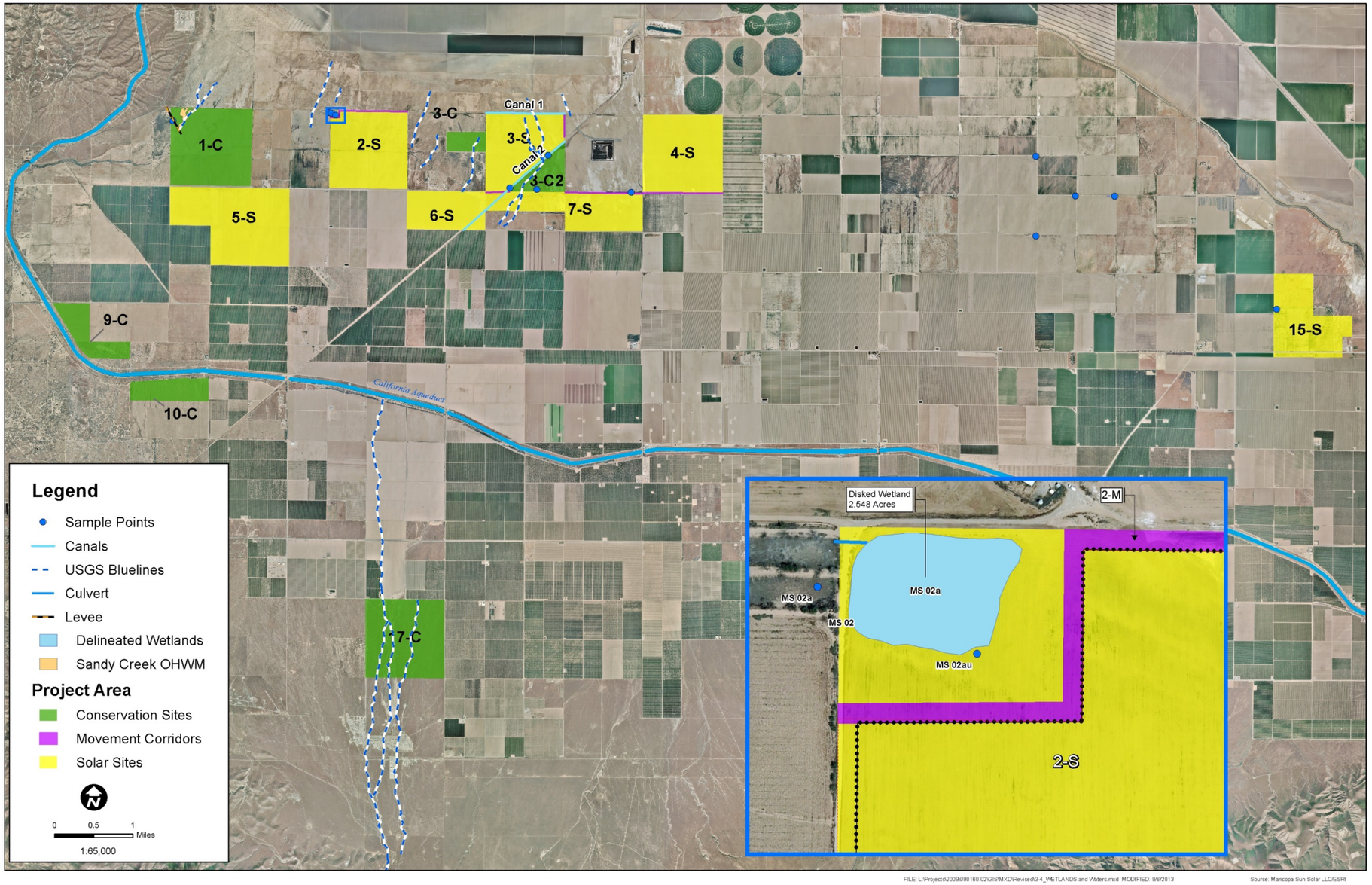
Two unlined canals occur within, or immediately adjacent to, the Covered Lands.

- **Canal #1** collects flood waters and drains the cultivated lands in this portion of the project area. It begins to the west of Site 3-S and ends to the east of Site 3-S. The length of this feature along the northern border of the project site is 5,288 feet, and the average width of the Ordinary High Water (OHW) is eight feet. The OHW acreage of this feature on Site 3-S is 0.97 acres. The bottom of the canal is largely unvegetated, but the banks of the canal support annual sunflower (*Helianthus annuus*), quailbush, tamarisk, and five-hook bassia. This feature will not be impacted by the project. A Movement Corridor has been established along this canal and it will be kept intact.

- **Canal #2** has its source at Santiago Creek near State Route 166 and drains orchards to the south of the project area. This feature is an artificial, unlined canal from SR 166 to its terminus in the northeast (Figure 3.4-4). The OHW width is approximately 10 feet, and the length on-site is 8,964 feet. The OHW acreage of this feature on the project site is 2.06 acres. Quailbush, annual sunflower, and five-hook bassia are present on its banks throughout most of the onsite length, but it is mostly devoid of vegetation to the south of the project area. This feature lies within an existing public easement (railway easement). The Solar Development Footprint does not include this easement and this canal will be protected by a mandatory 30 foot setback from the easement.

3.4.2.2 General Site Characteristics

The project region once supported a wide variety of plant and wildlife species, but much of the diversity and abundance has been reduced and species composition has been altered by dramatic changes in land use. Land use in the region that has contributed to significant declines in plant and wildlife diversity include the conversion of native lands to agriculture, disturbance by oil extraction and associated conveyance structures, urbanization, and the construction of infrastructures and utilities including pipelines, roads, canals, and power transmission lines. The loss of habitat associated with these disturbances has resulted in many species being listed as threatened or endangered by the CDFW and the USFWS. These species are protected by the FESA and/or the CESA. Other species are listed as species of special concern by the agencies and are afforded a lesser level of protection.



Quad Knopf

WETLANDS AND WATERS OF THE UNITED STATES
MARICOPA SUN SOLAR LLC

Figure 3.4-4

This page intentionally left blank.

Vegetation

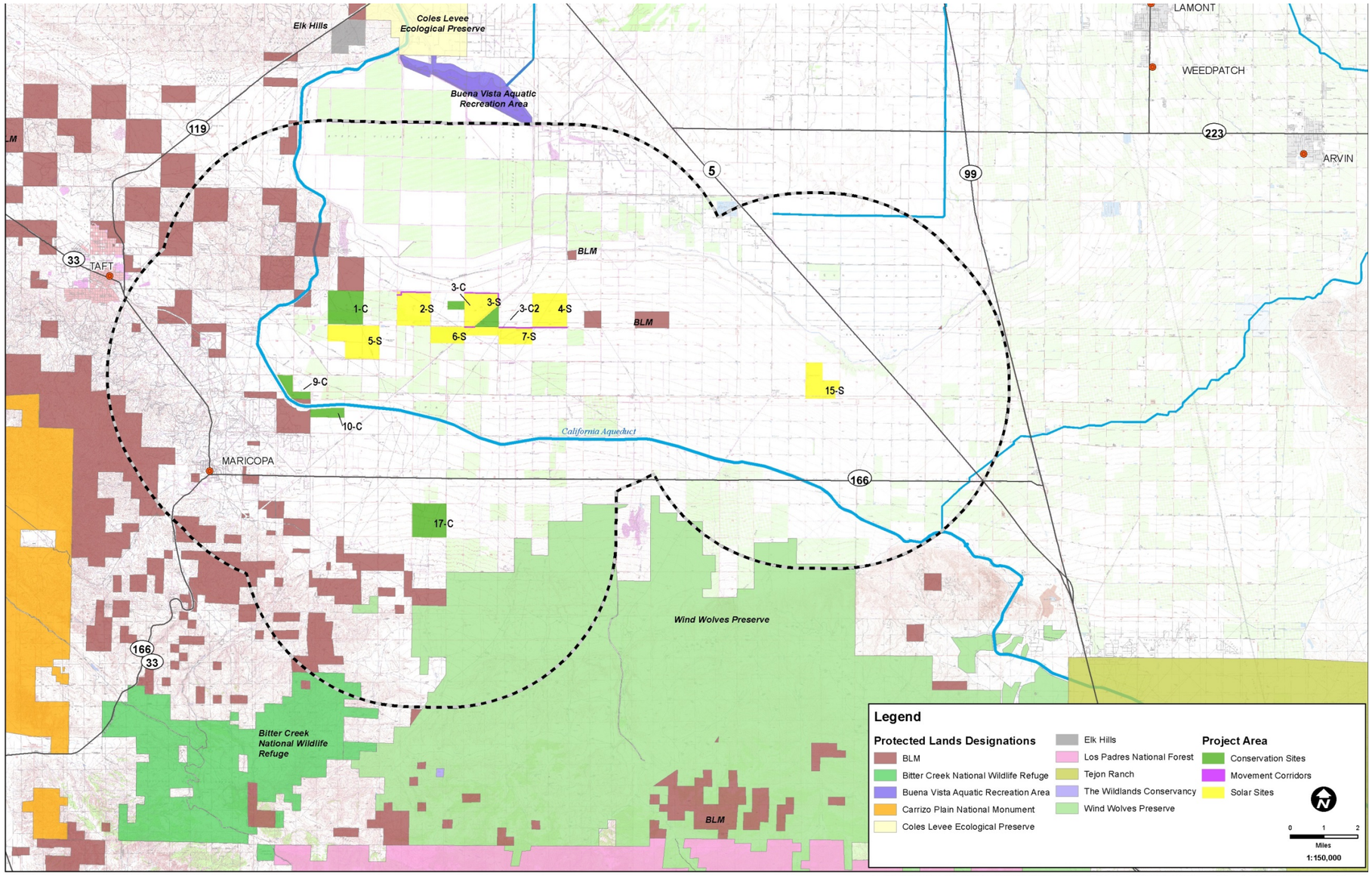
The seven Solar Sites (Sites 2-S, 3-S, 4-S, 5-S, 6-S, 7-S, and 15-S) including the Movement Corridors have been disked for weed control on a biannual basis. Due to the lack of available water, none of the land that is proposed for development (Solar Development Footprints) has been utilized in the past ten years for agricultural purposes. Virtually all of the land surrounding the Covered Lands is designated and zoned for agriculture and most of it is in active agricultural production. Some isolated parcels are in an unfarmed state, though, and contain some native species (Figure 3.4-5). All of the Solar Sites are maintained free of natural vegetative communities through biannual disking, and primarily weedy species sprout between disking activities. The only native plant that sprouts in significant numbers following disking is seepweed (*Suaeda nigra*), which occurs in scattered localities. Because disking occurs in the spring and fall of each year, the seepweed and other species never become established to any great degree and mostly remain as short seedlings, rarely maturing to established shrubs. Some surrounding parcels contain remnants of native Saltbush Scrub and Alkali Sink Scrub habitat in various sized blocks, which are highly fragmented and isolated from one another. Specific site occurrence information on vegetation is provided in Table 3.4-4.

Table 3.4-4
Plant Species Occurring on Solar Sites and Adjacent Lands of the Maricopa Sun Solar Project

Family Name	Scientific Name	Common Name	Project Site
Amaranthaceae	*Amaranthus* sp.	Amaranth	Adjacent to Site 4-S
Apoynaceae	*Asclepias fascicularis*	Narrow-leaf milkweed	Adjacent to Site 15-S
Asclepiadaceae	*Asclepias fascicularis*	Mexican milkweed	Adjacent to Site 15-S
	Centaurea solstitilais	Yellow starthistle	Occurring on Site 15-S
	Helianthus annuus	Annual sunflower	Occurring on Site 3-S
	Helianthus sp.	Sunflower	Adjacent to Site 3-S
	Baccharis salicifolia	Mulefat	Adjacent to Site 15-S
	Achillea millefolium	Yarrow	Adjacent to Site 15-S
	Isocoma acradenia	Alkali goldenbush	Occurring On Site 2-S, 15-S
	Lactuca serriola	Wire lettuce	Occurring On Site 3-S, 5-S
	Xanthium strumarium	Common cocklebur	Occurring On Site 3-S
Boraginaceae	*Amsinckia menziesii*	Fiddleneck	Occurring On Site 2-S, 3-S, 15-S
	Heliotropium currassavicum	Salt heliotrope	Occurring On Site 2-S, 3-S
Brassicaceae	*Sisymbrium irio*	London rocket	Occurring On Site 3-S, 5-S, 6-S, 15-S
	Brassica nigra	Black mustard	Occurring On Site 3-S

Source: Quad Knopf 2010c, 2010d

This page intentionally left blank.



FILE: \\BK-SERVER-02\Projects\Projects\2009\090180.02\GIS\MXD\Revised\3.4-1 Regional Context.mxd MODIFIED: 10/14/2013 Source: Maricopa Sun Solar LLC/ESRI/BLM/CDFG/USFWS

Quad Knopf

LAND USE MAP
MARICOPA SUN SOLAR LLC

Figure
3.4-5

This page intentionally left blank.

The six Conservation Sites (Site 1-C, Site 3-C, Site 3-C2, Site 9-C, Site 10-C, and Site 17-C) total 1,894.4 acres, but the Solar Sites will be converted to Conservation Sites once the solar facilities are decommissioned, resulting in a total of 5,692.7 acres of compensatory lands provided at the end of the project. The Movement Corridors will be managed as conservation land during the life of the project, but will be conserved in perpetuity along with the Solar Sites and Conservation Sites once the project is decommissioned. With the exception of Sites 3-C2, the southern 83.25 acres of Site 9-C, and all of 17-C, all of the lands within the Covered Lands are periodically disked for weed control. Site 3-C2 was previously disked, but has not been disked for some time and has recovered from previous disturbances. The only native plant that sprouts in significant numbers following disking is seepweed, which occurs in scattered localities, particularly on Sites 3-C. Site 1-C also contains some scattered saltbush shrubs and *Alkalo goldenbush*, primarily along the levee in the northwest corner of the site (which totals 2.44 acres), but some scattered quailbush shrubs survive disking. There is native saltbush scrub habitat occurring on 83.25 acres of Sites 9-C, and all of Site 17-C is vegetated with a matrix of annual grassland, saltbush scrub, and *Alkalo goldenbush*. There were 44 plant species occurring within the Conservation Sites, Movement Corridors, and surrounding adjacent lands (Table 3.4-5).

Table 3.4-5
Plant Species Occurring within Conservation Sites, Movement Corridors, and Adjacent Lands of the Maricopa Sun Solar Project

Family Name	Scientific Name	Common Name	Project Site
Asteraceae	*Ambrosia acanthicarpa*	Annual Bursage	Adjacent to Site 10-C
	Centaurea solstitialis	Yellow starthistle	Adjacent to Sites 9-C, 10-C
	Conyza coulteri	Coulter's conyza	Adjacent to Sites 9-C, 10-C
	Hemizonia kelloggii	Kellogg's tarweed	On and Adjacent to Site 9-C
	Heterotheca grandiflora	Telegraph weed	On and Adjacent to Site 9-C
	Helianthus annuus	Annual sunflower	Occurring on Site 3-C, 3-C2, 3-M; Adjacent to Site 10-C
	Helianthus sp.	Sunflower	Adjacent to Site 3-C2, 3-M
	Isocoma acradenia	Alkali goldenbush	Occurring On Site 2-M, 9-C; Adjacent to Sites 9-C, 10-C,
	Lactuca serriola	Wire lettuce	Occurring On Site 9-C, 3-C, 3-C2, 3-M; Adjacent to Site 9-C
	Xanthium strumarium	Common cocklebur	Occurring On Site 3-C, 3-C2, 3-M
Boraginaceae	*Amsinckia menziesii*	Fiddleneck	Occurring On Site 1-C, 2-M, 3-C, 3-C2, 3-M, 9-C, 10-C; Adjacent to Site 9-C, 10-C
	Heliotropium currassavicum	Salt heliotrope	Occurring On Site 3-S, 3-C, 3-C2, 3-M
Brassicaceae	*Sisymbrium irio*	London rocket	Occurring On Site 1-C, 3-S, 3-C, 3-C2, 3-M, 9-C
	Brassica nigra	Black mustard	Occurring On Site 3-S, 3-C, 3-C2, 3-M
	Lepidium sp.	Peppergrass	Adjacent to Site 10-C

Family Name	Scientific Name	Common Name	Project Site
	Raphanus sativus	Radish	Adjacent to Site 9-C
	Sisymbrium orientale	Eastern rocket	Adjacent to Site 9-C
Chenopodiaceae	*Salsola tragus*	Russian thistle	Adjacent to Site 9-C, 10-C; Occurring on Site 3-C, 3-C2, 3-M, 9-C, 10-C
	Bassia hyssopifolia	Five-hook bassia	Occurring on Site 3-C, 3-C2, 3-M, 10-C ; Adjacent to Site 10-C
	Atriplex lentiformis	Quailbush	Occurring On Sites 1-C, 3-C, 3-C2, 3-M, 9-C, Adjacent to Site 10-C
	Chenopodium album	Lamb's quarters "weedy chenopods"	Occurring On Site 3-S, 3-C, 3-C2, 3-M
	Suaeda nigra	Seepweed	Occurring On 3-S, 3-C, 3-C2, 3-M, 17-C
	Atriplex polycarpa	Allscale saltbush	Occurring on Site 9-C; Adjacent to Site 9-C, 10-C
Convolvulaceae	*Convolvulus arvensis*	Orchard bindweed	Occurring On Site 1-C
	Convolvulus sp.	Morning glory	Occurring On Site 1-C
Euphorbiaceae	*Eromocarpus setigerus*	Dove weed	Adjacent to Site 10-C
Lamiaceae	*Trichostema ovatum*	Vinegar Weed	Occurring On Site 17-C
	Marrubium vulgare	White horehound	Adjacent to Site 10-C
	Malacothamnus sp.	Bushmallow	Adjacent to Site 9-C
Plantaginaceae	*Bromus diandrus*	Ripgut brome	Occurring on Site 9-C; Adjacent to Site 9-C
Poaceae	*Bromus hordeaceus*	Soft brome	Occurring On 17-C; Adjacent to Site 9-C and 10-C
	Bromus madritensis ssp. *Rubens*	Red brome	Occurring On Site 2-M, 9-C; Adjacent to Site 10-C
Geraniaceae	*Erodium sp.*	Filaree	Occurring on Site 9-C; Adjacent to Site 9-C
	Cynodon dactylon	Bermuda grass	Occurring On Site 1-C
	Distichlis spicata	Saltgrass	Occurring On Site 3-C, 3-C2, 3-M
	Schismus sp.	Mediterranean barley	Occurring On Site 2-M, 3-S, 3-C, 3-C2, 3-M, 9-C; Adjacent to Site 9-C
Rosaceae	*Prunus dulcis*	Almond	Adjacent to Site 5-S
Salicaceae	*Salix laevigata*	Red willow	Adjacent to Site 15-S
	Salix goodingii	Black willow	Adjacent to Site 15-S
	Salix sp.	Willow	Occurring On Site 2-S, 2-M
Solanaceae	*Datura wrightii*	Jimsonweed	Occurring On Site 5-S; Adjacent to Site 9-C
	Nicotiana glauca	Tree tobacco	Adjacent to Site 10-C
Tamaricaceae	*Tamarix pentandra*	Tamarisk	Occurring On Site 1-C, 2-S, 2-M, 3-S, 3-C, 3-C2, 3-M, 15-S, 17-C; Adjacent to Site 9-C, 10-C, 15-S
Typhaceae	*Typha latifolia*	Narrowleaf cattail	Adjacent to Site 15-S

Source: Quad Knopf 2010c, 2010d

Wildlife

General wildlife species observed in 2009, 2010, and 2012 (Quad Knopf, 2009, 2010a, 2010e, 2012, HCP Appendix G) during visual surveys, small mammal trappings studies, focused surveys for the San Joaquin kit fox, and focused surveys for blunt-nosed leopard lizard in and

surrounding the Covered Lands include, but are not limited to, coyote (*Canis latrans*), California ground squirrel (*Spermophilus beecheyi*), desert cottontail (*Sylvilagus audubonii*), black-tailed jack rabbit (*Lepus californicus*), deer mouse (*Pero4myscus maniculatus*), Heermann's kangaroo rat (*Dipodomys heermanni*), barn owl (*Tyto alba*), red-tailed hawk (*Buteo jamaicensis*), lesser nighthawk (*Chordeiles acutipennis*), American kestrel (*Falco sparverius*), greater roadrunner (*Geococcyx californianus*), American crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), California horned lark (*Eremophila alpestris actia*), northern mockingbird (*Mimus polyglottos*), mourning dove (*Zenaida macroura*), California whiptail (*Aspidoscelis tigris munda*), common side-blotched lizard (*Uta stansburiana*), and western toad (*Anaxyrus boreas*). Specific site occurrence information for all of the species identified during the surveys is provided in Table 3.4-6.

Table 3.4-6
Wildlife Species Occurring on Covered Lands and Lands Adjacent to the Maricopa Sun Solar Project

Scientific Name	Common Name	Project Site
Amphibians		
Anaxyrus sp. Or Spea sp.	Toad	Site 3-S, 3-C, 3-C2, 3-M
Reptiles		
Aspidoscelis tigris munda	California whiptail	Site 3-S, 3-C, 3-C2, 3-M
Crotalus oreganus	western rattlesnake	Site 15-S
*Gambelia sila**	blunt-nosed leopard lizard	Adjacent to Site 2-S, 2-M, 3-S, 3-C, 3-C2, 3-M, 17-C
*Phrynosoma blainvillii**	California horned lizard	Adjacent to Site 3-S, 3-C, 3-C2, 3-M
Uta stansburiana	common side-blotched lizard	Site 3-S, 3-C, 3-C2, 3-M, 15-S
Birds		
*Athene cunicularia**	western burrowing owl	Site 1-C, 3-S, 3-C, 3-C2, 3-M, 5-S, 6-S, 7-S, 9-C, 10-C, 15-S; Adjacent to Site 1-C, 2-S, 2-M, 3-S, 3-C, 3-C2, 3-M, 5-S, 6-S, 7-S, 7-M, 15-S
*Buteo swainsoni**	Swainson's hawk	Adjacent to Site 4-S, 4-M
Chordeiles acutipennis	Lesser nighthawk	Site 15-S
*Circus cyaneus**	Northern harrier	Site 15-S, Adjacent to Site1-C, 3-S, 3-C, 3-C2, 3-M, 4-S, 4-M, 6-S
Corvus corax	raven	Site 1-C, 2-S, 2-M, 15-S
Corvus brachyrhynchos	crow	Site 15-S
*Elanus leucurus**	white-tailed kite	Site 5-S
Eremophila alpestris actia	California horned lark	Site 15-S
Falco sparverius	American kestrel	Site 15-S
*Lanius ludovicianus**	Loggerhead shrike	Site 17-C
Tyto alba	barn owl	Site 3-S, 3-C-3, 3-C2, 3-M, 5-S, 15-S
Zenaida macroura	mourning dove	Site 15-S
Mammals		
*Ammospermophilus nelsoni**	Nelson's antelope squirrel	Adjacent to Site 1-C, 9-C, 10-C, 17-C

Scientific Name	Common Name	Project Site
Spermophilus beecheyi	California ground squirrel	Site 15-S
Peromyscus maniculantus	deer mouse	Site 1-C, 2-S, 2-M , 3-S, 3-C, 3-C2, C-M, 9,10, 15-S
*Dipodomys nitratoides nitratoides**	Tipton's kangaroo rat	Site 1-C, 2-S, 2-M, 3-S, 3-C, 3-C2, 3-M, 9-C, 10-C
Dipodomys heermanni	Heermann's kangaroo rat	Site 1-C, 2-S, 2-M, 3-S, 3-C, 3-C2, 3M, 9-C, 10-C
*Onychomys torridus tularensis**	Tulare grasshopper mouse	Site 1-C, 6-S, 9-C, 15-S
Lepus californicus	black-tailed jackrabbit	Site 1-C, 2-S, 2-M, 3-S, 3-C, 3-C2, 3-M, 4-S, 4-M, 7-S, 7-M, 15-S
Sylvilagus audubonii	cottontail	Site 1-C, 2-S, 2-M, 3-S, 3-C, 3-C2, 3-M, 4-S, 4-M, 7-S, 7-M, 15-S
Felis catus	house cat	Site 6-S
*Taxidea taxus**	American badger	Site 17-C
CANIDAE	unknown canid	Site 15-S
Canis familiaris	domestic dog	Site 7-S, 7-M, 15-S
*Vulpes macrotis mutica**	San Joaquin kit fox	Adjacent to Sites 1-C, 15-S, 17-C
Canis latrans	coyote	Site 1-C, 3-S, 3-C, 3-C2, 3-M, 5-S, 15-S

Source: Quad Knopf 2009, 2010a, 2010e, 2012)
*Indicates special-status species

Special Status Species

A search of existing databases and literature was conducted to determine sensitive biological resources occurring in the project region. Information was obtained from the California Natural Diversity Database (CNDDB) (CDFW 2013), California Native Plant Society Inventory of Rare and Endangered Plants (CNPS 2013), Recovery Plan for the Upland Species of San Joaquin Valley, California (USFWS 1998), and the federal Endangered and Threatened Species List (USFWS 2013). There are five sensitive natural communities, 20 special-status plant species (Table 3.4-7), and 39 special-status wildlife species (Table 3.4-8) known to occur within the nine USGS 7.5-minute topographic quadrangles surrounding the Covered Lands. The distributions of these CNDDB records are provided in Figures 3.4-6 A through D. There are CNDDB records within a five-mile radius of the project area for the following special-status wildlife species:

- Blunt-nosed leopard lizards (*Gambelia sila*);
- San Joaquin kit foxes (*Vulpes macrotis mutica*);
- Tipton kangaroo rats (*Dipodomys nitratoides nitratoides*);
- Buena Vista Lake shrews (*Sorex ornatus relictus*);
- Nelson's antelope squirrels (*Ammospermophilus nelson*);
- American badgers (*Taxidea taxus*); and
- Western burrowing owls (*Athene cunicularia*).

Table 3.4-7
Sensitive Vegetation Communities and Special Status Plant Species Occurring in the Region of the Maricopa Sun Solar Habitat Conservation Plan Area

Scientific Name	Common Name	Status
Sensitive vegetative communities		
Great Valley Cottonwood Riparian Forest	Great Valley Cottonwood Riparian Forest	Protected under CEQA
Great Valley Mesquite Scrub	Great Valley Mesquite Scrub	Protected under CEQA
Valley Sacaton Grassland	Valley Sacaton Grassland	Protected under CEQA
Valley Saltbush Scrub	Valley Saltbush Scrub	Protected under CEQA
Valley Sink Scrub	Valley Sink Scrub	Protected under CEQA
Plants		
Allium howellii var. clokeyi	Mt. Pinos onion	1B.3
Astragalus hornii var. hornii	Horn's milk-vetch	1B.1
Atriplex cordulata	Heartscale	1B.2
Atriplex tularensis	Bakersfield smallscale	CE, 1B.1
Atriplex coronata var. *vallicola*	Lost Hills crownscale	1B.2
California (*Erodium*) *macrophyllum*	round-leaved filaree	1B.1
Caulanthus californicus (Stanfordia californica)	California jewel-flower	FE, CE, 1B.1
Caulanthus coulteri var. lemmonii	Lemmon's jewelflower	1B.2
Cirsium crassicaule	slough thistle	1B.1
Cordylanthus mollis ssp. hispidus	Hispid bird's beak	1B.1
Delphinium recurvatum	recurved larkspur	1B.2
Eremalche kernensis	Kern mallow	FE, 1B.1
Eriastrum hooveri	Hoover's eriastrum	4.2
Eschscholzia lemmonii ssp. kernensis	Tejon poppy	1B.1
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	1B.1
Layia hetereotricha	Pale-yellow layia	1B.1
Layia leucopappa	Comanche Point layia	1B.1
Monardella linoides ssp. oblonga	tehachapi monardella	1B.3
Monolopia congdonii	San Joaquin woollythreads	FE, 1B.2
Stylocline citroleum	oil neststraw	1B.1

Status Definitions

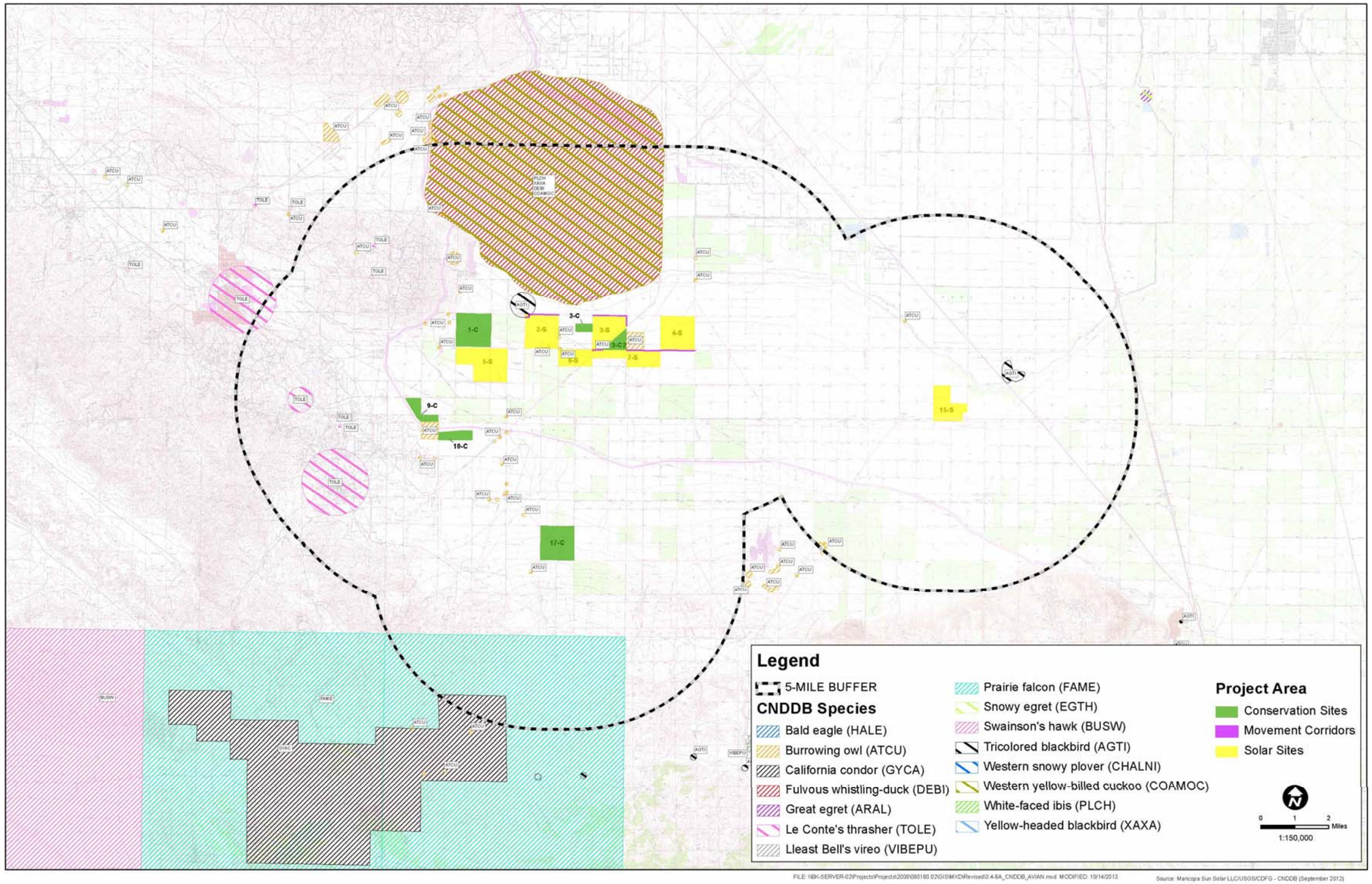
FE Federally Endangered
CE California Endangered
1B.1 California Native Plant Society List 1B Species-Plants Categorized as Rare, Threatened, or Endangered in California and Elsewhere; Seriously Endangered in California
1B.2 California Native Plant Society List 1B Species-Plants Categorized as Rare, Threatened, or Endangered in California and Elsewhere; Fairly Endangered in California.
1B.3 California Native Plant Society List 1B Species-Plants Categorized as Rare, Threatened, or Endangered in California and Elsewhere; Not Very Endangered in California
4.2. Plants of limited distribution - Watch list, Fairly endangered in California (20-80% occurrences threatened)

Source: CNDDB 2013, CNPS 2013, USFWS 2013, and CDFW 2013)

Table 3.4-8
Special Status Wildlife Species
Occurring in the Region of the Maricopa Sun Solar Habitat Conservation Plan Area

Scientific Name	Common Name	Status
Invertebrates		
Branchinecta lynchi	vernal pool fairy shrimp	FT
Desmocerus californicus dimorphus	Valley elderberry longhorn beetle	FT
Euproserpinus euterpe	Kern primrose sphinx moth	FT
Fishes		
Hypomesus transpacificus	Delta smelt	FT, CT
Amphibians		
Rana aurora draytonii	California red-legged frog	FT
Spea hammondii	western spadefoot	CSC
Reptiles		
Actinemys marmorata pallida	western pond turtle	CSC
Anniella pulchra pulchra	silvery legless lizard	CSC
*Gambelia sila**	blunt-nosed leopard lizard	CE, FE, CDFW fully protected
Masticophis flagellum ruddocki	San Joaquin whipsnake	CSC
*Phrynosoma blainvillii**	California horned lizard	CSC
Thamnophis gigas	giant garter snake	FT, CT
Birds		
Agelaius tricolor	tricolored blackbird	CSC
Athene cunicularia	western burrowing owl	CSC
*Buteo swainsoni**	Swainson's hawk	CSC
Charadrius alexandrinus nivosus	western snowy plover	FT
Charadrius montanus	mountain plover	CSC
*Circus cayaneus**	Northern harrier	CSC
Coccyzus americanus occidentalis	western yellow-billed cuckoo	CE
Dendrocygna bicolor	fulvous whistling-duck	CSC
*Elanus leucurus**	white-tailed kite	CDFW fully protected
Eremophila alpestris actia	California horned lark	CDFW watch list
Falco mexicanus	prairie falcon	CDFW watch list
Gymnogyps californianus	California condor	FE, CE
*Lanius ludovicianus**	Loggerhead shrike	CSC
Plegadis chihi	white-faced ibis	CDFW watch list
Toxostoma lecontei	Le Conte's thrasher	CSC
Xanthocephalus xanthocephalus	yellow-headed blackbird	CSC
Mammals		
*Ammospermophilus nelson**	Nelson’s antelope squirrel	CT
Dipodomys ingens	giant kangaroo rat	FE, CE
Dipodomys nitratoides brevinasus	short-nosed kangaroo rat	CSC
*Dipodomys nitratoides nitratoides**	Tipton kangaroo rat	FE, CE
Eumops perotis californicus	western mastiff bat	CSC
*Onychomys torridus tularensis**	Tulare grasshopper mouse	CSC
Perognathus inornatus inornatus	San Joaquin pocket mouse	CSC, BLMS
Sorex ornatus relictus	Buena Vista Lake shrew	FE
*Taxidea taxus**	American badger	CSC
*Vulpes macrotis mutica**	San Joaquin kit fox	FE, CT

*Identified on or adjacent to Covered Lands
* Status designations are: CSC = California Special of Special Concern, FE = federally endangered, FPS = fully protected species, FT = federally threatened, SE = State endangered, ST = State threatened, MBTA = protected by the Migratory Bird Treaty Act.
Source: CNDDB 2013, CNPS 2013, USFWS 2013, and CDFW 2013

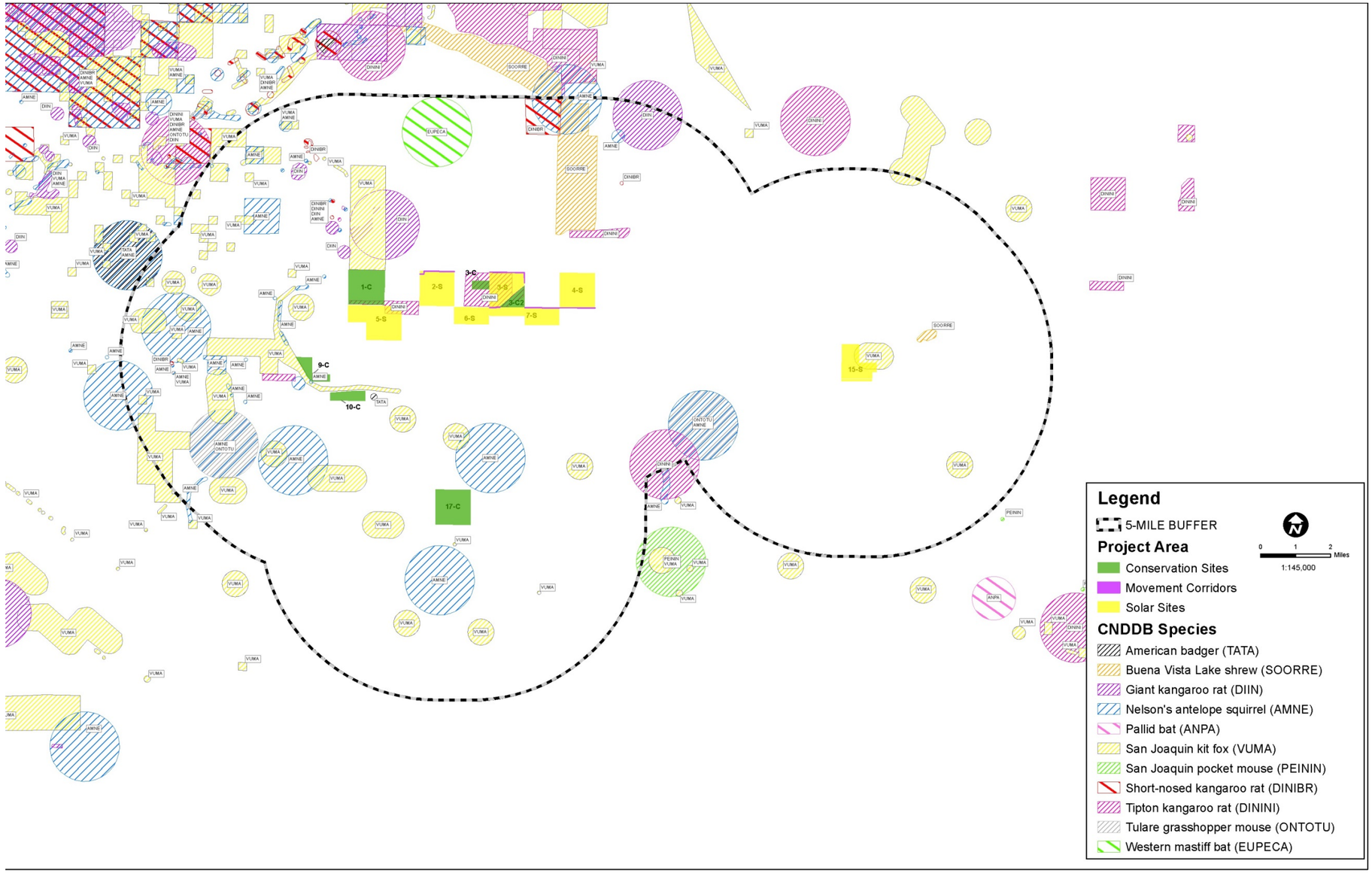


Quad Knopf

CNDDB SENSITIVE AVIAN SPECIES OBSERVATIONS
MARICOPA SUN SOLAR LLC

Figure
3.4-6A

This page intentionally left blank.

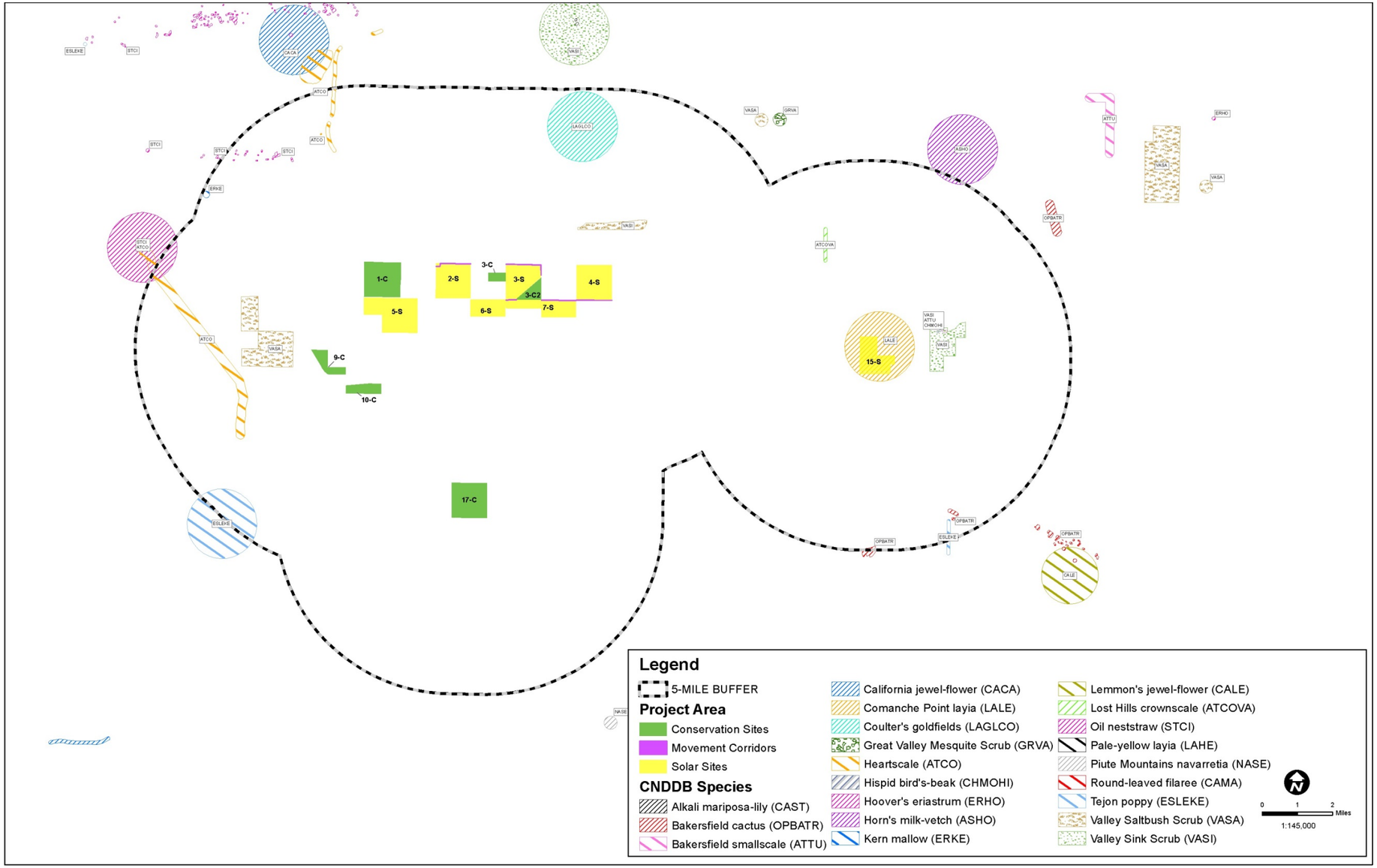


Quad Knopf

CNDDB SENSITIVE MAMMAL SPECIES OBSERVATIONS
MARICOPA SUN SOLAR LLC

Figure
3.4-6B

This page intentionally left blank.



FILE: \\BK-SERVER-02\Projects\Projects\2009\090160.02\GIS\MXD\Revised\3.4-6C_CNDDB_PLANTS.mxd MODIFIED: 10/14/2013

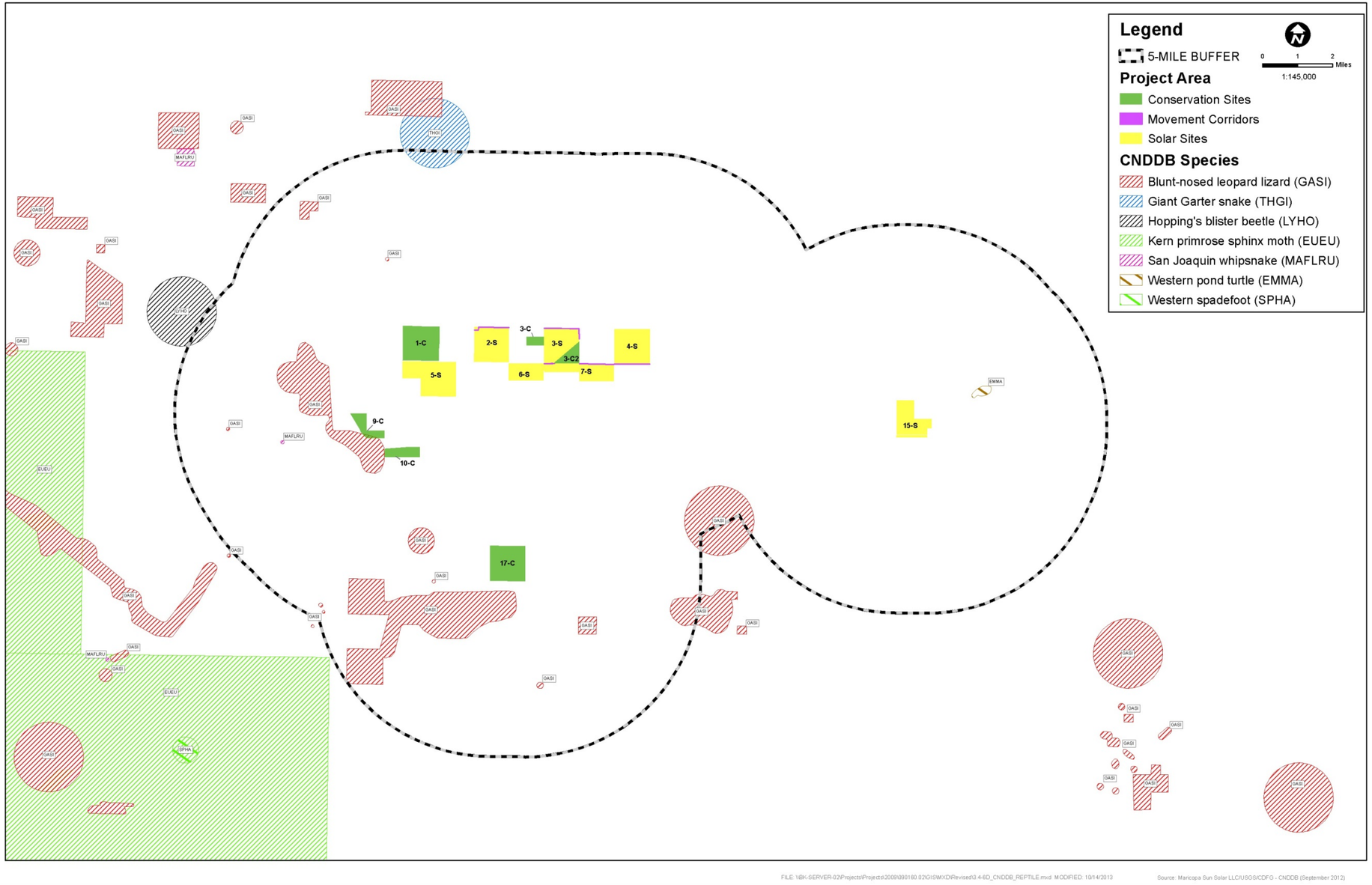
Source: Maricopa Sun Solar LLC/USGS/CDFG - CNDDB (September 2012)

Quad Knopf

CNDDB SENSITIVE PLANT SPECIES OBSERVATIONS
MARICOPA SUN SOLAR LLC

Figure
3.4-6C

This page intentionally left blank.



FILE: \\BK-SERVER-02\Projects\Projects\2009\09180.02\GIS\MXD\Revised\3.4-6D_CNDDB_REPTILE.mxd MODIFIED: 10/14/2013 Source: Maricopa Sun Solar LLC/USGS/CDFG - CNDDB (September 2012)

Quad Knopf

CNDDB SENSITIVE REPTILE, AMPHIBIAN, INSECT, AND INVERTEBRATE SPECIES OBSERVATIONS
MARICOPA SUN SOLAR LLC

Figure
3.4-6D

This page intentionally left blank.

Numerous evaluations of the potential for special-status species to occur on the Covered Lands were conducted between 2009 and 2012. These evaluations consisted of both reconnaissance and focused biological surveys. The focused surveys included protocol-surveys for small mammals, the San Joaquin kit fox, the blunt-nosed leopard lizard, and nesting raptors. The special-status species observed either on the Covered Lands or on adjacent lands include the blunt-nosed leopard lizard, San Joaquin kit fox, Tipton kangaroo rat, Nelson's antelope ground squirrel, western burrowing owl, American badger, Swainson's hawk, white-tailed kite, California horned lark, and Northern harrier (see Table 3.4-6).

The HCP covers five species that may be subject to take by Covered Activities (Table 3-4-9). A summary of the natural history of these species and the occurrence of covered species within the Permit Area are described below.

Table 3.4-9
List of Species Proposed for Coverage, Maricopa Sun HCP

Common Name	Scientific Name	Status*		
		Federal	State	Other
Mammals				
San Joaquin kit fox	*Vulpes macrotis mutica*	FE	ST	-
Tipton kangaroo rat	*Dipodomys nitratoides nitratoides*	FE	SE	-
Nelson's antelope squirrel	*Ammospermophilus nelsoni*	-	ST	-
Birds				
Western burrowing owl	*Athene cunicularia*	-	CSSC	MBTA
Reptiles				
Blunt-nosed leopard lizard	*Gambelia sila*	FE	SE	FPS

* Status designations are: CSC = California Species of Special Concern, FE = federally endangered, FPS = fully protected species, FT = federally threatened, SE = State endangered, ST = State threatened, MBTA = protected by the Migratory Bird Treaty Act.

LIFE HISTORY

The San Joaquin kit fox is found only in the Central Valley area of California. San Joaquin kit foxes currently inhabit suitable habitat in the San Joaquin Valley and in surrounding foothills of the Coast Ranges, Sierra Nevada, and Tehachapi Mountains, and on the Carrizo and Elkhorn Plains. Much of the historic natural vegetative communities within the range of the San Joaquin kit fox has been eliminated and is now represented only by small, isolated and degraded remnants. San Joaquin kit foxes are now primarily found on the western side of the San Joaquin Valley natural lands in Kern, Tulare, Kings, Fresno, Madera, San Benito, Merced, Stanislaus, San Joaquin, Alameda, and Contra Costa counties.

San Joaquin kit foxes occur in a variety of habitats, including grassland, scrublands, oak woodland, alkali sink scrubland, vernal pool areas, and alkali meadow communities. San Joaquin kit foxes are also known to occur in extensively modified habitats such as oil fields and wind turbine facilities (USFWS 1998). They are present, but generally less abundant, in other highly modified landscapes such as agricultural row crops, irrigated pastures, orchards, vineyards, and grazed annual grassland. They prefer habitats with loose-textured soils that are suitable for digging, but they occur on virtually every soil type.

The diet of San Joaquin kit foxes varies, with season and geographic locality based on local availability of potential prey but usually consists of kangaroo rats, pocket mice, white-footed mice, and other nocturnal rodents. San Joaquin kit foxes also prey on black-tailed hares, Nelson's antelope squirrels, desert cottontails, ground-nesting birds, and insects (USFWS 1998).

San Joaquin kit foxes can, but do not necessarily, breed their first year. Adult pairs of foxes stay together throughout the year and can begin breeding at one year of age. During September and October, females begin to clean and enlarge their pupping dens and mating usually occurs between December and March. Litters of two to six pups are born between February and late March, with pups emerging from the den after about a month. Population growth rates generally vary positively with reproductive success and kit fox density is often positively related to both current and the previous year's prey availability (Cypher et al. 2000).

Dens are generally located in open areas with grass or grass and scattered brush, and seldom occur in areas with thick brush. Preferred sites are relatively flat, well-drained terrain (USFWS 1998). The kit fox requires underground dens for temperature regulation, shelter, reproduction, and predator avoidance. Dens are usually located on loose-textured soils on slopes less than 40 degrees, but the characteristics (number of openings, shape, slope, aspect) of dens vary across the fox's geographic range. Kit foxes dig their own dens, but also use those constructed by other animals. They also frequently use human-made structures (culverts, abandoned pipelines, or banks in sumps or roadbeds) as den sites.

Kit foxes may range up to 20 miles at night (Girard 2001) during the breeding season and somewhat less (6 miles) during the pup-rearing season. Home ranges vary from less than 1 square mile up to approximately 12 square miles (Knapp 1978, Spiegel and Bradbury 1992, White and Ralls 1993).

Tipton Kangaroo Rat (Dipodomys nitratoides nitratoides)

LIFE HISTORY

The historical geographic range of Tipton kangaroo rats was over 1.7 million acres of arid-land communities occupying the valley floor of the Tulare Basin. By 1985, the inhabited area had been reduced to about 60,000 acres or about 4% of the historically occupied acreage. Currently,

Tipton kangaroo rats inhabit small, scattered, isolated fragments of remnant habitat. In the southern San Joaquin Valley, this includes the Kern and Pixley National Wildlife Refuges, and other scattered areas within Kern, Tulare, and Kings Counties.

The Tipton kangaroo rat is limited to arid-land communities occupying the valley floor of the Tulare Basin in level or nearly level terrain. They occupy alluvial fan and floodplain soils ranging from fine sands to clay-sized particles (because of the high alkalinity of these soils, some of the finer-textured soils tend to be powdery when dry rather than hard-packed). Generally, woody shrubs of one or more species are sparsely scattered over occupied terrain with scant-to-moderate ground cover of grasses and forbs. Tipton kangaroo rats are commonly associated with spinescale saltbush (*Atriplex spinifera*), Allscale saltbush, leafcover saltweed (*Atriplex covillei*), quailbush, iodine bush, alkali goldenbush, mesquite (*Prosopis glandulosa*), and seepweed (Williams, 1985).

The Tipton kangaroo rat eats mostly seeds, with small amounts of green, herbaceous vegetation and insects supplementing their diet when available (USFWS 1998). Little is known about Tipton kangaroo rat reproduction in the wild. Mating appears to begin in the winter and most females seem to have one litter per year, although litters of two or more may be born during exceptional years (USFWS 1998). Young are born in burrows.

Burrow systems are usually in open areas but may occur in thick scrub. They are typically simple, but may include interconnecting tunnels. Most are less than 10 inches deep. Burrows are most prominent on slightly elevated mounds, the berms of roads, canal embankments, railroad beds, and bases of shrubs and fences where wind-blown soils accumulate above the level of surrounding terrain.

Loss, fragmentation, and degradation of habitat associated with agricultural conversion in the San Joaquin Valley continue to decrease the remaining habitat of the Tipton kangaroo rat. As a result of industrial and agricultural related developments, cultivation, formation of patches of exotic grasses, urbanization, and flooding, there is an increase of habitat destruction or modification (USFWS 1998). The more common Heermann's kangaroo rat may competitively exclude or reduce the density of Tipton kangaroo rats where they co-occur.

Nelson's Antelope Squirrel (Ammospermophilus nelsoni)

LIFE HISTORY

Nelson's antelope squirrels are restricted to desert and scrubland habitats. The historical geographic range was within the southern and western areas of the Tulare Basin, the San Joaquin Valley, and up to the Cuyama Valley and the Carrizo and Elkhorn Plains. Its current range is now estimated to be uncultivated habitat within the San Joaquin Valley. They are thought to be extirpated from the Tulare Basin floor and only occur in the marginal habitat in the foothills of

the mountains bordering the west of the basin. Populations of Nelson's antelope squirrel occur in Lokern and Elk Hills and on the Carrizo and Elkhorn Plains. In all, approximately 41,300 hectares have been deemed fair to adequate habitat for Nelson's antelope squirrels within its historic range (USFWS 1998).

Habitat of Nelson's antelope squirrels consist of grasslands with moderate shrub cover which includes such species as salt bush, ephedra (*Ephedra* sp.), bladder pod (*Peritoma arborea*), goldenbush (*Isocoma* sp.), snakeweed (*Gutierrezia* sp.), and others. The squirrels live in small underground familial colonies on sandy, easily excavated grasslands

Nelson's antelope squirrels are opportunistic omnivores. Common food is green vegetation and insects, but is largely dependent on what is seasonally available (Hawbecker 1975; Harris 1993). Nelson's antelope squirrels are largely diurnal and are active for much of the day. However, during extreme high or low temperatures they will often stay in their ground burrows. Nelson's antelope squirrels often excavate their own ground burrows, but if the opportunity presents itself they will use a burrow that was constructed by another small mammal, such as kangaroo rats.

Nelson's antelope squirrels breed between late winter and early spring. Young are usually born between March and April. Only one litter is produced each year. Mortality rates of young are about 70% their first year, and the annual adult survival rate is between 50% and 60% (Williams and Tordoff 1988).

Nelson's antelope squirrels are social animals (Grinnell and Dixon 1916). They do not expend much energy throughout the day because of the extreme temperatures in their environment (Hawbecker 1953) and there is little activity during the heat of the day. Although there is no evidence of hibernation, the squirrels are not bothered by the cold and can survive temperatures below freezing in their burrow (Hawbecker 1958).

Nelson's antelope squirrels are cautious when emerging from their burrows (Grinnell and Dixon 1916), and have a specific route that they follow when foraging for food. If danger seems near, they will run into a burrow along their foraging route to get to safety (Hawbecker 1953). They move quickly and do not spend much time in one place (Hawbecker 1975).

Western burrowing owl (Athene cunicularia)

LIFE HISTORY

The western burrowing owl is a summer resident in the western half of the United States and a year-round resident in the southwestern portion of the U.S. and northern and central Mexico. In California, they inhabit the lowlands of the Central Valley and the desert environments of the southeastern part of the state. Although western burrowing owls still exist in most portions of

their historic range, their population densities have declined due to habitat loss, degradation, and fragmentation.

Western burrowing owls occupy grasslands, deserts, sagebrush scrub, agricultural areas (including pastures and untilled margins of cropland), earthen levees and berms, coastal uplands, and urban vacant lots, as well as the margins of airports, golf courses, and roads. Western burrowing owls select sites that support short vegetation, even bare soil, presumably because they can easily see over it. However, they will tolerate tall vegetation if it is sparse. Owls will perch on raised burrow mounds or other topographic relief, such as rocks, tall plants, fence posts, and debris piles, to attain good visibility (Haug et al. 1993). Western burrowing owls are primarily crepuscular in their foraging habits, but will hunt for insects and small vertebrates during both day and night.

Their breeding season begins in March or April and extends through August. Average clutch size is five or six eggs and they rarely produce a second brood. Where site conditions are optimal, western burrowing owls sometimes form loose colonies, which is unusual for avian predators (Haug et al. 1993). The female will lay an egg every 1 or 2 days until she has completed a clutch, which can consist of 4 to 12 eggs (usually 9). She will then incubate the eggs for three to four weeks while the male brings her food. After the eggs hatch, both parents will feed the chicks. Four weeks after hatching, the chicks are able to make short flights and begin leaving the nest burrow. The parents will still help feed the chicks for 1 to 3 months. While most of the eggs will hatch, only 4 to 5 chicks usually survive to leave the nest.

During the breeding season, western burrowing owls spend most of their time within 50 to 100 m (162 to 325 feet) of their nest or satellite burrows (Haug and Oliphant 1990). During the day, they forage in the vicinity of the natal burrow where they find it easy to prey on insects in low, open vegetation. Western burrowing owls will nest in loose colonies, although owls display intraspecific territoriality immediately around nest burrow (Haug et al. 1993). Western burrowing owls in California typically begin pair formation and courtship in February or early March, when adult males attempt to attract a mate.

When hunting, they wait on a perch until they spot prey. They then swoop down on prey or fly up to catch insects in flight. Sometimes, they chase prey on foot across the ground.

An immediate threat to the western burrowing owl is the conversion of grassland habitat to urban and agricultural uses, and the loss of suitable agricultural lands to development. Equally important is the loss of fossorial rodents, such as small ground squirrel species, across much of the owl's historical range. Another cause of population declines is thought to be pesticide use but evidence does not clearly indicate that other contaminants are reducing populations (Gervais et al. 1997). Habitat fragmentation (Remsen 1978) probably increases foraging distances, making hunting less efficient and potentially reducing reproductive success. In urban settings,

owls occurring in isolated habitats may experience frequent disturbances from adjacent land uses and barriers to foraging areas.

Blunt-nosed Leopard Lizard (Gambelia sila)

LIFE HISTORY

Historically, the blunt-nosed leopard lizard occurred in the southern San Joaquin Valley and adjacent western and southern foothills. The current distribution is restricted to scattered sites in the southern San Joaquin Valley, Carrizo Plain, Elkhorn Plain, and southeastern Cuyama Valley. This distribution roughly corresponds with the western half of Kern County, the eastern boundary of San Luis Obispo and Kings Counties, the western boundary of Fresno County, and extreme southwestern Tulare County. These lizards are rare and localized in suitable habitat throughout their current range (Quad Knopf 2010c).

Blunt-nosed leopard lizards are typically associated with sparsely vegetated, arid habitats of saltbush scrub, alkali sinks, non-native grasslands, Ephedra scrub, and washes. Most of these habitat types have been lost to agricultural conversion, oil production, and urbanization, and the blunt-nosed leopard lizard currently occurs in less than 15 percent of their historic distribution (USFWS 1998).

The blunt-nosed leopard lizard is a carnivorous predator that feeds primarily on insect (mostly grasshoppers, crickets, and moths) and other lizards. Lizard species taken as prey include side-bloched lizards, coast horned lizards, California whiptails, and spiny lizards. Young of its own species are also eaten (USFWS 1998).

Blunt-nosed leopard lizards are in reproductive status from April to July. Females typically lay eggs between May and June. Clutch size averages three eggs with a range of one to six eggs. One clutch per season is the normal pattern, but females may produce a second, third, or even fourth clutch if environmental conditions are favorable (Jennings 1995; Germano and Williams 1992 and 2005; USFWS 1998). There are no current data available for population densities of blunt-nosed leopard lizards, but Uptain *et al.* (1992) reported densities ranging from 0.1 to 4.2 individuals per acre at the Pixley National Wildlife Refuge in Tulare County.

The optimum activity period occurs when air temperatures are between 25-35^{ø}C (77-95^{ø}F) and soil temperatures are between 30-50^{ø}C (86-122^{ø}F). On hotter days, they are active in the early morning and late afternoon and use small rodent burrows during the day. Blunt-nosed leopard lizards are highly territorial.

3.4.2.3 Site-Specific Characteristics

Descriptions of the Covered Lands, including information on land use, plant and wildlife communities, and special-status species are provided below for each of the Solar Sites, Movement Corridors, and Conservation Sites.

Solar Sites (3,798.3 acres)

The Solar Sites, including the Movement Corridors, encompass 3,798.3 acres and formerly supported agricultural uses. Due to the lack of available water, these lands have not been in agricultural production for at least ten years. However, the lands have been maintained in a farm-ready condition by repeated disking, which has prevented Covered Species from occurring on the sites or has removed Covered Species from the sites The Solar Sites are currently not fenced or actively improved.

Site 2-S (628.8 acres)

Site 2-S has been disked for weed control on a biannual basis, with the exception of an earthen berm located along the northern edge of the site. The site is mostly bare ground, but it does support sparse patches of weedy annual plants that include salt heliotrope, tamarisk, red brome, fiddleneck, Mediterranean barley *(Hordeum murinum)*, quailbush, and seepweed. A lone willow tree, which appeared to be a black willow/weeping willow hybrid (*Salix babylonica*), exists near the electrical transmission lines in the southeast quarter of the site. Most of the annual plants occur along the earthen berm located at the north end of the site. There are scattered seepweed shrubs on the sides of the, but these scattered shrubs do not comprise a functional Valley Sink Scrub community. The surrounding lands consist of vineyards, an alfalfa (*Medicago sativa*) field, and disked fields. To the east of this site is native Saltbush Scrub habitat, which has been disturbed by past disking. This area is vegetated with disturbed chenopod scrubland, seepweed, Allscale saltbush, Mediterranean grass (*Schismus arabicus*), red brome, fiddleneck, alkali goldenbush and a few large tamarisks.

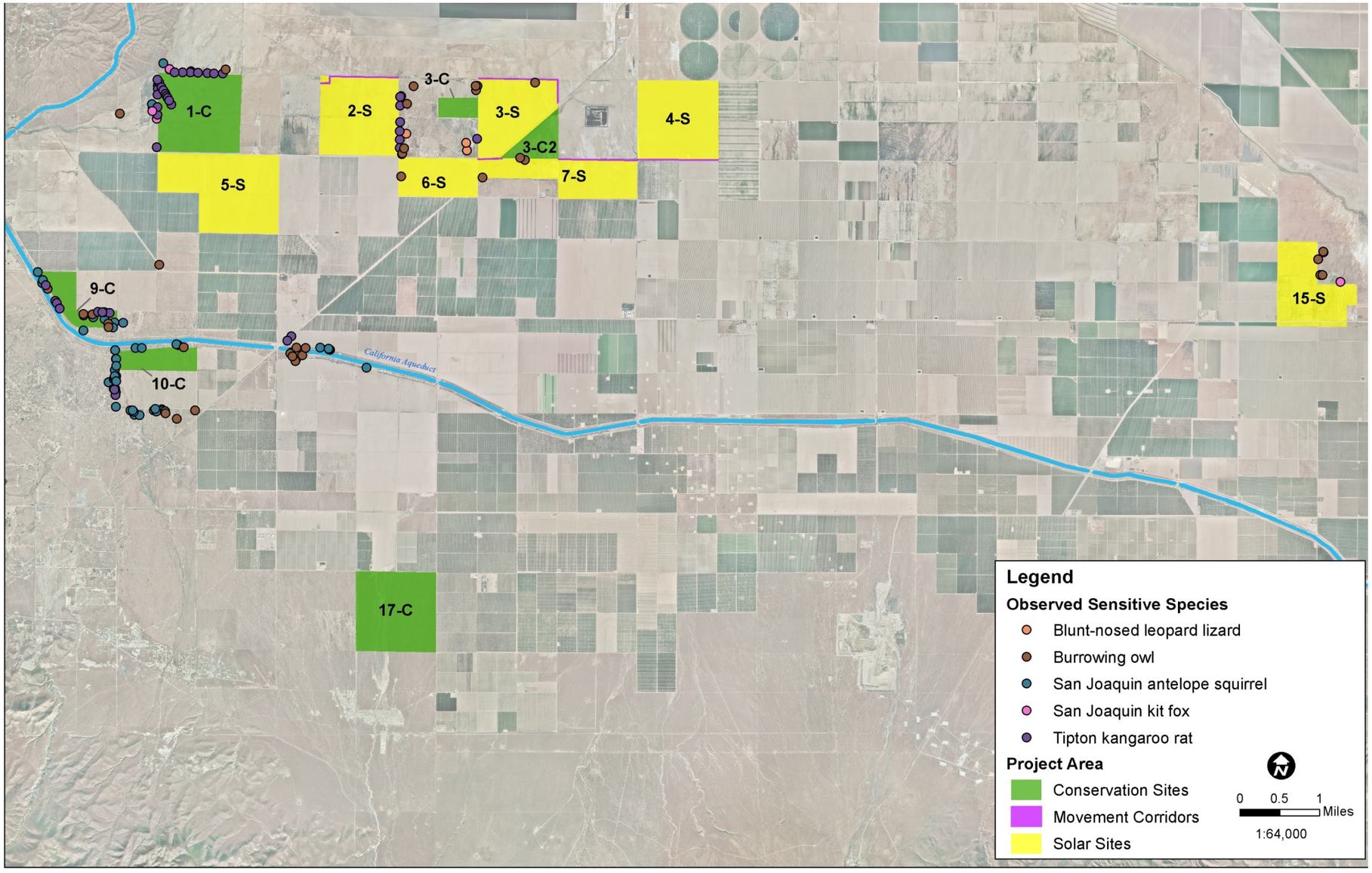
This site was likely historically vegetated with a matrix of Valley Saltbush Scrub and Alkali Sink Scrub vegetation communities. However, there are no historical records of special-status plant species occurring on the site (see Figures 3.4-6 A-D) (Quad Knopf 2010a, d). Although possible, it is also unlikely that special-status plant species occur within the saltbush scrub habitat that exists east of this site.

There are no historical records of special-status wildlife species occurring on the site (see Figures 3.4-6 A through D), and no evidence could be found that Covered Species occur on this site (Quad Knopf 2010a) However, Covered Species that may occasionally make forays onto or across the site for foraging or movement purposes include the San Joaquin kit fox, blunt-nosed

leopard lizard, Tipton kangaroo rat, and western burrowing owl (Table 3.4-9). Blunt-nosed leopard lizards, western burrowing owls, and Tipton kangaroo rats were located on the adjacent land east of the site (Figure 3.4-7). Other special-status species (e.g., western mastiff bat, white-tailed kite, and Northern harrier) may occasionally fly over the site.

Table 3.4-10
Existing Maricopa Sun Solar Site Conditions and Presence of Covered Species

Site No.	Area (Acres)	Site Condition/Vegetation	Presence of Covered Species*
2-S	628.8	Fallow farmland, actively disked for weed control, minimal vegetation present	None present, but SJKF and WEBO may move through area BNLL, TKR, and WEBO known to occur nearby
3-S	460.4	Fallow farmland, actively disked for weed control, minimal vegetation present; NWI mapped freshwater emergent wetlands; field surveys determined that the area lacks hydric soils or wetland vegetation	WEBO was sighted on this site, SJKF may occasionally move through the area; BNLL, TKR, and WEBO known to occur nearby
4-S	652.5	Fallow farmland, actively disked for weed control, no vegetation present; a ponding basin is located on lands off site, adjacent to the southwest corner of this site	None present; SJKF and WEBO may move through area
5-S	797.2	Fallow farmland, actively disked for weed control, minimal vegetation present	None present; SJKF and WEBO may move through area
6-S	304.2	Fallow farmland, actively disked for weed control, minimal vegetation present	WEBO observed on site; SJKF may occur as; TKR and BNLL not present on site, but may be present on adjacent lands to the north;
7-S	471.6	Fallow farmland, actively disked for weed control, minimal vegetation present; NWI mapped emergent wetlands in the north central portion no longer present; a small (3.88-acre) ponding basin is present, off site, at the south corner	WEBO observed on site; SJKF may occur as; TKR and BNLL not present on site, but present on adjacent lands to the north; Covered Species may be present within existing easements, but no evidence of presence was obtained and those areas are not within the Solar Development Footprint
15-S	483.6	Fallow farmland, actively disked for weed control, minimal vegetation present; several NWI mapped wetlands are no longer present due to frequent disking	None present; WEBO, SJKF observed on adjacent lands and are expected to be on the site; TKR may also occur on adjacent lands.



Quad Knopf

SPECIAL STATUS SPECIES SURVEY RESULTS
MARICOPA SUN SOLAR LLC

Figure
3.4-7

This page intentionally left blank.

Site 3-S (460.4 acres)

Site 3-S has been disked for weed control on a biannual basis, with the exception of an irrigation ditch that is located to the north of the site. The ditch is bounded on both sides by dirt roads. The ditch and roads are maintained to control weeds, but weedy species are present at a greater frequency here than on the disked portion of this site. The site is sparsely vegetated with weedy annual plant species, including London rocket, five-hook bassia, black mustard, seepweed, Russian thistle, Mediterranean grass, saltgrass, tamarisk, quailbush, annual weedy chenopods and annual sunflower. The adjacent lands consist of disked fields, a fallow field with a small patch of Valley Sink Scrub habitat, an expanse of Chenopod Scrub habitat, and ponding basins that are vegetated with tamarisk, seepweed, saltbush, and scattered iodine bush (*Allenrolfea occidentalis*).

There are no historical records of sensitive natural communities or special-status plant species occurring on the site (see Figures 3.4-6 A through D), but it is likely that this site was once vegetated with Valley Saltbush Scrub. No sensitive communities or special-status plant species were observed on the site during surveys, and special-status species cannot be supported on the disked portions of the site (Quad Knopf 2010 a, d). There is potential for special-status plant species to occur in adjacent native habitat to the west of the site. Special status species potentially occurring in this adjacent habitat include heartscale, Lost Hills crownscale, recurved larkspur, Kern mallow, Hoover's eriastrum, Tejon poppy, San Joaquin woollythreads, and oil neststraw. The disturbed habitat to the north of the site, which will be managed as a Movement Corridor, could also potentially support special-status plant species.

Based on a search of the CNDDB database, much of this site was once occupied by Tipton kangaroo rats (see Figures 3.4-6 A through D). However, the only Covered Species observed on the site was the western burrowing owl (Table 3.4-9)(Quad Knopf 2010a). Other Covered Species that may occasionally cross utilize the site for foraging or movement purposes include the San Joaquin kit fox, blunt-nosed leopard lizard, and Tipton kangaroo rat (Table 3.4-9). Other special-status species (e.g., western mastiff bat, white-tailed kite, and northern harrier) may occasionally fly over the site.

Site 4-S (652.5 acres)

Site 4-S has been disked on a biannual basis for weed control, and it has virtually no topographic relief. Along its margins are a few weedy species such as amaranth, but the site is otherwise devoid of vegetation. The adjacent land consists of row crop fields (onions and carrots), disked fields, fallow fields and alfalfa fields. There is a ponding basin adjacent to the southwest corner of the site. It is vegetated with thick quailbush and some tamarisk.

There are no historical records of sensitive natural communities or special-status plant species occurring on the site (see Figures 3.4-6 A through D), but it is likely that this site was once vegetated with Valley Saltbush Scrub, a sensitive natural community. Repeated disking has eliminated all native vegetation from the site removing habitat that would support special-status plant species. Similarly, intensive agricultural activities occurring on adjacent lands has eliminated habitat that would support special-status plant species from those areas.

There are no historical records of special-status wildlife species occurring on the site (see Figures 3.4-6 A through D), and no special-status species were observed on the site (Quad Knopf 2010a). Covered Species that may occasionally utilize the site for foraging or movement purposes include the San Joaquin kit fox and western burrowing owl (Table 3.4-9). Other special-status species (e.g., western mastiff bat, white-tailed kite, and Northern harrier) may occasionally fly over the site.

Site 5-S (797.2 acres)

Site 5-S has been disked on a biannual basis for weed control, and includes only sparse patches of weedy annual plants. Plants observed on this site include Bermuda grass, orchard bindweed, Johnsongrass (*Sorghum halepense*), five-hook bassia, London rocket, Russian thistle, and lamb's quarters. The adjacent lands include disked fields, an almond orchard, and an alfalfa field.

There are no historical records of sensitive natural communities or special-status plant species occurring on the site (see Figures 3.4-6 A through D), but it is likely that this site was once vegetated with Valley Saltbush Scrub. No sensitive vegetation communities or special-status plant species were observed on the site during surveys (Quad Knopf 2010a, d). Lands to the south, west, and east are cultivated and do not support special-status species. However, land to the north beyond South Lake Road, is known to support a variety of special-status species (see descriptions of lands adjacent to Sites 2-S and 3-S).

There are historical records of the Tipton kangaroo rat on the northeast portion of the site and on adjoining lands to the north (see Figures 3.4-6 A through D). No Covered Species were observed on the site, but a white-tailed kite was observed flying over the site (Table 3.4-9)(Quad Knopf 2010a). Tipton kangaroo rats are currently absent from the site, having been extirpated by the conversion of habitat through regular disking. Covered Species that may occasionally utilize the site for foraging or movement purposes include the San Joaquin kit fox and western burrowing owl (Table 3.4-9). Other special-status species (e.g., western mastiff bat, white-tailed kite, and Northern harrier) may occasionally fly over the site.

Site 6-S (304.2 acres)

Site 6-S has been repeatedly disked for weed control, with the exception of a small strip of land occurring within an existing railroad easement. The disked portion of the site includes only sparse patches of weedy annual plants, but the railroad easement is densely vegetated with London rocket, Russian thistle, five-hook bassia, and annual atriplex (*Atriplex argentea*). A canal occurring off the site along the southeastern border contains some quailbush, annual sunflower, and some scattered tamarisk. Adjoining lands include disked fields, orchards, and the native chenopod scrub habitat that occurs between sites 2-S and 3-S.

There are no historical records of sensitive natural communities or special-status plant species occurring on the site (see Figures 3.4-6 A through D), but it is likely that this site was once vegetated with Valley Saltbush Scrub. No sensitive vegetation communities or special-status plant species were observed on the site during surveys (Quad Knopf 2010a, d). However, there is some habitat within the existing railroad easement, which is outside the Solar Development Footprint, that could potentially support special-status plant species. Special status plant species could also potentially occur on adjacent lands to the north that are vegetated with disturbed saltbush scrub. Special status plant species potentially occurring on those adjacent lands include heartscale, Lost Hills crownscale, recurved larkspur, Kern mallow, Hoover's eriastrum, Tejon poppy, San Joaquin woollythreads, and oil neststraw.

There are no historical records of special-status wildlife species occurring on the site (see Figures 3.4-6 A through D). The only Covered Species observed during surveys was the western burrowing owl (see Table 3.4-9)(Quad Knopf 2010a). Other Covered Species that could occasionally make forays onto or across the site for foraging or movement purposes include the San Joaquin kit fox, Tipton kangaroo rat, and blunt-nosed leopard lizard. These species would likely come from the saltbush scrub habitat to the north. Other special-status species (e.g., western mastiff bat, white-tailed kite, and Northern harrier) may occasionally fly over the site.

Site 7-S (471.6 acres)

Site 7-S has been disked on a biannual basis for weed control, with the exception of a small strip of land occurring within existing railroad and South Lake Road easements. These easements are not within the Solar Development Footprint. The site is generally devoid of vegetation, but it does have sparse patches of weedy species including five-hook bassia, yarrow, annual sunflower, and tamarisk. These plants are common throughout the existing easements though. The site is surrounded by disked lands, orchards, and a fallow field that is vegetated with weedy species and tamarisk.

There are no historical records of sensitive natural communities or special-status plant species occurring on the site (see Figures 3.4-6 A through D), but it is likely that this site was once

vegetated with Valley Saltbush Scrub. No sensitive vegetation communities or special-status plant species were observed on the site during surveys, (Quad Knopf 2010a, d). There is potential for special-status plant species to occur within the railroad and road easements, though. Lands surrounding this site are in active agriculture or are managed by repeated disking. It is unlikely that special-status plant species occur on these adjacent lands.

There are no historical records of sensitive wildlife species occurring on the site (see Figures 3.4-6 A through D). The only Covered Species observed during surveys was the western burrowing owl (see Table 3.4-9)(Quad Knopf 2010a). The San Joaquin kit fox may occasionally make forays onto and across the project site. Other Covered Species that could potentially occur on the site include the Tipton kangaroo rat and blunt-nosed leopard lizard. These species are known to occur in native habitat to the northwest of the site. Other special-status species (e.g., western mastiff bat, white-tailed kite, and Northern harrier) may occasionally fly over the site.

Site 15-S (483.6 acres)

Site 15-S is entirely disked for weed control and is devoid of vegetation. Valley Sink Scrub, a sensitive vegetative community, occurs to the northeast of the site. The remaining surrounding lands include disked fields, alfalfa fields, asparagus fields, a vineyard, and a fallow field that is mostly vegetated with London rocket. There is also a ponding basin to the north of the site that contains tamarisk, red willow, black willow, mulefat, yarrow, quailbush, seepweed, common cattails, and Mexican milkweed.

One historical record of Comanche Point layia, a sensitive plant species, occurs in the vicinity of the site (see Figures 3.4-6 A through D). The polygon record has a non-specific one-mile radius accuracy, so the specimen may not have been located directly on the site. There are currently no sensitive vegetation communities or special-status plant species present on the site, and there is no habitat to support them (Quad Knopf 2010a, d). There is potential for special-status plant species such as Comanche Point layia to occur on adjacent lands to the north and east of the site.

Historical records indicate that this site was once occupied by the San Joaquin kit fox (see Figures 3.4-6 A through D). No Covered Species were observed on the site during the surveys, but the San Joaquin kit fox and western burrowing owl were observed on adjoining lands east of the site (Quad Knopf 2010a). These Covered Species, as well as the blunt-nosed leopard lizard, Nelson's antelope squirrel, and Tipton kangaroo rat, could occasionally utilize the site for foraging or movement purposes. Other special-status species (e.g., western mastiff bat, white-tailed kite, and Northern harrier) may occasionally fly over the site.

Movement Corridors (33.8 acres)

Although the Movement Corridors are technically included along with the acreage described within the Solar Sites, the Movement Corridors will be part of the areas managed as conservation areas. These include movement corridors that are present along the north border of site 2-S (2-M), the north and east borders of site 3-S (3-M), the south border of site 4-S (4-M), and the north border of site 7-S (7-MW and 7-ME).

The four Movement Corridors encompass 33.8 acres as described below. These areas are not within the Solar Development Footprint and will be avoided by construction activities and managed to facilitate wildlife movements in and around the solar sites. They will be protected by a conservation easement, incorporated into the conservation strategy, and protected and managed for Covered Species in perpetuity once the solar project is decommissioned.

Corridor 2-M (12.5 acres)

Movement Corridor 2-M is located along the northern border of Site 2-S. It includes an earthen berm and an existing wetland. Much of this corridor has been disked and is generally devoid of vegetation, but some scattered vegetation exists along the earthen berm. There are no sensitive vegetation communities occurring within this corridor, and it is unlikely that this area contains special-status plant species due to the routine disking and other maintenance activities that occur here. Covered Species were not observed within this corridor. Some burrows do exist along the earthen berm and the Tipton kangaroo rat might exist in very low numbers within this corridor.

Corridor 3-M (7.8 acres)

Movement Corridor 3-M is located along the north and east borders of Site 3-S. The portion of the corridor along the north border contains an irrigation canal. Portions of the corridor along the north border and the entire portion along the east border are managed by routing disking. Consequently, much of the corridor is devoid of vegetation, but the irrigation canal is more heavily vegetated. There are no sensitive vegetation communities occurring within this corridor and it is unlikely that this area contains special-status plant species. Covered Species were not observed within this corridor. Some burrows do exist along the earthen berm and the Tipton kangaroo rat might exist in very low numbers within this corridor.

Corridor 4-M (6.1 acres)

Movement Corridor 4-M is located along the south border of Site 4-S. It consists entirely of bare ground that has been subject to repeated disking. It does not contain habitat capable of supporting Covered Species, and no special-status plant species were present in the corridor.

Corridor 7-M (7.4 acres)

Movement Corridor 7-M is divided into two separate sections. One section aligns with the South Lake road easement, connecting with a railroad easement to the east (7-MW). The second section aligns with the north border of Site 7-S, connecting Site 3-C2 to Movement Corridor 4-M (7-ME). Both of these sections consist of disked lands that contain no vegetation other than sparse weedy annuals. Covered Species were not observed within this corridor. Lands adjacent to this corridor, though, are known to contain habitat that may support Covered Species.

Conservation Sites (1894.4 acres)

Existing conditions on the Conservation Sites (1-C, 3-C, 3-C2, 9-C, 10-C, and 17-C) are variable, ranging from lands that are currently disked to lands that contain native habitat and are known to currently support Covered Species. The six Conservation Sites encompass 1,894.4 acres. The sites will be placed into a permanent Conservation Easement and managed in perpetuity for the benefit of Covered Species and other special-status species. Enhancements, management actions and goals, and long-term monitoring of these lands will be conducted.

Site 1-C (656.6 acres)

Site 1-C is regularly disked for weed control, and the majority of the site contains virtually no vegetation. It is sparsely vegetated with weedy plant species, including fiddleneck, orchard bindweed, Bermuda grass, London rocket, tamarisk and quailbush. A small patch of degraded saltbush scrub habitat is located within the northeast corner of the site. There is also an old levee structure in the northwest corner of the site that is not disked, and it is vegetated with valley saltbush, quailbush, and akali goldenbush. The site historically contained freshwater shrub wetlands (NWI 2012). The area lacks hydric soils or wetland vegetation, but there are some areas with remnant characteristics of historical water flow across the site from southwest to northeast. These areas have been determined by the ACOE to be federally regulated waters that are hydrologically connected to a traditionally navigable water (per communication, Ramon Aberasturi, ACOE). Higher quality Valley Sink Scrub and saltbush scrub habitats are present on the lands adjoining the north and south perimeters. These habitats are known to contain sensitive species. The other surrounding land uses include alfalfa production, orchards, and disked fields.

There are no historical records of special-status plant species occurring on the site (see Figures 3.4-6 A through D). Past disking has eliminated all but a small portion of the saltbush scrub habitat type now restricted to the northeast corner of the site. There are no special-status plant species on the site (Quad Knopf 2010a, d). Special status plant species that might occur in the Valley Sink Scrub and saltbush scrub habitats to the north and east include heartscale, Lost Hills crownscale, recurved larkspur, Kern mallow, Hoover's eriastrum, Tejon poppy, San Joaquin woollythreads, and oil neststraw.

There are historical records of the Tipton kangaroo rat along the south portion of the site (see Figures 3.4-6 A through D). The only Covered Species observed on the site during the surveys was the Tipton kangaroo rat (Quad Knopf 2010a, b, Table 3.4-10), which was identified in the northeast corner of the site. The western burrowing owl, Nelson's antelope squirrel, and a San Joaquin kit fox skull were found in adjacent habitats. These species, as well as the blunt-nosed leopard lizard, could potentially forage on or otherwise occur as transient visitors to the site. Other special-status species (e.g., western mastiff bat, white-tailed kite, and Northern harrier) may occasionally fly over the site. The San Joaquin kit fox "Core" habitat encompasses the majority of the site, and the site is near Windwolves Preserve, which provides an east-west linkage corridor for the species (USFWS 1998).

Table 3.4-11
Existing Conditions of Maricopa Sun Solar Project's Conservation Sites and Presence of Covered Species

Site No.	Area (Acres)	Site Condition/Vegetation	Presence of Covered Species*
1-C	656.6	Fallow farmland, actively disked for weed control, little vegetation except in the northwest corner along an existing levee; mapped as NWI freshwater shrub wetlands; however, field surveys determined that the area lacks hydric soils or wetland vegetation, but ACOE determines that federal Waters are present	TKR observed on site. SJKF, NAS, and WEBO observed on adjacent lands and may be transients on site. BNLL may also be present on adjacent lands, but protocol surveys failed to locate them
3-C	80.4	Fallow farmland, actively disked for weed control, no vegetation	No Covered Species observed. Adjacent lands contain WEBO, TKR, BNLL, and possibly NAS and SJKF
3-C2	152.9	Fallow farmland which was managed for weed control in past years, but disking has not occurred in recent years; the site has partially recovered, supporting annual grasses, seepweed, and some scattered saltbush and tamarisk	WEBO observed. No TKR captured despite extensive trapping. SJKF may be a transient
9-C	180.6	83.25 acres vegetated with Atriplex scrub, the remainder is disked with no vegetation	WEBO, NAS, and TKR are known to occur on the 83.25 acre portion. BNLL and SJKF might also be present. WEBO and SJKF may be a transient on the remaining portion of this site
10-C	176.2	Fallow farmland, actively disked for weed control, no vegetation	No Covered Species were observed. The SJKF, WEBO, NAS, TKR, and BNLL are all known to occur nearby
17-C	647.7	Relatively natural state, consisting of saltbush and goldenbush dominated scrublands	No Covered Species observed. Two special-status species observed on site. WEBO, SJKF, BNLL, and NAS are known from nearby. The site is located within the "Core" area of SJKF

Site 3-C (80.4 acres)

Site 3-C has been disked on a biannual basis and is devoid of vegetation. The site was formerly in agricultural production and has been kept in a farm-ready condition by repeated disking. It is surrounded on three sides by native saltbush scrub habitat. No special-status plant species were observed on this site during surveys (Quad Knopf 2010a, d). No Covered Species were observed on this site (Quad Knopf 2010a). Lands adjacent to this site are known to contain the western burrowing owl, blunt-nosed leopard lizard, and Tipton kangaroo rat. These species along with the San Joaquin kit fox could be present as transients and could become established on the site once disking ceases. Other special-status species (e.g., western mastiff bat, white-tailed kite, and Northern harrier) may occasionally fly over the site.

Site 3-C2 (152.9 acres)

Site 3-C2 has historically been disked for weed control on a biannual basis, but it has not been disked in a number of years. This site is now vegetated with a matrix of introduced grasses, seepweed, and some scattered saltbush scrub and tamarisk. Some of the more common species include London rocket, five-hook bassia, black mustard, seepweed, Russian thistle, Mediterranean grass, saltgrass, tamarisk, quailbush, annual weedy chenopods and annual sunflower. The adjacent land consists of disked fields to the east, saltbush scrub to the south, and west, and a matrix of disturbed saltbush scrub and alkali sink habitat to the north.

There are no historical records of special-status plant species occurring on the site (see Figures 3.4-6 A through D). No sensitive vegetation communities or special-status plant species were observed on the site during the surveys (Quad Knopf 2010a, d), but they could potentially become established as site recovery proceeds. Special status plant species may already be present in adjacent native habitats to the north, south and west of the site. Special status species potentially occurring in these habitats include heartscale, Lost Hills crownscale, recurved larkspur, Kern mallow, Hoover's eriastrum, Tejon poppy, San Joaquin woollythreads, and oil neststraw.

Much of this site was historically occupied by the Tipton kangaroo rat (see Figures 3.4-6 A through D). However, no Tipton kangaroo rats were identified on the site during the surveys (Quad Knopf 2010a, e). The western burrowing owl was observed on the site. The blunt-nosed leopard lizard was observed on adjacent lands. In addition to the western burrowing owl, Covered Species that could occasionally utilize the site for foraging or movement purposes include the San Joaquin kit fox, Tipton kangaroo rat, and blunt-nosed leopard lizard.

Site 9-C (180.6 acres)

Site 9-C borders native habitat located along the California Aqueduct right-of-way, which provides a viable movement corridor for the Covered Species. The north portion of the site has been disked on a biannual basis for weed control, and is nearly devoid of vegetation. The south portion of the site supports Saltbush Scrub habitat, a sensitive vegetative community, which is dominated by saltbush with a sparse groundcover of fiddleneck and Mediterranean grass. Remnant scarring and mounding within the center of the Saltbush Scrub habitat indicates that disking and grading activities have occurred here in the past.

The land to the south of the site consists of non-native annual grassland habitat that exhibits signs of previous sheep grazing (e.g. sheep pellets, tracks, and sheep carcass). A stubble field along the east perimeter of the site contains a substantial amount of Russian thistle and some tamarisk. Almond orchards are located to the north beyond Cadet Road.

The south portion of the site is known to be occupied by the Tipton kangaroo rat, Nelson's antelope squirrel, and western burrowing owl. It is also likely to be used by the San Joaquin kit fox and the blunt-nosed leopard lizard. Any of the Covered Species could occur here. In addition, the San Joaquin kit fox "Core" habitat encompasses the majority of the site, and the site is near Windwolves Preserve, which provides an east-west linkage corridor for the species (USFWS 1998).

Site 10-C (176.2 acres)

Site 10-C is repeatedly disked for weed control and currently lacks vegetation. Irrigation standpipes and pumps are located within this site, indicating that it was used for agriculture in the past. The habitat to the south and west of the site is vegetated with Allscale saltbush, and is currently grazed by sheep. The areas to the west and southwest are used for oil production, with numerous active and inactive oil wells present. The habitat to the north of the site along the California Aqueduct right-of-way is vegetated with saltbush scrub, tamarisk, and other shrub species. The California Aqueduct right-of-way is a known corridor for a variety of special-status wildlife species. The east perimeter of the site adjoins disked fields, beyond which almond and apricot orchards are located.

This site is not known to support Covered Species, but the San Joaquin kit fox and western burrowing owl may forage on the site. The north perimeter of this site is contiguous with native habitat along the California Aqueduct right-of-way. Native habitat occurs to the west and south of the site as well. Given the relative abundance of adjoining native habitat, the site will likely recover and provide conservation benefits to Covered Species rather quickly. The San Joaquin kit fox, western burrowing owl, Nelson's antelope squirrel, blunt-nosed leopard lizard, and Tipton kangaroo rat are all expected to eventually occur here. In addition, the San Joaquin kit

fox "Core" habitat encompasses the majority of the site, and the site is near Windwolves Preserve, which provides an east-west linkage corridor for the species (USFWS 1998).

The Tipton kangaroo rat range is defined as occurring to the north and east of the California Aqueduct (Williams 1986). This has been generally accepted by the biological community and holds true except in limited instances, such as this location. The habitat on the site is suitable for the Tipton kangaroo rat because it is on the valley floor rather than on the alluvial plain of the coast or transverse range. Furthermore, *Dipodomys nitratoides* from the area are specifically identified in the CNDDB as Tipton kangaroo rats (*D. n. nitratoides*) because morphological characteristics of the population are indicative of Tipton kangaroo rats. In reality, the morphological characteristics of individuals captured from this area exhibit both Tipton kangaroo rats and short-nosed kangaroo rat (*D. n. brevinasus*) characteristics, thus providing evidence that the two species intergrade within this limited geographic area.

Site 17-C (647.7 acres)

Site 17-C is in a relatively natural state, having never been actively farmed or tilled. Vegetation on the site includes a mosaic of Chenopod Scrub and non-native grassland habitats, but the Chenopod Scrub habitat is dominant. Valley Saltbush Scrub habitat, a sensitive natural community, also occurs over a large portion of the site (see Figures 3.4-6 A through D). No Covered Species were observed on the site, but the blunt-nosed leopard lizard, San Joaquin kit fox, and Nelson's antelope squirrel have been historically recorded in the vicinity of the site and the habitat on the site could potentially support these species (Quad Knopf 2010a, e). The site does not occur within the range of the Tipton kangaroo rat. The San Joaquin kit fox "Core" habitat encompasses the western portion of the site, and the site is nearly contiguous with Windwolves Preserve, which provides an east-west linkage corridor for the species (USFWS 1998). The site does not occur within the range of the Tipton kangaroo rat.

3.5 CULTURAL RESOURCES

The following discussion provides an overview of the existing cultural resources conditions within and adjacent to the Covered Lands.

Cultural resources include archaeological, historical, architectural, and paleontological resources. Paleontological resources include vertebrate, invertebrate and plant fossils. All prehistoric human related artifacts are considered "archeological" resources and all human-related artifacts from the era of the written record are considered "historical" resources. Although there can be some cross-over between archeological and historical resources, "historical" is generally applied to artifacts dating from the start of European colonization of the region.

3.5.1 Regulatory Setting

3.5.1.1 Federal

Section 106 of the National Historic Preservation Act

Archaeological resources are protected through the National Historic Preservation Act (NHPA) of 1966, as amended (16 USC 470f), and it's implementing regulation, Protection of Historic Properties (36 CFR Part 800), the Archaeological and Historic Preservation Act of 1974, and the Archaeological Resources Protection Act of 1979. Prior to implementing an "undertaking" (e.g., issuing a Federal permit), Section 106 of the NHPA requires Federal agencies to consider the effects of the undertaking on historic properties and to afford the Advisory Council on Historic Preservation and the State Historic Preservation Officer a reasonable opportunity to comment on any undertaking that would adversely affect properties eligible for listing in the National Register of Historic Places (NRHP). As indicated in Section 101(d)(6)(A) of the NHPA, properties of traditional religious and cultural importance to a tribe are eligible for inclusion in the NRHP. Under the NHPA, a resource is considered significant if it meets the NRHP listing criteria at 36 CFR 60.4.

National Register of Historic Places

The NRHP was established by the NHPA of 1966, as "an authoritative guide to be used by Federal, State, and local governments, private groups and citizens to identify the Nation's historic resources and to indicate what properties should be considered for protection from destruction or impairment" (36 CFR 60.2). The NRHP recognizes both historical-period and prehistoric archaeological properties that are significant at the national, State, and local levels. In the context of the project, which does not involve any historical-period structures, the following NRHP criteria are given as the basis for evaluating archaeological resources.

To be eligible for listing in the NRHP, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and

objects of potential significance must meet one or more of the following four established criteria (U.S. Department of the Interior 1995):

- Are associated with events that have made a significant contribution to the broad patterns of our history;
- Are associated with the lives of persons significant in our past;
- Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- Have yielded, or may be likely to yield, information important in prehistory or history.

Unless the property possesses exceptional significance, it must be at least 50 years old to be eligible for NRHP listing (U.S. Department of the Interior 1995).

In addition to meeting the criteria of significance, a property must have integrity. Integrity is defined as "the ability of a property to convey its significance" (U.S. Department of the Interior 1995). The NRHP recognizes seven qualities that, in various combinations, define integrity. To retain historic integrity a property must possess several, and usually most, of these seven aspects. Thus, the retention of the specific aspects of integrity is paramount for a property to convey its significance. The seven factors that define integrity are location, design, setting, materials, workmanship, feeling, and association.

3.5.1.2 State

California Register of Historic Resources

Created in 1992 and implemented in 1998, the California Register of Historic Resources (CRHR) is "an authoritative guide in California to be used by State and local agencies, private groups, and citizens to identify the State's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change." Certain properties, including those listed in or formally determined eligible for listing in the NRHP and California Historical Landmarks numbered 770 and higher are automatically included in the CRHR. Other properties recognized under the California Points of Historical Interest program, identified as significant in historic resources surveys or designated by local landmarks programs, may be nominated for inclusion in the CRHR. A resource, either an individual property or a contributor to a historic district, may be listed in the CRHR if the State Historical Resources Commission determines that it meets one or more of the following criteria, which are modeled on NRHP criteria:

- Criterion 1. It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- Criterion 2. It is associated with the lives of persons important in our past;
- Criterion 3. It embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual, or possesses high artistic values; and
- Criterion 4. It has yielded, or may be likely to yield, information important in history or prehistory.

Furthermore, under Public Resource Code (PRC) Section 4852(c), a cultural resource must retain integrity to be considered eligible for the CRHR. Specifically, it must retain sufficient character or appearance to be recognizable as a historical resource and convey reasons of significance. Integrity is evaluated with regard to retention of such factors as location, design, setting, materials, workmanship, feeling, and association. Cultural sites that have been affected by ground-disturbing activities, such as grazing and off-road vehicle use (both of which occur within the project site), often lack integrity because they have been directly damaged or removed from their original location, among other changes.

Typically, a prehistoric archaeological site in California is recommended eligible for listing in the CRHR based on its potential to yield information important in prehistory or history (criterion 4). Important information includes chronological markers such as projectile point styles or obsidian artifacts that can be subjected to dating methods or undisturbed deposits that retain their stratigraphic integrity. Sites such as these have the ability to address research questions.

CALIFORNIA STATE HISTORICAL LANDMARKS IN KERN COUNTY

Of the 78 Historic Resources located in Kern County, six are within 10 miles of the proposed Project site. These include:

FAGES-ZALVIDA CROSSING: In 1772, Don Pedro Fages, first recorded non-Indian to visit the southern San Joaquin Valley, crossed this spot on his way from San Diego to San Luis Obispo. Near this point crossed Farther Jose Maria de Zalvidea in 1806, while accompanying the Ruiz expedition in search of mission sites. This site is located on SR 166, 5.5 miles west of Mettler, near the intersections of SR 166 and State Highway 99.

JAMESON 17-24 C OIL WELL (P495): This is currently the site of the West Kern Museum in the City of Taft, located on SR 33.

FORT TAFT: The Fort is located on the northwest side of the city of Taft on SR 33.

TULAMNIU INDIAN SITE: The old Yokuts village of Tulamniu was named Buena Vista by Spanish Commander Fages in 1772. Fr. Zalvidea again recorded the site in 1806. This village was occupied for several centuries, and in 1933-34, its site was excavated by the Smithsonian Institute. This site is located 300 feet southeast of Block House #BV4, 1.1 miles north of Buena Vista Pumping Station, and 8 miles east of Taft. It is approximately two and a half miles north of a conservation site, just east of the California Aqueduct.

WELL 2-6: Near an area of small 40-and 50-barrel wells, it blew in over the derrick top on November 27, 1909, with a production of 2,000 barrels a day, and started one of the greatest oil booms California ever experienced. The well was located as a wildcat, on June 1, 1909 by Fred C. Ripley. The site is 100 feet west of the Fellows Fire Station on Broadway, in the community of Fellows.

LAKEVIEW GUSHER: America's most spectacular gusher blew on this site on March 14, 1910. Initially 18,000 barrels per day, the flow later reached an uncontrolled peak of 100,000 barrels per day, completely destroying the derrick. This Union Oil Company well produced nine million barrels of oil in 18 months. The site is approximately two miles west of two of the conservation sites, and approximately one and one half miles north of Maricopa on Petroleum Club Road.

3.5.1.3 Local

Kern County General Plan

The Kern County General Plan includes the following goals and policies applicable to the project:

Chapter 1. Land Use, Open Space, and Conservation Element

1.10.3 Archaeological, Paleontological, Cultural, and Historical Preservation (pages 66 and 67)

Policy 25. The County will promote the preservation of cultural and historic resources which provide ties with the past and constitute a heritage value to residents and visitors.

Implementation Measure K. Coordinate with the California State University, Bakersfield's Archaeology Inventory Center

Implementation Measure L. The County shall address archaeological and historical resources for discretionary projects in accordance with the California Environmental Quality Act (CEQA).

Implementation Measure M. In areas of known paleontological resources, the County should address the preservation of these resources where feasible.

3.5.2 Cultural Resources Setting

3.5.2.1 Prehistoric Setting

Prehistoric hunter-gatherers inhabited the San Joaquin Valley beginning at least 12,000 years before present (BP). To better understand long-term culture change, archaeologists have divided prehistory into three broad chronological periods. The Early Holocene spans the period from 12,000 BP to 7,000 BP and is represented by very scant archaeological evidence. The period from 7,000 BP to 4,000 BP, the Middle Holocene, is similarly poorly represented in the archaeological record of the southern San Joaquin Valley. Evidence for prehistoric land use in the region is most abundant from 4,000 BP to 150 BP (Late Holocene). Because of its richer archaeological record, the Late Holocene can be further subdivided into three distinct temporal sub-periods: Late Holocene I (4,000–2,000 BP); Late Holocene II (2,000 BP–1,100 BP); and Late Holocene III (1,100 BP–300 BP). The period from 350 BP to 150 BP is referred to as the Protohistoric and is sometimes considered within Late Holocene III (see discussion in Culleton et al. 2005:277–287).

Early Holocene (12,000 to 7,000 BP)

The available data for Early Holocene occupation of the southern San Joaquin Valley comes almost exclusively from the shores of Tulare and Buena Vista lakes. Extant evidence suggests Early Holocene hunter-gatherers were organized as small groups whose ephemeral camps left few enduring marks on the landscape. Material remains, including faunal bone, stone tools, and associated debris, indicate that resources were procured locally and lifeways were focused almost exclusively on lakes and their immediate vicinity. While the remains of extinct terrestrial big game have been recovered in the Tulare Lake and Buena Vista Lake areas, their association with prehistoric hunter-gatherers has not been clearly established. Fluted points, tools widely associated with the hunting of late Pleistocene and early Holocene terrestrial big game, are also absent in the study area.

Middle Holocene (7,000 to 4,000 BP)

The Middle Holocene is very poorly represented across the region. Sites with well-defined stratigraphy or radiocarbon dates that indicate Middle Holocene occupation of the study area are rare. Several researchers have suggested that the lack of sites is likely attributable not to an absence of prehistoric occupation but to fluctuating lake levels and geomorphological processes that have obscured Middle Holocene deposits. Material remains thought to be associated with the Middle Holocene include handstones and milling slabs, which indicate an increased reliance on the gathering of plant foods and the use of landscapes outlying the lakes and sloughs. Lakeshores appear to be used on a year-round basis to hunt game. Task-specific campsites also begin to appear near lakeshores. Topographic rises near lakes show evidence of temporary camps established by hunters to process fresh kills and to refresh tools during hunting

expeditions. From the limited evidence available, the Middle Holocene appears to be a time in which hunter-gatherers organized themselves in small task-specific groups to exploit an increasing variety of resources.

Late Holocene Period (1,400 BP to the Historic Period)

The Late Holocene period is characterized by an increase in archaeological visibility and evidence of shifting land use strategies. Following the warm, dry Middle Holocene, a period of geomorphic instability accompanied the onset of cooler, wetter conditions at the beginning of the Late Holocene. Middle Holocene subsistence and settlement systems were likely disrupted as landscape, vegetation, and fauna were fundamentally altered between 5,000 and 4,000 BP. Some researchers have argued that the Late Holocene was a period of increasing residential mobility in which entire groups moved as resources became available. Others have argued for a more detailed chronology that tracks several different economic strategies utilized throughout the Late Holocene as hunter-gatherers adapted to changing environmental conditions. A chronological framework for understanding prehistoric land use during the Late Holocene was created through the synthesis of research undertaken by several investigators in the Buena Vista Basin and the incorporation of extensive research in the Elk Hills. This is the chronology used in the following discussion.

Late Holocene I (4,000 BP to 2,000 BP)

During the Late Holocene I phase (4,000–2,000 BP) researchers argue that the Elk Hills were seasonally occupied by people who relied on a terrestrially oriented strategy that included gathering and processing seeds and obtaining game. Habitations were dispersed and were probably camps established for specific purposes on a seasonal basis. The presence of handstones and other milling implements in Buena Vista Lake indicates a focus on terrestrial resources was widespread, even in lakeshore environments. From this data, researchers argue that the proximity of Late Holocene I sites within foraging distance from lakes and sloughs was probably related to access to water rather than a reliance on lacustrine resources. In sum, Late Holocene I people appear to have been organized as regularly mobile, foraging groups with few year-round settlements.

Late Holocene II (2,000 BP to 1,100 BP)

Evidence for Late Holocene II occupation suggests possible abandonment of lakeshore environments during this time span. It is likely that prehistoric people continued a pattern of highly mobile foraging focused on the exploitation of terrestrial resources.

Late Holocene III (1,100 BP to 300 BP)

The Late Holocene III components are the most archaeologically visible in the Buena Vista Basin and elsewhere, recognizable by widespread deposits characterized by freshwater mussel shell, Olivella beads, and midden deposits. In the early part of the Medieval Climatic Anomaly, occupation of the Elk Hills was still relatively sparse. From approximately 900 BP, Culleton et al. (2005) identify a radically different use of the Elk Hills as compared to the Late Holocene I component. Exploitation of slough resources, particularly freshwater mussel, fish, and turtle, rather than terrestrial resources was the dominant activity at sites widely distributed across the north flank of the Elk Hills. Use of these sites appears to be focused on intense short-term exploitation of Buena Vista Slough. Sites along the shoreline of Buena Vista Lake take on the character of more permanent settlements as indicated by distinct cemeteries, house pits, and structural remains, as well as the development of dense shell middens. This land use pattern has been interpreted as a complementary strategy in which permanent sedentary village populations on Buena Vista Lake supported their lifeways through periodic short-term use of resources available in outlying Buena Vista Slough. This adaptation appears to have been basically consistent until the Protohistoric period, and it corresponds to ethnographic descriptions of Yokuts culture. Evidence suggests that Yokuts populations increased and by approximately 300 BP occupied the majority of the San Joaquin Valley.

3.5.2.2 Ethnographic Setting

There is no available literature to confirm that any historically known Native American settlement existed within the program area. The area is located near the homeland of the Tulumne Yokuts, an ethno-linguistic group of more than 40 autonomous, linguistically and culturally related tribelets. Ethnographic sources identify the Tulumne Yokuts as residing in the area south and west of Lake Buena Vista. There were two Tulumne settlements along the Buena Vista lakeshore, both north of the project area.

Yokuts' villages were typically located on elevated ground overlooking a slough or a lake. Dwellings were of two general types: a small, oval structure housing a single family, a series of which were arranged in a linear pattern and covered with a long continuous awning of brush wood; and a larger linear structure, housing up to ten families. Both were constructed of tule mats lain over support poles. Other structures at Yokuts villages included sunshades, windbreaks, and granaries. The Southern Valley Yokuts practiced a mixed subsistence economy based primarily on fish, waterfowl, freshwater mussels, seeds, and roots, with a much smaller emphasis on terrestrial game such as tule elk, deer, and antelope. Fish were harvested in nets dropped from tule rafts, in baskets, by spearing, by trapping in weirs, or by poisoning. Smaller game, particularly rabbits and hares, were taken in communal drives; larger game such as elk and pronghorn were sometimes shot from blinds. Smaller game and fowl were taken in snares. Waterfowl were also taken from blinds and rafts, often using decoys.

3.5.2.3 History

Early Exploration and Development

At least eight Spanish colonial expeditions traveled to the southern San Joaquin Valley. These expeditions included: 1804 Martin, 1806 Moraga–Muñoz, 1806 Zalvidea–Ruiz, 1814 Cabot, 1815 Ortega, 1816 Father Luis Antonio Martinez, 1819 Estudillo, and 1828. The area in which Bakersfield now sits was settled by homesteaders in the 1860s, but flooding destroyed these early agricultural settlements. Colonel Thomas Baker re-settled the area in 1863 and found that the land was productive once it had been drained and reclaimed. His homestead, referred to as Baker's field, became the center of the community that grew up in the area. By 1870, it had become the principal town in Kern County and was officially incorporated as a city in 1873, and became the County seat in 1874.

The San Joaquin Valley branch of the Central (now Southern) Pacific Railroad reached Kern County in 1873 and had moved through the southernmost part of the County by 1875. Interest in petroleum exploration was sparked by discoveries of oil in the Buena Vista Lake area and asphalt near McKittrick in the late 1890s. Discoveries of oil in the Elk Hills District in the early 1900s, however, created an all-out rush to develop the oilfields on the west side of the San Joaquin Valley. Major companies quickly acquired control over the westside fields and associated refining facilities. Three of the biggest oil companies in the area were Standard Oil, Southern Pacific, and Associated Oil (a cooperative of independent Kern River oil field producers).

At the same time, the U.S. Navy, concerned about the security of future oil supplies, asked the U.S. Congress to create a system of petroleum reserves in the western United States. In September 1912, President Taft issued an executive order that created Naval Petroleum Reserve No. 1 (NPR-1) from approximately 38,000 acres in the Elk Hills. NPR-2 (south of NPR-1) and NPR-3 (at Teapot Dome, Wyoming) were created in the following three years.

The development of the oil industry led to the growth of towns and cities out of oil camps. This included now largely-vanished towns such as Tupman, as well as the thriving Taft area inclusive of the communities of Taft, Maricopa, Ford City, McKittrick, Dustin Acres, Fellows, and Derby Acres. Each of these towns was principally dependent on revenues from the massive Midway-Sunset oil field, the Elk Hills oil field, and the Buena Vista oil field. The towns in this region grew during the early 20th century from oil camps composed of cheap housing and temporary structures to full-fledged towns with permanent community centers, thriving businesses, and facilities such as schools and town administrative offices. The expansion of the railroad system during the late 19th and early 20th century, required by the increasing importance of these oil fields to the nation as a whole, fed the population and economic growth. Although the train's importance has faded, sections of the once-vital track are still visible throughout the region.

3.5.3 Paleontological Setting

Paleontological resources are the mineralized (fossilized) remains of prehistoric plants and animals and the mineralized impressions (trace fossils) left as indirect evidence of the forma and activity of such organisms. These resources are located within sedimentary rocks or alluvium and are considered to be nonrenewable.

The formations of the project site can be divided into five groups: (1) late Paleozoic metamorphic rocks (Bean formation); (2) Mesozoic granitic rocks; (3) the sedimentary Winet formation; (4) Tertiary volcanic rocks; and (5) Quaternary age (past 2 million years) sedimentary deposits (old alluvial fan and recent alluvium). The metamorphic and igneous rocks have no potential for paleontological resources. However, the Quaternary alluvium and Winet formation do have potential for both vertebrate and invertebrate fossils as well as woodrat middens. Woodrat middens can contain remains of "mummified" plant materials and small vertebrate remains that can contain scientifically significant information about vegetation and climates of the past. In addition, isolated pendants of marble within the Mesozoic metamorphic rock have potential for containing solution caves that contain significant fossils.

Formations that contain vertebrate fossils are considered more sensitive because vertebrate fossils tend to be rare and fragmentary. Formations containing microfossils, plant casts, and invertebrate fossils are more common. A significant fossil deposit is a rock unit or formation that contains significant nonrenewable paleontological resources. This is defined as comprising one or more identifiable vertebrate fossils, large or small, and any associated invertebrate and plant fossils, traces, and other data that provide taphonomic, taxonomic, phylogenetic, ecologic, and stratigraphic information (ichnites and trace fossils generated by vertebrate animals such as trackways or nests and middens), which provide datable material and climatic information. This definition excludes invertebrate or botanical fossils except when present within a given vertebrate assemblage. However, invertebrate and botanical fossils may be significant as environmental indicators associated with vertebrate fossils or may have scientific importance if they are rare or provide stratigraphic or tectonically important data.

3.5.4 Results of the Records Search

3.5.4.1 Records Search

Pacific Legacy Incorporated prepared a Cultural Resources Inventory for the Maricopa Sun Solar Complex EIR (Kern County, page 4.5-1) prepared for the project in 2010. The records search identified 17 previously recorded cultural resources (10 oil extraction facility remains, one oil camp, two sites composed of the remains of historic-era structures, one historic debris scatter, and three isolated historic artifacts) within 0.5 mile of the original project site of 6,046 acres, none of which were within the boundaries of the project. A request was submitted to the California Native American Heritage Commission (NAHC) at that time to consult their Sacred

Lands files to identify other culturally significant properties within the original project area. The NAHC reported that there were no known sensitive resources within a 0.5-mile radius of the original project-level parcels, but resources were known to have been found within the general vicinity of the project site.

3.5.4.2 Field Surveys

Pacific Legacy Incorporated conducted pedestrian archaeological surveys from March 2 through March 21, 2010, and June 29 through July 8, 2010 on the original project site. Survey results for the project included the identification of 14 cultural resources, four historic era archaeological sites, two historic structures, seven prehistoric sites, and one prehistoric isolated artifact. All the identified cultural resources within the survey area had been disturbed due to agricultural activities that have historically occurred on the project site.

The results of the field surveys are also shown in Table 3.5-1, below.

Table 3.5-1
Existing Resources Identified During Survey

Target Site Number	Archeological Site Number	Description of Finding	Resource Type
1	PL-Maricopa-01	Historic era debris scatter	Historic Era Deposit
1	PL-Maricopa-02	Large earthwork, possible oil sump	Structure
1	PL-Maricopa-04	Prehistoric freshwater mussel scatter	Shell Scatter
1	PL-Maricopa-05	Prehistoric freshwater mussel scatter	Shell Scatter
1	PL-Maricopa-06	Prehistoric freshwater mussel scatter	Shell Scatter
5	PL-Maricopa-07	Historic era debris scatter	Historic Era Deposit
3,6	PL-Maricopa-08	Remains of historic railroad	Structure
2	PL-Maricopa-12	Prehistoric freshwater mussel scatter	Shell Scatter
7	PL-Maricopa-13	Historic era debris scatter	Historic Era Deposit
16	PL-Maricopa-14	Historic era debris scatter	Historic Era Deposit
7	PL-Maricopa-15	Prehistoric freshwater mussel scatter	Shell Scatter
16	PL-MS-A-ISO-001	Prehistoric chert biface fragment	Isolated Prehistoric Artifact
5	PL-MS-B-001	Prehistoric freshwater mussel scatter	Shell Scatter
2	PL-MS-B-002	Prehistoric freshwater mussel scatter	Shell Scatter

Source: Pacific Legacy Incorporated, “Cultural Resources Inventory, Maricopa Solar Project”, July 2010

3.6 GEOLOGY AND SOILS

This section describes the geology and soils characteristics of the Covered Lands, including an overview of all applicable regulations and a description of the physical environment.

3.6.1 Regulatory Setting

3.6.1.1 Federal

Federal Soil Conservation Law (16 USGS 590a)

By Congressional policy, this law provides permanently for the control and prevention of soil erosion by preventative measures, including but not limited to engineering operations, methods of cultivation, growing of vegetation, and changes in land use.

Uniform Building Code

The Uniform Building Code includes development standards for projects to comply with appropriate seismic design criteria in the Uniform Building Code, adequate drainage facility design, and preconstruction soils and grading studies. Seismic design standards have been established to reduce many of the structural problems occurring because of major earthquakes. In 1998, the code was revised as follows:

- Upgrade the level of ground motion used in the seismic design of buildings;
- Add site amplification factors based on local soils conditions; and
- Improve the way ground motion is applied in detailed design.

There are four types of regions defined by Seismic Zones 1 through 4, with Zone 1 having the least seismic potential and Zone 4 having the highest. That portion of Kern County where the project site is located is within Seismic Zone 3 (Uniform Building Code 1997).

Clean Water Act (Erosion Control)

Formerly the Federal Water Pollution Control Act of 1972, the Clean Water Act (CWA) (33 USC 1251 et seq.) was passed with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain nonpoint source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). Projects that disturb one or more acres of land are required to obtain NPDES coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction Activity

(General Permit), Order No. 99-08-DWQ. The General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which includes Best Management Practices (BMPs) to protect stormwater runoff, including measures to prevent soil erosion.

3.6.1.2 State

Alquist-Priolo Earthquake Fault Zoning Act

In response to the severe fault rupture damage of structures by the 1971 San Fernando earthquake, the State of California enacted the Alquist-Priolo Earthquake Fault Zoning Act in 1972. This act required the State Geologist to delineate Earthquake Fault Zones along known active faults that have a relatively high potential for ground rupture. Faults that are zoned under the Alquist-Priolo Act must meet the strict definition of being "sufficiently active" and "well-defined" for inclusion as an Earthquake Fault Zones. The Earthquake Fault Zones are revised periodically, and they extend 200 to 500 feet on either side of identified fault traces. No structures for human occupancy may be built across an identified active fault trace. An area of 50 feet on either side of an active fault trace is assumed to be underlain by the fault, unless proven otherwise. Proposed construction in an Earthquake Fault Zone is permitted only following the completion of a fault location report prepared by a California Registered Geologist.

The Seismic Hazards Mapping Act of 1990

In accordance with PRC, Chapter 7.8, Division 2, the California Department of Conservation, Division of Mines and Geology [now the California Geological Survey (CGS)] is directed to delineate Seismic Hazard Zones. The purpose of the Act is to reduce the threat to public health and safety and to minimize the loss of life and property by identifying and mitigating seismic hazards, such as those associated with strong ground shaking, liquefaction, landslides, other ground failures, or other hazards caused by earthquakes. Cities, counties, and state agencies are directed to use seismic hazard zone maps developed by CGS in their land-use planning and permitting processes. In accordance with the Seismic Hazards Mapping Act, site-specific geotechnical investigations must be performed prior to permitting most urban development projects within seismic hazard zones.

The California Building Code

The California Building Standards Code establishes building requirements for construction and renovation. The most recent version of the California Building Standards Code was adopted in 2007 by the California Building Standards Commission and took effect January 1, 2008, and it is based on the National Fire Protection Association, International Association of Plumbing and Mechanical Officials, and the International Code Council's Building and Fire Codes. Included

in the California Building Standards Code are the Electrical Code, Mechanical Code, Plumbing Code, Energy Code, and Fire Code.

3.6.1.3 Local

Kern County General Plan

The Kern County General Plan establishes the following goals and policies related to geology and soils that are applicable to the project:

Chapter 1: Land Use, Conservation, and Open Space Element, 1.3 Physical and Environmental Constraints (page 12)

> Policy 1: Kern County will ensure that new developments will not be sited on land that is physically or environmentally constrained (Map Code 2.1 [Seismic Hazard], Map Code 2.2 [Landslide], Map Code 2.3 [Shallow Groundwater], Map Code 2.5 [Flood Hazard], Map Codes from 2.6 – 2.9, Map Code 2.10 [Nearby Waste Facility], and Map Code 2.11 [Burn Dump Hazard]) to support such development unless appropriate studies establish that such development will not result in unmitigated significant impact.

Chapter 4: Safety Element, 4.3 Seismically Induced Surface Rupture, Ground Shaking, and Ground Failure (Safety Element) (page 157)

> Policy 1: The County shall require development for human occupancy to be placed in a location away from an active earthquake fault in order to minimize safety concerns.

4.5 Landslides, Subsidence, Seiche, and Liquefaction (Safety Element) (page 166)

> Policy 1: Determine the liquefaction potential at sites in areas of shallow groundwater (Map Code 2.3) prior to discretionary development and determine specific mitigation to be incorporated into the foundation design, as necessary, to prevent or reduce damage from liquefaction in an earthquake; and
>
> Policy 3: Reduce potential for exposure of residential, commercial, and industrial development to hazards of landslide, land subsidence, liquefaction, and erosion.

Kern County Code of Building Regulations (Title 17 of the Ordinance Code of Kern County)

All construction in Kern County is required to conform to the Kern County Building Code (Chapter 17.08, Building Code, of the Kern County Code of Regulations). Kern County has adopted the UBC, 2007 Edition, with some modifications and amendments. The entire county is in Seismic Zone 4, a designation previously used in the UBC to denote the areas at highest risk for earthquake ground motion. California has an unreinforced masonry program that details

seismic safety requirements for Zone 4. Seismic provisions associated with Seismic Zone 4 have been adopted.

3.6.2 Environmental Setting

3.6.2.1 Geologic Setting

The Covered Lands are located in the southwestern portion of the Great Valley geomorphic province of California. The Great Valley, also known as the Central Valley, is an elongated, northwest-trending, nearly flat lowland located between the Sierra Nevada Mountains on the east and the Coast Ranges on the west. The Sacramento River drains the northern portion of the Great Valley, and the San Joaquin River drains the southern portion. The southern part of the Great Valley, where the project site is located, is also known as the San Joaquin Valley.

The Great Valley consists of the alluvial flood and delta plains of the Sacramento River, the San Joaquin River, and their tributaries. The region has persisted as a shallow marine embayment, and later as lowland, for the entire Cenozoic and the latest Mesozoic eras (from about 100 million years ago to present). The valley originated below sea level as an offshore area that was later enclosed by uplift of the Coast Ranges. Over the millennia the valley was filled by the sediments eroded from the Coast Ranges and the Sierra Nevada Mountains. In the late Cenozoic much of the Great Valley was occupied by shallow brackish and freshwater lakes.

3.6.2.2 Faults and Seismic History

A fault is a fracture in the crust of the earth along which the land on one side has moved relative to the land on the other side. Most faults are the result of repeated displacements over a long period of time. A fault trace is the line on the earth's surface defining the fault.

An active fault is defined by the State Mining and Geology Board as a fault that has had surface displacement within Holocene times (about the last 11,000 years). This definition does not mean that faults lacking evidence of surface displacement within Holocene times are necessarily inactive. A fault may be presumed to be inactive based on satisfactory geologic evidence; however, the evidence necessary to prove inactivity is sometimes difficult to obtain and locally may not exist. A potentially active fault is a fault that shows evidence of surface displacement during Quaternary time (the last 1.6 million years).

The Covered Lands are in a seismically active region that could be subjected to future seismic shaking during earthquakes generated by any one of the several surrounding active faults. There are numerous geologic fractures in the earth's crust within the San Joaquin Valley, with the San Andreas Fault being the most prominent. Other major fault lines of the San Joaquin Valley include the Garlock Fault, the Breckenridge–Kern Canyon Fault, the Pond Poso Fault, and the White Wolf Fault.

3.6.2.3 Soils

The Covered Lands include eight soil types: Calfax Loam, Cerini Loam, Excelsior Sandy Loam, Excelsior Fine Sandy Loam, Excelsior Loam, Fages Clay, Posochanet Silt Loam, Posochanet Silty Clay Loam. Each of the eight soil types are described below. A Soil Map is provided is provided in the Biological Resources section of this EIS in Figure 3.4-2.

Calflax Loam, 0 to 1 percent slopes: Calflax loam is the most commonly occurring soil, accounting for about 33 percent of the soils surveyed for all Covered Lands. Calflax loam is classified as a well-drained soil that generally occurs in fan skirt landforms formed from alluvium derived from mixed mineralogy rock and typically includes slopes ranging from 0 to 1percent. Calflax loam includes loam within the first 6 inches of the surface, underlain by about 2.5 feet of stratified clay loam, followed by a mix of sandy loam and loam soils. The soil is well drained, available water capacity is moderate, percolation rates are slow, and the threat of flooding is low. Plasticity index for Calflax loam ranges from 6–29, which indicates low to moderate plasticity.

Cerini Loam, 0 to 2 percent slopes. Cerini loam is classified as a well-drained soil and generally occurs in alluvial fans. The Cerini loam is formed from alluvium derived from granitoid rock and typically includes slopes ranging for 0 to 2 percent. Cerini loam is made of loams within the first two feet, followed by stratified fine sandy loam to silty clay loam for another two feet, underlain by another two feet of stratified sandy loam to sandy clay loam. The soil is well-drained, available water capacity is high, percolation rates are slow, and the threat of flooding is low. Plasticity index for Cerini loam ranges from 20–50, which indicates moderate to high plasticity.

Excelsior Sandy Loam, saline-sodic, 0 to 2 percent slopes: The excelsior sandy loam consists of well-drained soil and generally occurs in the southern end of the San Joaquin Valley. The soil type is formed from alluvium derived from sedimentary rock and generally includes fine sandy loam and sandy loam within the first 2 feet of soil, underlain by stratified fine sandy loam to silt loam mixed with fine sandy loam. Available water capacity for excelsior sandy loam is high, percolation rates are slow, and the threat of flooding is low. Plasticity index for Excelsior sandy loam ranges from 0–31, which is considered a moderate to high risk, and indicates low to high plasticity.

Excelsior Fine Sandy Loam, saline-sodic, 0 to 1 percent slopes: The Excelsior fine sandy loam consists of well-drained soil and generally occurs in fan skirt landforms in the southern end of the San Joaquin Valley. The soil type is formed from alluvium derived from sedimentary rock and generally includes fine sandy loam and sandy loam within the first two feet of soil, underlain by stratified fine sandy loam to silt loam mixed with fine sandy loam. Available water capacity for excelsior fine sandy loam is high, percolation rates are slow, and the threat of flooding is low.

Plasticity index for Excelsior fine sandy loam ranges from 0–33, which indicates low to high plasticity.

Excelsior Loam, saline-sodic, 0 to 2 percent slopes: The Excelsior loam consists of well-drained soil and generally occurs in the southern end of the San Joaquin Valley. The soil type is formed from alluvium derived from sedimentary rock and generally includes loam and sandy loam within the first two feet of soil, underlain by stratified fine sandy loam to silt loam. Available water capacity for Excelsior sandy loam is high, percolation rates are slow, and the threat of flooding is low. Plasticity index for Excelsior loam ranges from 0–33, which indicates low to high plasticity.

Fages Clay, 0 to 1percent slope: The Fages clay consists of moderately well-drained soils and generally is found near the south and west sides of Buena Vista Lake Bed in the south end of the San Joaquin Valley. The soil type is formed from lacustrine deposits over alluvium derived from rocks of mixed mineralogy and generally includes clays within the first four feet of soil, underlain by silty clay, loam, and clay loam. Available water capacity is very low, percolation rates are slow, and annual flooding is rare. Plasticity index for Fages clay ranges from 19–67, which indicates moderate to high plasticity.

Posochanet Silt Loam, saline-sodic, 0 to 1 percent slopes: Posochanet silt loam accounts for 33 percent of the soils in the Covered Lands. This soil type is a moderately well-drained soil and is found south of the Kern River near the edge of the Buena Vista Lake Bed in the south end of the San Joaquin Valley. The soil type is formed from alluvium derived from granitoid and/or sedimentary rock and generally includes a mixture of silt loam, silt clay loam, and clay loams. Available water capacity is moderate, annual flooding is considered rare, and percolation rates are slow. The plasticity index for Posochanet silt clay loam ranges from 20–61, which indicates moderate to high plasticity.

Posochanet Silty Clay Loam, saline-sodic, 0 to 1 percent slopes: Posochanet silty clay loam occurs in very small amounts within the Covered Lands. See the discussion for Posochanet Silt Loam, above.

3.6.2.4 Seismic Hazards

Seismic hazards pose a substantial danger to property and human safety and are present because of the risk of naturally occurring geologic events and processes affecting human development. Therefore, the hazard risk is equally influenced by the condition and location of human development as by the frequency and distribution of major geologic events. Seismic hazards present in California include ground rupture along faults, strong seismic shaking, liquefaction, ground failure, and slope failure.

3.6.2.5 Fault Rupture

Fault rupture is a seismic hazard that affects structures sited above an active fault. The hazard from fault rupture is the movement of the ground surface along a fault during an earthquake. Typically, this movement takes place during the short time of an earthquake, but it also can occur slowly over many years in a process known as creep. Most structures and underground utilities cannot accommodate the surface displacements of several inches to several feet commonly associated with fault rupture or creep.

3.6.2.6 Ground Shaking

The severity of ground shaking depends on several variables such as earthquake magnitude, epicenter distance, local geology, thickness, and seismic wave-propagation properties of unconsolidated materials, groundwater conditions, and topographic setting. Ground shaking hazards are most pronounced in areas near faults or with unconsolidated alluvium.

The most common type of damage from ground shaking is structural damage to buildings, which can range from cosmetic cracks to total collapse. The overall level of structural damage from a nearby large earthquake would likely be moderate to heavy, depending on the characteristics of the earthquake, the type of ground, and the condition of the building. Besides damage to buildings, strong ground shaking can cause severe damage from falling objects or broken utility lines. Fire and explosions are also hazards associated with strong ground shaking.

While Richter magnitude provides a useful measure of comparison between earthquakes, the moment magnitude is more widely used for scientific comparison, since it accounts for the actual energy released by the earthquake. Actual damage is due to the propagation of seismic or ground waves as a result of the earthquake, and the intensity of shaking is related to earthquake magnitude and distance as well as to the condition of underlying materials. Loose and soft materials tend to amplify long period vibrations, while hard rock can quickly attenuate them, causing little damage to overlying structures. For this reason, the Modified Mercalli Intensity (MMI) Scale provides a useful qualitative assessment of ground shaking. The MMI Scale is a 12-point scale of earthquake intensity that is based on local effects experienced by people, structures, and earth materials. Each succeeding step on the scale describes a progressively greater amount of damage at a given point of observation.

3.6.2.7 Ground Failure

Ground failure includes liquefaction and the liquefaction-induced phenomena of lateral spreading and lurching.

Liquefaction is a process by which sediments below the water table temporarily lose strength during an earthquake and behave as a viscous liquid rather than a solid. Liquefaction is restricted to certain geologic and hydrologic environments, primarily recently deposited sand and

silt in areas with high groundwater levels. The process of liquefaction involves seismic waves passing through saturated granular layers, distorting the granular structure and causing the particles to collapse. This causes the granular layer to behave temporarily as a viscous liquid rather than a solid, resulting in liquefaction.

Liquefaction can cause the soil beneath a structure to lose strength, which may result in the loss of foundation-bearing capacity, which could cause a structure to settle or tip. Liquefaction can also result in the settlement of large areas due to the densification of the liquefied deposit. Where structures are located within liquefied deposits, the liquefaction can result in the structure to rise as a result of buoyancy.

Lateral spreading is lateral ground movement, with some vertical component, as a result of liquefaction. In effect, the soil rides on top of the liquefied layer. Lateral spreading can occur on relatively flat sites with slopes less than 2 percent, under certain circumstances, and can cause ground cracking and settlement.

Lurching is the movement of the ground surface toward an open face when the soil liquefies. An open face could be a graded slope, stream bank, canal face, gully, or other similar feature.

3.6.2.8 Landslides and Slope Failure

Landslides and other slope failures form in response to the long-term geologic cycle of uplift, mass wasting, and slope disturbance. Mass wasting refers to a variety of erosional processes from gradual downhill soil creep to mudslides, debris flows, landslides, and rock fall. These processes are commonly triggered by intense precipitation. Seismic activity can also trigger landslides and rockfalls.

Often, various forms of mass wasting are grouped together as landslides, which are generally used to describe the downhill movement of rock and soil. Geologists classify landslides into several different types that reflect differences in the type of material and type of movement. The four most common types of landslides are translational, rotational, earth flow, and rock fall. Debris flows and earth flows are another type of landslide that are characterized by soil and rock particles in suspension with water and which often move with considerable speed. Debris flows often refer to flows that contain coarser soil and rock materials while earth flows frequently refer to slides that are predominantly finer materials. Mudslide is a term that appears in non-technical literature to describe a variety of shallow, rapidly moving earth flows.

3.7 HAZARDS AND HAZARDOUS MATERIALS

This section describes hazards and hazardous materials that may occur on Covered Lands, including an overview of all applicable regulations and a description of the physical environment.

3.7.1 Regulatory Setting

3.7.1.1 Federal

Federal Toxic Substances Control Act/Resource Conservation and Recovery Act/Hazardous and Solid Waste Act

In 1976, the Federal Toxic Substances Control Act (TSCA) and Resource Conservation and Recovery Act (RCRA) created a program administered by the EPA for regulation of the following: generation, transportation, treatment, storage, and disposal of hazardous waste. The RCRA was amended in 1984 by the Hazardous and Solid Waste Act (HSWA), which affirmed and extended the "cradle to grave" system of regulating hazardous waste.

Clean Water Act/Spill Prevention, Control, and Countermeasure Rule

As part of the CWA, the EPA oversees and enforces the Oil Pollution Prevention regulation contained in 40 CFR 112, which is often referred to as the "SPCC rule" because the regulations describe the requirements for facilities to prepare, amend and implement Spill Prevention, Control, and Countermeasure (SPCC) Plans. A facility is subject to SPCC regulations if a single oil storage tank has a capacity greater than 660 gallons, or the total aboveground oil storage capacity exceeds 1,320 gallons, or the underground oil storage capacity exceeds 42,000 gallons, and if, due to its location, the facility could reasonably be expected to discharge oil into or upon the "Navigable Waters" of the United States.

Toxic Substances Control Act

The Toxic Substances Control Act requires the control of new and existing chemical substances that may pose an unreasonable risk to public health or the environment. The legislation establishes provisions for testing of chemical substances, regulation of hazardous chemical substances, manufacture and processing notices, management of imminent hazards, and reporting and recordkeeping requirements.

Federal Aviation Administration

Aviation is regulated by the Federal Aviation Administration (FAA) at regional, public, private, and military airports such as Edwards Air Force Base. The FAA regulates objects affecting navigable airspace and structures taller than 200 feet according to Federal Aviation Regulation

49 CFR 77.13. The U.S. and California Departments of Transportation also require the project operator to submit FAA Form 7460-1, Notice of Proposed Construction or Alteration. According to 49 CFR 77.17, notification allows the FAA to identify potential aeronautical hazards in advance, thus preventing or minimizing any adverse impacts on the safe and efficient use of navigable airspace. Any structure that would constitute a hazard to air navigation, as defined in this FAA regulation, requires issuance of a permit from the California Department of Transportation's Aeronautics Program. The permit is not required if the FAA aeronautical study determines that the structure has no impact on air navigation.

3.7.1.2 State

Division of Oil, Gas, and Geothermal Resources (DOGGR)

The DOGGR is a California agency responsible for supervising the drilling, operation, maintenance, plugging, and abandonment of oil, gas, and geothermal wells. The DOGGR's regulatory program promotes the sensitive development of oil, natural gas, and geothermal resources in California through sound engineering practices, prevention of pollution, and implementation of public safety programs. To implement this regulatory program, DOGGR requires avoidance of building over or near plugged or abandoned oil and gas wells, or requires the remediation of wells to current DOGGR standards.

Powerline Hazard Reduction (PRC 4292)

PRC 4292 requires a 10-foot clearance of any tree branches or ground vegetation around the base of power poles carrying more than 110 kilovolts (kV). The firebreak clearances required by PRC 4292 are applicable within an imaginary cylindrical space surrounding each pole or tower on which a switch, fuse, transformer, or lightning arrester is attached and surrounding each dead-end or corner pole, unless such pole or tower is exempt from minimum clearance requirements by provisions of PRC 4296.

Powerline Clearance Required (PRC 4293)

PRC 4293 provides guidelines for line clearance including a minimum of 10 feet of vegetation clearance from any conductor operating at 110,000 volts or higher.

Minimum Clearance Provisions (14 CCR 1254)

California Code of Regulations (CCR) Title14, Section 1254 presents guidelines for minimum clearance requirements on non-exempt utility poles. The proposed project structures would be primarily exempted from the clearance requirements with the exception of cable poles and dead-end structures.

The firebreak clearances required by 14 CCR 1254 are applicable within an imaginary cylindrical space surrounding each pole or tower on which a switch, fuse, transformer, or lightning arrester is attached and surrounding each dead-end or corner pole, unless such pole or tower is exempt from minimum clearance requirements by provisions of 14 CCR 1255 or PRC 4296. The radius of the cylindroid is 3.1 meters (10 feet) measured horizontally from the outer circumference of the specified pole or tower with the height equal to the distance from the intersection of the imaginary vertical exterior surface of the cylindroid with the ground to an intersection with a horizontal plane passing through the highest point at which a conductor is attached to such pole or tower. Flammable vegetation and materials located wholly or partially within the firebreak space would be treated as follows:

- At ground level—remove flammable materials, including but not limited to, ground litter, duff, and dead or desiccated vegetation that will propagate fire;
- From 0 to 2.4 meters (0 to 8 feet) above ground level—remove flammable trash, debris, or other materials, grass, and herbaceous and brush vegetation. All limbs and foliage of living trees would be removed up to a height of 2.4 meters (8 feet); and
- From 2.4 meters (8 feet) to the horizontal plane of highest point of the conductor attachment -remove dead, diseased, or dying limbs and foliage from living sound trees and any dead, diseased, or dying trees in their entirety.

Hazardous Materials Release Response Plans and Inventory Act of 1985

Businesses that use hazardous materials are required by the Hazardous Materials Release Response Plans and Inventory Act (also known as the Business Plan Act) to prepare a plan that describes their facilities, inventories, emergency response plans, and training programs. Hazardous materials are defined as unsafe raw or unused materials that are part of a process or manufacturing step. They are not considered hazardous waste. Health concerns pertaining to the release of hazardous materials, however, are similar to those relating to hazardous waste.

Hazardous Materials Transportation

The transportation of hazardous materials within California is subject to various federal, State, and local regulations. It is illegal to transport explosives or inhalation hazards on any public highway not designated for that purpose, unless the use of the highway is required to permit delivery or the loading of such materials (California Vehicle Code, Sections 31602(b) and 32104(a)). The California Highway Patrol (CHP) designates through routes to be used for the transportation of hazardous materials. Transportation of hazardous materials is restricted to these routes except in cases where travel branching from these routes is required to deliver or receive hazardous materials

Hazardous Materials and Waste

A hazardous material is any substance that, because of its quantity, concentration, or physical or chemical properties, may pose a hazard to human health and the environment. Under Title 22 of the CCR, the term "hazardous substance" refers to both hazardous materials and hazardous wastes. Both of these are classified according to four properties: (1) toxicity, (2) ignitability, (3) corrosiveness, and (4) reactivity (22 CCR 11, Article 3). A hazardous material is defined as:

> A substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed (22 CCR 66260.10).

Various forms of hazardous materials can cause death; serious injury; long-lasting health effects; and damage to buildings, homes, and other property. Hazards to human health and the environment can occur during production, storage, transportation, use, or disposal of hazardous materials.

Hazardous Waste Control Act

The Hazardous Waste Control Act created the State hazardous waste management program, which is similar to but more stringent than the Federal RCRA program. The act is implemented by regulations contained in CCR, Title 26, which describes the following required aspects for the proper management of hazardous waste:

- Identification and classification;
- Generation and transportation;
- Design and permitting of recycling, treatment, storage, and disposal facilities;
- Treatment standards;
- Operation of facilities and staff training; and
- Closure of facilities and liability requirements.

These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of such waste. Under the Hazardous Waste Control Act and Title 26, the generator of hazardous waste must complete a manifest that accompanies the

waste from generator to transporter to the ultimate disposal location. Copies of the manifest must be filed with the California Department of Toxic Substances and Control (DTSC).

California Environmental Protection Agency

The California Environmental Protection Agency (Cal/EPA) was created in 1991, which unified California's environmental authority in a single cabinet-level agency and brought the California Air Resources Board (CARB), State Water Resources Control Board (SWRCB), Regional Water Quality Control Boards (RWQCBs), California Department of Resources Recycling and Recovery (CalRecycle, formerly Integrated Waste Management Board), Department of Toxic Substance Control (DTSC), Office of Environmental Health Hazard Assessment (OEHHA), and Department of Pesticide Regulation (DPR) under one agency. These agencies were placed within the Cal/EPA "umbrella" for the protection of human health and the environment and to ensure the coordinated deployment of State resources. Their mission is to restore, protect, and enhance the environment, to ensure public health, environmental quality, and economic vitality.

Department of Toxic Substance Control

As a department within the CalEPA, the DTSC regulates hazardous waste, cleaning up existing contamination, and finding ways to reduce the hazardous waste produced in California. The DTSC regulates hazardous waste primarily under the authority of the Federal RCRA and the California Health and Safety Code (primarily Division 20, Chapters 6.5 through 10.6, and Title 22, Division 4.5). Other laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning.

California Office of Emergency Services

In order to protect the public health and safety and the environment, the California Office of Emergency Services (OES) is responsible for establishing and managing Statewide standards for business and area plans relating to the handling and release or threatened release of hazardous materials. The OES requires that basic information on hazardous materials handled, used, stored, or disposed of (including location, type, quantity, and health risks) be available to firefighters, public safety officers, and regulatory agencies. Typically this information should be included in business plans in order to prevent or mitigate damage to the health and safety of persons and the environment from the release or threatened release of these materials into the workplace and environment. These regulations are covered under Chapter 6.95 of the California Health and Safety Code Article 1–Hazardous Materials Release Response and Inventory Program (Sections 25500 to 25520) and Article 2–Hazardous Materials Management (Sections 25531 to 25543.3).

The CCR Title 19, Public Safety, Division 2, Office of Emergency Services, Chapter 4–Hazardous Material Release Reporting, Inventory, And Response Plans, Article 4 (Minimum

Standards for Business Plans) establishes minimum Statewide standards for Hazardous Materials Business Plans (HMBPs). These plans include the following: (1) a hazardous material inventory in accordance with Sections 2729.2 to 2729.7; (2) emergency response plans and procedures in accordance with Section 2731; and (3) training program information in accordance with Section 2732. Business plans contain basic information on the location, type, quantity, and health risks of hazardous materials stored, used, or disposed of in the State. Each business must prepare a HMBP if that business uses, handles, or stores a hazardous material or an extremely hazardous material in quantities greater than or equal to the following:

- 500 pounds of a solid substance;
- 55 gallons of a liquid;
- 200 cubic feet of compressed gas;
- A hazardous compressed gas in any amount; or
- Hazardous waste in any quantity.

California Occupational Safety and Health Administration

The California Occupational Safety and Health Administration (Cal/OSHA) is the primary agency responsible for worker safety in the handling and use of chemicals in the workplace. Cal/OSHA standards are generally more stringent than federal regulations. The employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR 337-340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings.

California Highway Patrol

A valid Hazardous Materials Transportation License, issued by the CHP, is required by the laws and regulations of State of California Vehicle Code Section 3200.5 for transportation of either:

- Hazardous materials shipments for which the display of placards is required by State regulations; or
- Hazardous materials shipments of more than 500 pounds, which would require placards if shipping greater amounts in the same manner.

Additional requirements on the transportation of explosives, inhalation hazards, and radioactive materials are enforced by the CHP under the authority of the State Vehicle Code. Transportation of explosives generally requires consistency with additional rules and regulations for routing,

safe stopping distances, and inspection stops (14 CCR 6 [1][1150–1152.10]). Inhalation hazards face similar, more restrictive rules and regulations (13 CCR 6 [2.5] [1157–1157.8]). Transportation of radioactive materials is restricted to specific safe routes.

3.7.1.3 Local

Kern County General Plan

The Kern County General Plan establishes the following goals and policies that are applicable to the project:

Chapter 1: Land Use, Open Space, and Conservation Element, 1.3 Physical and Environmental Constraints (pages 11 and 12)

Goal 1: To strive to prevent loss of life, reduce personal injuries, and property damage, minimize economic and social diseconomies resulting from natural disaster by directing development to areas which are not hazardous:

Policy 1: Kern County will ensure that new developments will not be sited on land that is physically or environmentally constrained ((Map Code 2.1 (Seismic Hazard), Map Code 2.2 (Landslide), Map Code 2.3 (Shallow Groundwater), Map Code 2.5 (Flood Hazard), Map Codes from 2.6 – 2.9, Map Code 2.10 (Nearby Waste Facility), and Map Code 2.11 (Burn Dump Hazard)) to support such development unless appropriate studies establish that such development will not result in unmitigated significant impact.

Chapter 2: Circulation Element, 2.5.4 Transportation of Hazardous Materials (page 142)

Transportation-related accidents and spills of hazardous materials pose a serious threat to the traveling public and nearby sensitive land uses. Transportation of hazardous materials poses a short-term threat to public health.

Goal 1: Reduce risk to public health from transportation of hazardous materials:

Policy 1: The commercial transportation of hazardous material, identification and designation of appropriate shipping routes will be in conformance with the adopted Kern County and Incorporated Cities Hazardous Waste Management Plan; and

Policy 2: Kern County and affected cities should reduce use of County-maintained roads and city maintained streets for transportation of hazardous materials.

Chapter 4: Safety Element, 4.6 Wildland and Urban Fire (pages 172 and 173)

Policy 1: Require discretionary projects to assess impacts on emergency services and facilities;

Policy 4: Ensure that new development of properties have sufficient access for emergency vehicles and for the evacuation of residents; and

Policy 6: All discretionary projects shall comply with the adopted Fire Code and the requirements of the Fire Department.

4.9 Hazardous Materials (page 180)

Policy 1: The proposed siting or expansion of hazardous waste facilities will be in conformance with the adopted Kern County and Incorporated Cities Hazardous Waste Management Plan; and

Policy 2: Innovative technologies to manage hazardous waste streams generated in Kern County will be encouraged.

Chapter 5: Energy Element (page 195)

Goal To ensure the proper abandonment of petroleum production operations, in accordance with DOGGR requirements, when petroleum resource areas are depleted or are no longer productive, to provide for conversion of these areas to other land uses:

Policy 3: The County shall promote and encourage the safe reuse of former petroleum production lands by developments compatible with surrounding land use designations. The guidelines for site reestablishment include the following:

- Removal of oil-laden soil;
- Shaping of disturbed lands back to natural grade and the elimination of pad areas, settling ponds, and similar disturbances;
- Stabilization of sites by seedlings and plantings as appropriate;
- Other measures as may be stipulated by the State Division of Oil, Gas and Geothermal Resources; and
- Proper identification and abandonment of all oil and natural gas wells.

3.7.2 Environmental Setting

3.7.2.1 Existing Environment

The Covered Lands are located on the north and south sides of South Lake Road, approximately 5 miles east of Taft, and approximately 1.5 miles west of Interstate 5 (I-5); along Copus Road, north of Maricopa Highway (State Route [SR] 166); as well as bisected and bordered by the California Aqueduct to the west. A small number of scattered farm residences and buildings are located adjacent to and within the vicinity of the Covered Lands. There are three plugged oil

wells within the Covered Lands. The Covered Lands are in an area that is subject to periodic levels of high winds. The Covered Lands have previously been used for agricultural purposes and as such, pesticides and herbicides have been applied to the crops and soils. A privately owned and operated airport is located adjacent to the Covered Lands along Corpus Road that provides glider and skydiving opportunities for the community and surrounding region. The Covered Lands are not located in an area of severe fire risk.

This page intentionally left blank.

3.8 HYDROLOGY AND WATER QUALITY

This section describes aspects of the Covered Lands that have the potential to impact hydrology and water quality during construction and after implementation of the project. Issues such as drainage, groundwater supply and recharge, water quality, water supply, and flooding are discussed.

3.8.1 Regulatory Setting

3.8.1.1 Federal

Clean Water Act

The Federal Water Pollution Control Act, also known as the Clean Water Act,(CWA) is the principal statute governing water quality. Section 402 of the CWA mandates that certain types of construction activity comply with the requirements of National Pollutant Discharge Elimination System (NPDES) stormwater program. The Phase II Rule, issued in 1999, requires that construction activities that disturb land equal to or greater than 1 acre require permitting under the NPDES program. In California, permitting occurs under the General Permit for Stormwater Discharges Associated with Construction Activity, issued to the State Water Resources Control Board (SWRCB) and implemented and enforced by the nine Regional Water Quality Control Boards (RWQCBs). The project site is within the boundaries of the Central Valley RWQCB. See NPDES, below, for additional discussion.

Federal Emergency Management Agency (FEMA)

Floodplain zones are determined by the Federal Emergency Management Agency (FEMA) and used to create Flood Insurance Rate Maps designating flood areas. These tools assist cities in mitigating flooding hazards through land use planning and building permit requirements. To address the need for insurance to cover flooding issues, FEMA administers the National Flood Insurance Administration (NFIA) program. The NFIA program provides federal flood insurance and federally financed loans for property owners in flood prone areas. The 100-year floodplain is the area that has a statistical probability of being flooded every 100 years. To qualify for federal flood insurance, a City must identify flood hazard areas and implement a system of protective controls.

3.8.1.2 State

Department of Water Resources

The California Department of Water Resources' (DWR) major responsibilities include preparing and updating the California Water Plan to guide development and management of the State's water resources; planning, designing, constructing, operating, and maintaining the State Water

Resources Development System; regulating dams; providing flood protection; assisting in emergency management to safeguard life and property; educating the public; and serving local water needs by providing technical assistance. In addition, DWR cooperates with local agencies on water resources investigations; supports watershed and river restoration programs; encourages water conservation; explores conjunctive use of ground and surface water; facilitates voluntary water transfers; and, when needed, operates a State drought water bank.

Porter-Cologne Water Quality Control Act

The State's Porter-Cologne Water Quality Control Act outlines the responsibilities of the RWQCB, and the procedures for coordinating with the State Water Quality Control Board (SWQCB) to meet federal CWA standards. The Porter-Cologne Act established the responsibilities and authorities of the nine RWQCBs, which include preparing water quality plans for areas in the region, identifying water quality objectives, and issuing NPDES permits and Waste Discharge Requirements. Water quality objectives are defined as limits or levels of water quality constituents and characteristics established for reasonable protection of beneficial uses or prevention of nuisance. The Porter-Cologne Act was later amended to provide the authority delegated from the EPA to issue NPDES permits.

STATE WATER RESOURCES CONTROL BOARD AND NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

The CWA requires local jurisdictions to address the problems of pollutants in stormwater runoff from development. The CWA provides for the control of the discharge of any pollutant into navigable waters from any point sources. To regulate point source pollution, the CWA provides a provision to allow the EPA to issue NPDES permits. The SWRCB is responsible for implementing the CWA and does so through issuing NPDES permits to cities and counties through regional water quality control boards. Section 402(p) of the CWA establishes a framework for regulating municipal and industrial stormwater discharges under the NPDES program, and requires controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and systems, design and engineering methods.

Federal regulations allow two permitting options for storm water discharges, individual permits and general permits. The SWRCB elected to adopt a statewide general permit (Water Quality Order No. 2003-0004-DWQ) for Municipal Separate Storm Sewer System (MS4s) covered under the CWA to efficiently regulate numerous storm water discharges under a single permit. Permit applicants must meet the requirements in Provision D of the General Permit, which requires development and implementation of a Storm Water Management Plan (SWMP) with the goal of reducing the discharge of pollutants to the maximum extent practicable.

Pursuant to the CWA, in 2001, the SWRCB issued a statewide general NPDES Permit for stormwater discharges from construction sites (NPDES No. CAS000002); it was updated in 2010. Under this Statewide General Construction Activity permit, discharges of stormwater from construction sites with a disturbed area of one or more acres are required to either obtain individual NPDES permits for stormwater discharges or to be covered by the General Permit. Each permit must list Best Management Practices (BMPs) to be implemented on the construction site to protect stormwater runoff and must contain a visual monitoring program, a chemical monitoring program for nonvisible pollutants to be implemented if there is a failure of BMPs; and a monitoring plan if the site discharges directly to a water body listed on the state's 303(d) list of impaired waters.

In September 2009, the SWRCB adopted a new NPDES General Permit for the stormwater discharges associated with construction and land disturbance activities (No. 2009-0009-DWQ) that, among other things, requires compliance with certain numeric effluent limitations. This General Permit became effective on July 1, 2010. It requires development of a site-specific SWPPP that specifies Best Management Practices (BMPs) that will prevent construction pollutants from contacting stormwater with the interest of keeping all products of erosion from moving offsite to receiving waters. This General Permit is implemented and enforced by the RWQCBs.

California Water Code §13260

California Water Code Section 13260 requires that any person discharging waste or proposing to discharge waste that could affect the quality of the waters of the State, other than into a community sewer system, must submit a report of waste discharge to the applicable RWQCB. Any actions related to the proposed project that would be applicable to California Water Code Section 13260 will be reported to the Central Valley RWQCB.

Water Quality

Surface water quality is subject to Federal, State, and local water quality requirements that are administered and enforced by the EPA, the SWRCB, and the California RWQCB, with cooperation from each county. The principal law governing pollution of the nation’s surface waters is the CWA. Originally enacted in 1948, it was amended in 1972 and has remained substantially the same since. The CWA consists of two major parts: provisions that authorize Federal financial assistance for municipal sewage treatment plant construction and regulatory requirements that apply to industrial and municipal dischargers. The CWA authorizes the establishment of effluent standards on an industry basis. The CWA also requires states to adopt water quality standards that “consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses.”

3.8.1.3 Local

Kern County General Plan

The Kern County General Plan includes the following goals and policies that are applicable to the project:

Chapter 1. Land Use, Open Space, and Conservation Element

1.3 Physical and Environmental Constraints (pages 12 and 13)

Policy 1. Kern County will ensure that new developments will not be sited on land that is physically or environmentally constrained (Map Code 2.1 [Seismic Hazard], Map Code 2.2 [Landslide], Map Code 2.3 [Shallow Groundwater], Map Code 2.5 [Flood Hazard], Map Codes from 2.6 – 2.9, Map Code 2.10 [Nearby Waste Facility], and Map Code 2.11 [Burn Dump Hazard]) to support such development unless appropriate studies establish that such development will not result in unmitigated significant impact.

Policy 2. In order to minimize risk to Kern County residents and their property, new development will not be permitted in hazard areas in the absence of implementing ordinances and programs. The ordinances will establish conditions, criteria and standards for the approval of development in hazard areas.

Policy 3. Zoning and other land use controls will be used to regulate and, in some instances, prohibit development in hazardous areas.

Policy 8. Encourage the preservation of the floodplain's flow conveyance capacity, especially in floodways, to be open space/passive recreation areas throughout the County.

Policy 9. Construction of structures that impede water flow in a primary floodplain will be discouraged.

Policy 10. The County will allow lands which are within flood hazard areas, other than primary floodplains, to be developed in accordance with the General Plan and Floodplain Management Ordinance, if mitigation measures are incorporated so as to ensure that the proposed development will not be hazardous within the requirements of the Safety Element (Chapter 4) of this General Plan.

Policy 11. Protect and maintain watershed integrity within Kern County.

1.9 Resources (page 57)

Policy 11. Minimize the alteration of natural drainage areas. Require development plans to include necessary mitigation to stabilize runoff and silt deposition through utilization of grading and flood protection ordinances.

1.10.6 Surface Water and Groundwater (pages 68 and 69)

Policy 34. Ensure that water quality standards are met for existing users and future development.

Policy 41. Review development proposals to ensure adequate water is available to accommodate projected growth.

Policy 43. Drainage shall conform to the Kern County Development Standards and the Grading Ordinance.

Policy 44. Discretionary projects shall analyze watershed impacts and mitigate for construction-related and urban pollutants, as well as alterations of flow patterns and introduction of impervious surfaces as required by the CEQA, to prevent the degradation of the watershed to the extent practical.

3.8.1.4 Wheeler Ridge - Maricopa Water Storage District

The Wheeler Ridge – Maricopa Water Storage District is a public agency whose jurisdiction encompasses about 147,000 acres (230 square miles) of land in Kern County, at the extreme southern end of the San Joaquin Valley south of Bakersfield. This Water district provides water supplies to about 90,000 acres of farmland within its boundaries. It was founded in 1959 for the purpose of securing a surface water supply for agricultural purposes from the Feather River Project (now the State Water Project). The supply of surface water has allowed some lands in the district not previously irrigated to be productively farmed, and eliminated the need for ground water pumping, except in drought years. As a result, the decline of ground water levels within the District has been halted, and some recovery has occurred, with ground water levels raising an average of 50 feet to 100 feet between the early 1970s and 1996.

According to the District, “Most of the District’s water supply is obtained via the California Aqueduct from the State Water Project under contract with the Kern County Water Agency. This 197,088 acre-feet supply is allocated and distributed to 72,074 acres of farm lands within the District’s Surface Water Service Area under the terms of recorded long-term agricultural water service contracts. Current District facilities can also provide temporary water service to about 18,000 acres of additional farm lands. An additional 20,000 acres of farm lands and 10,000 acres of other developed lands rely primarily on ground water supplies. Another 27,000 acres are undeveloped and…” (Wheeler Ridge – Maricopa Water Storage District, August 2013).

3.8.2 Environmental Setting

This section discusses the existing conditions relating to hydrology and water quality in the Covered Lands. The environmental setting discussion is divided into discussions of hydrology, water quality, and water supply. The Western Regional Climate Center provides quality climate data derived from stationary weather stations throughout the western United States. WRCC has developed a data set for monthly climate for the Bakersfield area (1937 to 2010); this data set is based on weather readings taken from a stationary weather station found at the Meadows Field Airport north of Bakersfield. The monthly average maximum was 98.6°F in July and the monthly average minimum was 38.5°F in January.

Typical of southern California, most of the rainfall in the Bakersfield area occurs during the period between November and April because the Gulf Stream shifts southward from northern latitudes in the wintertime. This shift creates a quasi-permanent, low-pressure zone over southern California and feeds moisture originating over the Pacific Ocean into the region. This southern shift creates the winter-wet or Mediterranean climate characteristic of southern California. However, because of its inland location and the rain shadow effect caused by the coastal mountain ranges, the Bakersfield area typically gets less rainfall during the winter than coastal areas to the west. The rain shadow effect refers to a reduction of precipitation commonly found on the leeward side of a mountain. Infrequent summer thunderstorms and showers from tropical depressions account for the remaining rainfall in the summer months. Average annual precipitation in the Bakersfield area is 6.21 inches.

3.8.2.1 Regional Surface Water Resources

Tulare Lake Basin

The Covered Lands are located in the Central Valley's Tulare Lake Basin. This essentially closed basin is situated in the topographic horseshoe formed by the Diablo and Temblor Ranges on the west, by the San Emigdio and Tehachapi Mountains on the south, and by the Sierra Nevada Mountains on the east and southeast. The Tulare Lake Basin encompasses approximately 10.5 million acres, of which approximately 3.25 million acres are in federal ownership. Valley floor lands (i.e., those having a land slope of less than 200 feet per mile) make up slightly less than half of the total basin land area. The maximum length and width of Tulare Lake Basin are about 170 miles and 140 miles, respectively. The valley floor is approximately 40 miles wide near its southern end and widens to a maximum of 90 miles. The basin is generally a closed system; it drains only to the north into the San Joaquin River Basin in years of extreme rainfall.

The Tulare Lake Basin is within the jurisdiction of the Central Valley RWQCB, which is responsible for preparing the Tulare Basin Plan.

South Valley Floor Watershed

At a local level, the Covered Lands are located in the South Valley Floor Watershed, which is the largest watershed in the Tulare Lake Basin. The watershed is hydrologically closed, except in extremely wet periods, as annual average precipitation is about 8 inches. The South Valley Floor Watershed is bounded on the north by the San Joaquin River, on the south by the Tehachapi Mountains, on the west by the Coast Ranges, and on the east by the Sierra Nevada Mountains. The South Valley Floor Watershed is relatively flat compared to surrounding watershed areas and surface water is minimal. There are no water bodies within the vicinity of the Covered Lands that are listed as impaired per the Final 2008 CWA 303(d) List of Water Quality Limited Segments.

Most water in the area is imported from other locations. The Friant-Kern Canal, the San Luis Canal/California Aqueduct System, and the Cross-Valley Canal primarily control surface hydrology. Agriculture is the primary land use type in the watershed, encompassing approximately 66 percent (3.5 million acres) of the total land area.

Topography

The topography of the Covered Lands is generally flat with little to no change in elevation, though runoff water flows north to south. The topography of the Covered Lands, coupled with very low average precipitation, results in very little natural offsite drainage. Precipitation that would cause standing water or water that flows anywhere on level ground is rare in the Bakersfield area. Because of the Covered Lands relatively flat topography and the typically low rainfall in the Bakersfield area, most of the onsite stormwater surface flows percolate into the soil on the site.

The Covered Lands are located between four watersheds, referred to as Watersheds A, B, C, and D (see Figure 3.8-1). Watershed A drains into the western portion of the Covered Lands and is formed by the Santiago Creek, Bitter Creek, Bitterwater Creek, and Cienaga Creek. Watersheds B and C drain into the central portion of the Covered Lands from the San Emigdio Mountains, located north of the site. Watershed B is formed by Santiago Creek while Watershed C is formed by the Muddy Creek and Los Lobos Creek. Watershed D drains from Tecuya Ridge and the San Emigdio Mountains in the eastern portion of the Covered Lands and is formed by the San Emigdio Creek and the Pleitito Creek.

Local Surface Water Availability

Figure 3.8-2, on the following page, depicts surface water availability in the Wheeler Ridge – Maricopa Water Storage District. Essentially all the Solar Sites have no availability.

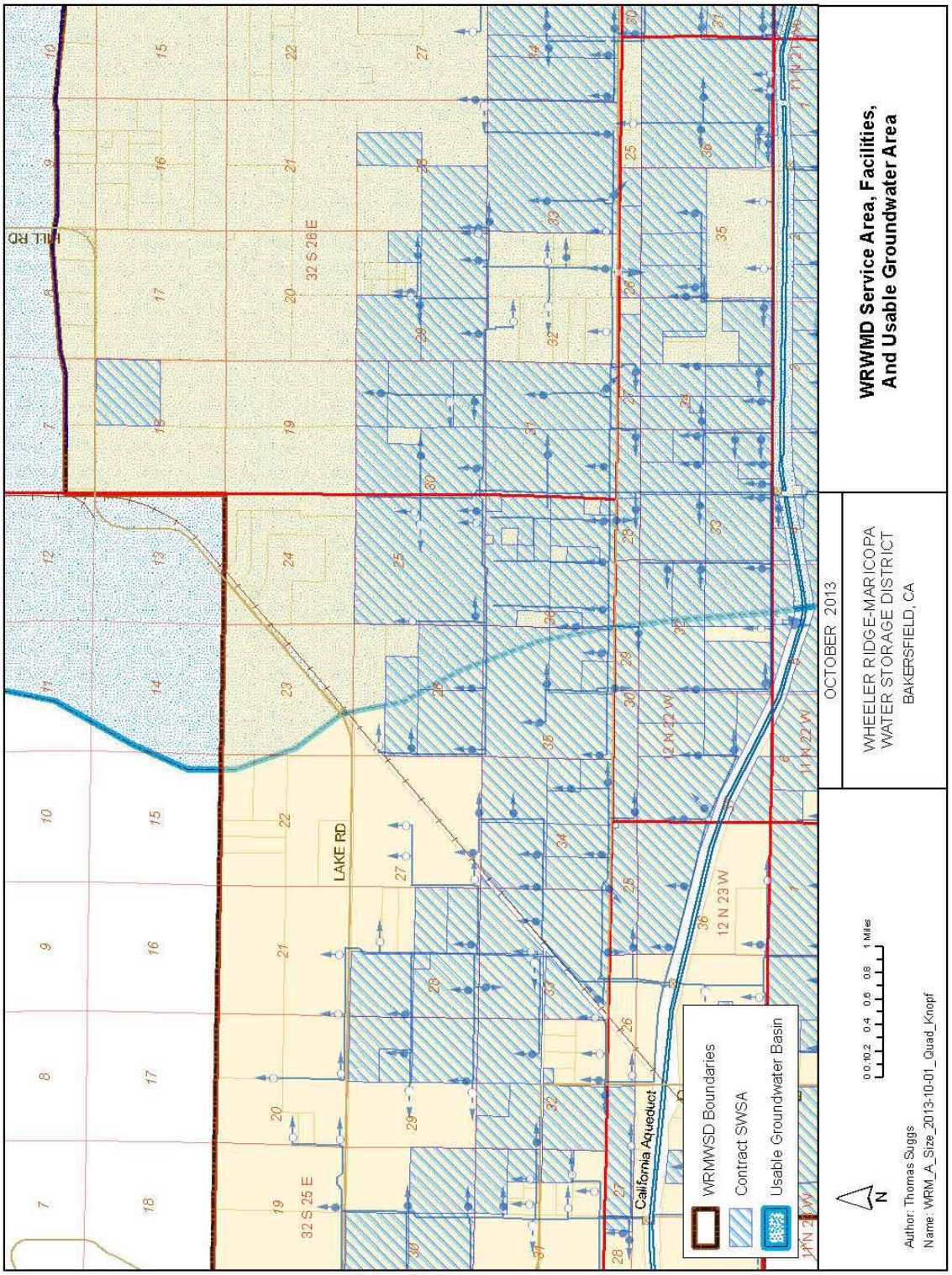
This page intentionally left blank.

Quad Knopf

WATERSHEDS
MARICOPA SUN SOLAR LLC

Figure
3.8 - 1

This page intentionally left blank.



Quad Knopf

SURFACE WATER AVAILABILITY AND GROUNDWATER QUALITY BOUNDARY

Figure 3.8 - 2

This page intentionally left blank.

3.8.2.2 Groundwater Resources

The following description of groundwater resources is based on the Department of Water Resources California's Groundwater Bulletin 118. This bulletin provides a description of the groundwater basin and its supply, water quality, and use.

Regional Groundwater Basin

The Covered Lands are in the Tulare Lake Hydrologic Region, San Joaquin Valley Groundwater Basin, and the Kern County Subbasin (Groundwater Basin No. 5 22.14). This groundwater basin is located entirely within Kern County and has a surface area of 1,950,000 acres (3,040 square miles). The aquifers are generally quite thick in the San Joaquin Valley subbasins with groundwater wells commonly exceeding 1,000 feet in depth. The maximum thickness of freshwater-bearing deposits (4,400 feet) occurs at the southern end of the San Joaquin Valley. The Tulare Hydrological Region supplies about 40 percent of the 10,556,000 acre-feet water demand from groundwater.

The San Joaquin Valley is surrounded on the west by the Coast Ranges, on the south by the San Emigdio and Tehachapi Mountains, on the east by the Sierra Nevada Mountains, and on the north by the Sacramento-San Joaquin Delta and Sacramento Valley. The northern portion of the San Joaquin Valley drains toward the delta via the San Joaquin River and its tributaries: the Fresno, Merced, Tuolumne, and Stanislaus Rivers. The southern portion of the valley is internally drained by the Kings, Kaweah, Tule, and Kern Rivers that flow into the Tulare drainage basin, including the beds of the former Tulare, Buena Vista, and Kern Lakes. The San Joaquin Valley is a structural trough up to 200 miles long and 70 miles wide filled with up to 32,000 feet of marine and continental sediments deposited during periodic inundation by the Pacific Ocean and by erosion of the surrounding mountains.

Located within the San Joaquin Valley Groundwater Basin, the Kern County Subbasin is bounded on the north by the Kern County line and the Tule Groundwater Subbasin, on the east and southeast by granitic bedrock of the Sierra Nevada foothills and Tehachapi Mountains, and on the southwest and west by the marine sediments of the San Emigdio Mountains and Coast Ranges.

Water quality degradation has been observed in many wells in Kern County. Groundwater contamination in the area includes nitrates, ethylene dibromide (EDB), and dibromochloropropane (DBCP). As a result of the historical use of the area for cultivated agriculture, a number of groundwater contaminants have been introduced over a period of years. In many cases, recent efforts to limit such discharge have led to a reduction or complete cessation of new sources of contamination. Many uses, however, continue to contribute significant quantities of contaminants to the groundwater.

Three principal sources for ongoing groundwater contamination exist within the subbasin: septic systems, cultivated agriculture, and contaminants resulting from petroleum industry activities. By design, septic systems discharge nitrified effluent into soils surrounding the systems. Cultivated agriculture contributes pollutants through nitrogen fertilizer application resulting in a measurable increase in groundwater nitrates throughout the area. A past source of groundwater contamination was the application of EDB and DBCP to control crop damage.

Petroleum production and refining contributes contamination through direct application of spilled or leaked crude oil and petroleum products to the ground surface and through the use of corrosion inhibitors in the well development process. Pollutants resulting from this activity typically include hydrocarbons and phenols that have entered the subsurface soils through injection or by percolation.

Regional Groundwater Overdraft Conditions and Recharge Activities

Groundwater overdraft occurs when groundwater-pumping rates exceed recharge rates. If groundwater pumping is not controlled, the groundwater table could be lowered to a depth where its use is not economical. Extended overdraft situations also raise the possibility of physical damage to aquifers through subsidence, where the aquifer collapses on itself as a result of insufficient pressure in its pore space.

Kern County is a semi-arid region that relies on its water supply for its farming and other activities. The goal for water resource management in the area is to reach a condition of “safe yield” where the amount of water pumped from the basin is less than or equal to recharge in the basin.

Overdraft conditions have existed in the County and in the worst-case scenario would lower groundwater to a depth where pumping for agricultural uses would no longer be economical. This would reduce withdrawals to balance recharge—thus achieving storage balance—but would make water available only for municipal and industrial uses that could afford the increased cost.

Water that is pumped from the local aquifer is recharged by precipitation runoff, whether in the form of direct precipitation or melted snow from the nearby Sierra Nevada Mountains. However, direct recharge (i.e., in-situ percolation) from precipitation is only a minor source of supply for the aquifers in the South Valley Floor watershed because average rainfall is only 8 inches per year. Rather, snow melt and precipitation runoff from the Sierra Nevada feeds into the Kern River, which recharges local aquifers through seepage and percolation; this is the most important method of recharge in the South Valley Floor watershed. Other sources of groundwater recharge come in the form of agricultural canal seepage and percolation, irrigation of inedible crops with reclaimed water (which percolates to the aquifer), and water spreading (a method of storing water underground for later retrieval).

Local Groundwater Quality

Areas of high Total Dissolved Solids (TDS) content are primarily located along the west side of the San Joaquin Valley and in the trough of the valley. High TDS content of west-side water is due to recharge of stream flow originating from marine sediments in the Coast Range. High TDS content in the trough of the valley is the result of concentration of salts remaining from evaporation and poor drainage. In the central and west-side portions of the valley, where the Corcoran Clay confining layer exists, water quality is generally better beneath the clay than above it. Nitrates may occur naturally or as a result of disposal of human and animal waste products and fertilizer. Areas of high nitrate concentrations are known to exist near the town of Shafter and other isolated areas in the San Joaquin Valley.

High levels of arsenic occur locally and appear to be associated with lakebed areas. Elevated arsenic levels have been reported in the Tulare Lake, Kern Lake and Buena Vista Lake bed areas. Organic contaminants can be broken into two categories, agricultural and industrial. Agricultural pesticides and herbicides have been detected throughout the valley, but primarily occur along the east side, where soil permeability is higher and depth to groundwater is shallower. The most notable agricultural contaminant is DBCP, a now-banned soil fumigant and known carcinogen once used extensively on grapes. Industrial organic contaminants include TCE, DCE, and other solvents. They are found in groundwater near airports, industrial areas, and landfills. Typical well yields in the San Joaquin Valley range from 300 gallons per minute (gpm) to 2,000 gpm with yields of 4,000 gpm possible. The average total dissolved solids content for wells in this area is 400-450 milligrams per liter (mg/L), with a range of 150-5,000 mg/L. Water with TDS levels less than 500 mg/L have generally no restrictions on agricultural uses, while water with 500-2,000 mg/L have slight to moderate restrictions. However, water that exceeds 2,500 mg/L TDS content has severe use restrictions.

Local Groundwater

Eight local-area agricultural water wells have been identified, all located about 3 miles southeast of the easternmost Covered Lands. These wells can pump between 1,000 and 2,800 gpm. Groundwater in the Covered Lands area has high total dissolved solids. Figure 3.8-2 depicts the westerly boundary of “usable groundwater” (2,000 milligrams per liter mg/l) of total dissolved solids, or less. Fifty percent of the Solar Sites lie west of that boundary. “Usable groundwater” approaching a 2,000 mg/l quality is of limited value per crop irrigation. Most crops (all fruit crops) cannot produce viable yields at such levels. As noted above, the Covered Lands are in Tulare Hydrologic region and the Kern County Subbasin. The Tulare Hydrological Region supplies about 40 percent of the 10,556,000 acre-feet water demand from groundwater and the Kern County Subbasin has a surface area of 1,950,000 acres (3,040 square miles).

Flooding/Floodplains

Due to the historic use of the area for agriculture, the Covered Lands area is relatively flat. As shown in Figure 3.4-3, portions of the Covered Lands are currently mapped by the Federal Emergency Management Agency (FEMA) in Flood Zone A, and accordingly are within 100-year flood zone (annual flood risk of 1 percent).

The Covered Lands are composed of two hydrological soils groups as categorized by the Kern County Hydrology Manual. Approximately 61.4 percent of the Covered Lands contains Soils Group B, which is characterized by having slow infiltration rates when thoroughly wetted, consisting chiefly of moderately deep to deep, moderately well to well drained soils with moderately coarse textures. These soils have a moderate rate of water transmission and are generally suitable for stormwater retention basins on a case-by-case basis. The remaining 38.6 percent of the Covered Lands area is composed of Soils Group D, which is characterized by having very slow infiltration rates when thoroughly wetted, consisting chiefly of, (1) clay soils with high swelling potential, (2) soils with a high permanent water table, (3) soils with clay pan or clay layer at or near the surface, and (4) shallow soils over nearly impervious materials. These soils have very slow water transmission and high storm runoff potential. Stormwater retention basins are not recommended for group D soils.

Storm water drainage resulting from the area's limited rainfall is principally retained on site. Minimal drainage runoff from one Solar Site is temporarily retained in a small pond (drainage basin) just outside the edge of the Site. Minimal runoff, prior to agricultural land leveling and disking, from another Site formerly drained to a plant-identified "wetlands" in a Site-adjacent, proposed, Movement Corridor.

Dam Inundation

Isabella Dam is located approximately 40 miles northeast of the city of Bakersfield and approximately 90 miles from the Covered Lands. The dam is built near a major earthquake fault. Isabella Dam is earth-filled and approximately 185 feet high and 1,725 feet long with a capacity of 570,000 acre-feet of water.

Because Isabella Dam is near an active fault, the potential for seismic activity to cause dam failure exists. If the dam fails, its entire reservoir would be released, and approximately 60 square miles of metropolitan Bakersfield would be flooded. The Kern County General Plan indicates that the chance of the dam failing entirely, with the reservoir at capacity, is equal to 1 day in 10,000 years. The Covered Lands are located outside the area of potential flooding due to inundation from dam collapse.

3.9 LAND USE AND PLANNING

This section discusses the current land uses and land use designations affecting the Covered Lands.

3.9.1 Regulatory Setting

3.9.1.1 Federal

Section 10 and Habitat Conservation Plans

The federal Endangered Species Act of 1973 (ESA) was enacted to protect sensitive animal and plant species (e.g., those listed under the ESA as threatened or endangered by extinction), in part by providing programs for their conservation. Amendments to Section 10 of the ESA in 1982 allowed non-Federal parties (i.e., private landowners and local agencies) that engage in otherwise lawful activities that are likely to result in the unintentional harm, death, or destruction of habitat ("take") of federally-listed species to obtain incidental take permits under Section 10(a)(1)(B) of the ESA. Under Section 10(a)(2)(A) of the ESA, applicants for a Section 10 permit are required to develop and submit a habitat conservation plan (HCP). HCPs are developed by project applicants and/or state and local government entities with advice and guidance from USFWS. The HCP defines the activities to be addressed, characterizes the extent to which activities may affect federally-listed species and their habitat, and then specifies measures to minimize and mitigate for impacts to the federally-listed species. In approving the 1982 amendments to the ESA, Congress also expressed that HCPs be long-term, multi-species plans that cover not only federally-listed species, but also unlisted species, as long as those species are treated as if they were federally-listed (H.R. Rep. No. 835, 97th Cong., 2d Sess. 29 (1982)). Section 10 authorizes incidental take of individuals of species' populations covered by a Section 10 permit, including those caused by disturbance of the habitat of such species, provided that a Section 10 permit has been issued.

3.9.1.2 State

Farmland Mapping and Monitoring Program

The California Department of Conservation created the Farmland Mapping and Monitoring Program (FMMP) in the 1980s as a continuation of Federal Natural Resources Conservation Service mapping efforts. Under the FMMP, State farmlands are inventoried based on soil quality, land use, availability of water, soil temperature range, flooding potential, and other factors. The Important Farmlands maps identify four agriculture listings and three additional land use designations: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, Grazing Land, Urban Land, and Other Land. Other land includes wetlands, timber/brush, borrow pits, and other uses that fit no other category.

3.9.1.3 Local

Land use and planning decisions within and adjacent to the Covered Lands are regulated by a variety of jurisdictional planning agencies and programs, including the Kern County General Plan and the Kern County Zoning Ordinance.

Kern County General Plan

Kern County adopted a General Plan in 2004 that was last amended (with an update to the text and zoning consistency matrix) in 2009. The General Plan Land Use Element identifies certain classes of land uses that are consistent with the County's planning goals and objectives throughout the area of its jurisdiction. The portions of the County that are subject to each General Plan land use designation are identified by a corresponding map code on maps that are maintained by the County. Relevant goals and policies contained within the General Plan are provided below. Figure 3.9-1 identifies the locations of the existing General Plan land use designations applicable to the Covered Lands, including the following.

Chapter 1. Land Use, Open Space, and Conservation Element

1.3 Physical and Environmental Constraints (pages 11 through 15)

Goal 1. To strive to prevent loss of life, reduce personal injuries, and property damage, minimize economic and social diseconomies resulting from natural disaster by directing development to areas which are not hazardous.

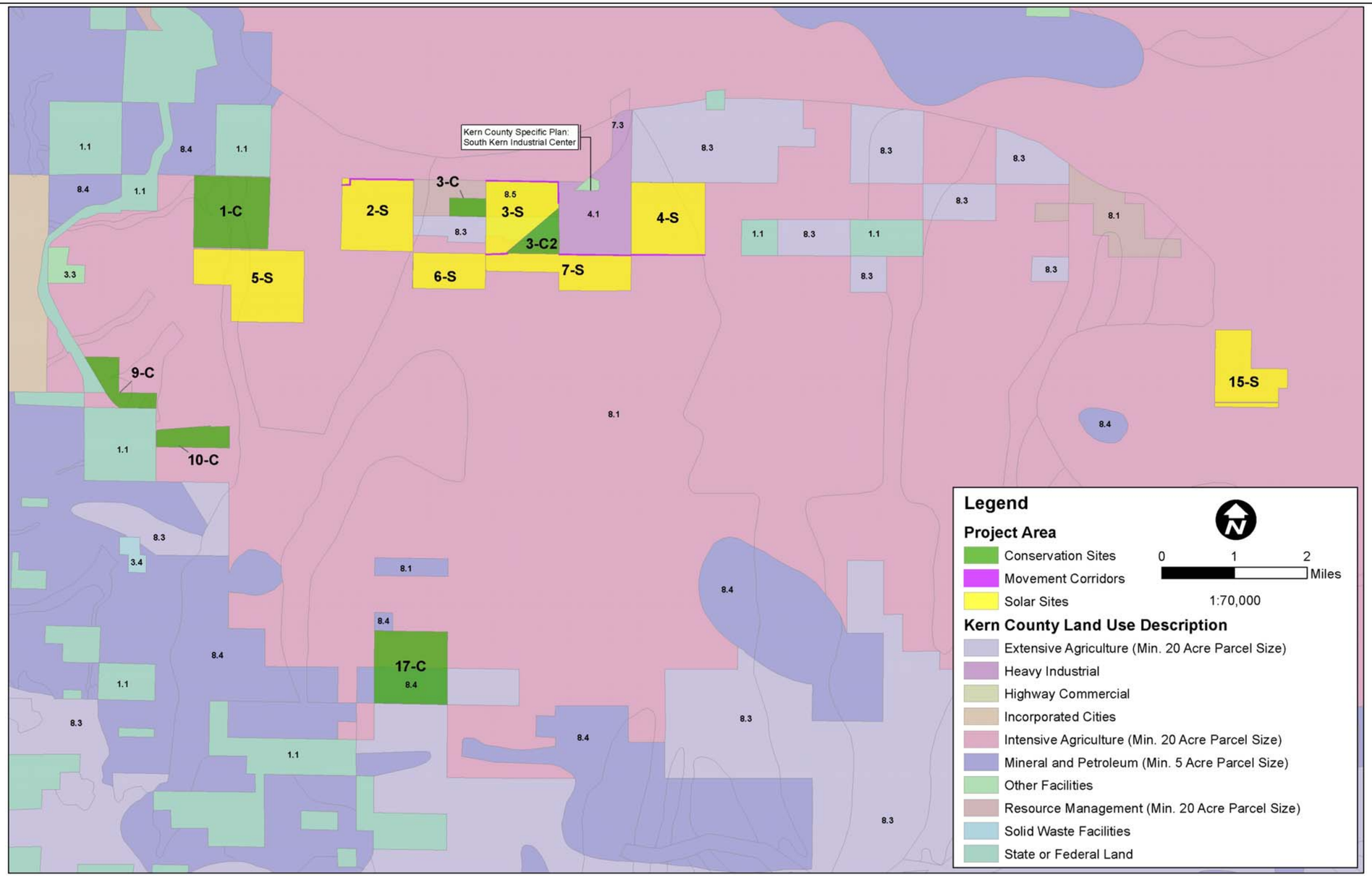
Map Code Provisions: Physical and Environmental Constraints

Shallow Groundwater (Map Code 2.3). Groundwater within 15 feet of the land surface is delineated on the Kern County Seismic Hazard Atlas.

Flood Hazard (Map Code 2.5). Special Flood Hazard Areas (Zone A), as identified on the Flood Insurance Rate Maps (FIRM) of the Federal Emergency Management Agency (FEMA) and supplemented by floodplain delineating maps that have been approved by the Kern County Engineering and Survey Services Department.

Policy 1. Kern County will ensure that new developments will not be sited on land that is physically or environmentally constrained. The County will not support such development unless appropriate studies establish that such development will not result in unmitigated significant impact.

Policy 2. In order to minimize risk to Kern County residents and their property, new development will not be permitted in hazard areas in the absence of implementing ordinances and programs. These ordinances will establish conditions, criteria, and standards for the approval of development in hazard areas.



Document Path: \\BK-SERVER-02\Projects\Projects\2009\090160.02\GIS\MXD\Revised\Fig3.9-1_KCLandUse.mxd

Quad Knopf

GENERAL PLAN LAND USE DESIGNATIONS
MARICOPA SUN SOLAR LLC

Figure
3.9 - 1

This page intentionally left blank.

Policy 3. Zoning and other land use controls will be used to regulate and, in some instances, to prohibit development in hazardous areas.

Policy 8. Encourage the preservation of the floodplain's flow conveyance capacity, especially in floodways, to be open space/passive recreation areas throughout the County.

Policy 9. Construction of structures that impede water flow in a primary floodplain will be discouraged.

Policy 10. The County will allow lands which are within flood hazard areas, other than primary floodplains, to be developed in accordance with the General Plan and Floodplain Management Ordinance, if mitigation measures are incorporated so as to ensure that the proposed development will not be hazardous within the requirements of the Safety Element of this General Plan.

Implementation Measure J. Compliance with the Floodplain Management Ordinance prior to grading or improvement of land for development or the construction, expansion, conversion or substantial improvements of a structure is required.

1.9 Resource (pages 53 through 58)

Intensive Agriculture (Map Code 8.1). Areas devoted to the production of irrigated crops or having a potential for such use. Other agricultural uses, while not directly dependent on irrigation for production, may also be consistent with the intensive agriculture designation. Minimum parcel size is 20 acres gross.

Uses shall include, but are not limited to, the following:

Irrigated cropland; orchards; vineyards; horse ranches; raising of nursery stock ornamental flowers and Christmas trees; fish farms' bee keeping' ranch and farm facilities and related uses; one single-family dwelling unit; cattle feed yards; dairies; dry land farming; livestock grazing; water storage; groundwater recharge acres; mineral; aggregate; and petroleum exploration and extraction; hunting clubs; wildlife preserves; farm labor housing; public utility uses; and Agricultural industries pursuant to provisions of the Kern County Zoning Ordinance, and land within development areas subject to significant physical constraints.

Extensive Agriculture (Map Code 8.3). Agricultural uses involving large amounts of land with relatively low value-per-acre yields, such as livestock grazing, dry land farming, and woodlands. Minimum parcel size is 20 acres gross, except lands subject to a Williamson Act Contract/Farmland Security Zone Contract, in which case the minimum parcel size shall be 80 acres gross.

Uses shall include, but are not limited to, the following:

Livestock grazing; dry land farming; ranching facilities; wildlife and botanical preserves; and timber harvesting; one single-family dwelling unit; irrigated croplands; water storage or groundwater recharge areas; mineral; aggregate; and petroleum exploration and extraction; and recreational activities, such as gun clubs and guest ranches; and land within development areas subject to significant physical constraints.

Resource Management (Map Code 8.5). Primarily open space lands containing important resource values, such as wildlife habitat, scenic values, or watershed recharge areas. These areas may be characterized by physical constraints, or may constitute an important watershed recharge area or wildlife habitat or may have value as a buffer between resource areas and urban areas. Other lands with this resource attribute are undeveloped, non-urban areas that do not warrant additional planning within the foreseeable future because of current population (or anticipated increase), marginal physical development, or no subdivision activity.

Minimum parcel size is 20 acres gross, except lands subject to a Williamson Act Contract/Farmland Security Zone Contract, in which case the minimum parcel size shall be 80 acres gross.

Uses shall include, but are not limited to, the following:

Recreational activities; livestock grazing; dry land farming; ranching facilities; wildlife and botanical preserves; and timber harvesting; one single-family dwelling unit; irrigated croplands; water storage or groundwater recharge areas; mineral; aggregate; petroleum exploration and extraction; open space and recreational uses; one single-family dwelling on legal residentially zoned lots on effective date of this General Plan; land within development areas subject to significant physical constraints; State and federal lands which have been converted to private ownership.

Goal 3. Ensure the development of resource areas minimize effects on neighboring resources lands.

Goal 4. Encourage safe and orderly energy development within the County, including research and demonstration projects, and to become actively involved in the decision and actions of other agencies as they affect energy development in Kern County.

Goal 6. Encourage alternative sources of energy, such as solar and wind energy, while protecting the environment.

Policy 1. Appropriate resource uses of all types will be encouraged as desirable and consistent interim uses in undeveloped portions of the County regardless of General Plan designation.

Policy 7. Areas designated agricultural use, which includes Class I and II, and other enhanced agricultural soils with surface delivery water systems, should be protected from incompatible residential commercial, and industrial subdivision and development activities.

Policy 9. When evaluating General Plan Amendment proposals to change a Map Code 8.1 (Intensive Agriculture) designation to accommodate residential, commercial, or industrial development, the County shall consider the following factors:

a. Approval of the proposal will not unreasonably interfere with agricultural operations on surrounding lands.

b. Necessary public services and infrastructure ware available to adequately serve the project.

c. There is a demonstrated need for the proposed project location based upon population projections, market studies and other indications.

d. The requested change in land use designation is accompanied by a zone change and other implementing land use applications for a specific development proposal.

e. The site in contiguous to properties that are developed or characterized by nonagricultural land uses.

f. Past agricultural use of the site has led to soil infertility or other soil conditions which render the property unsuitable for long term agricultural use.

g. Approval of the proposed project outweighs the need to retain the landform long term agricultural use.

h. Where adjacent or within proximity (1/2 mile) to existing urban areas, the County shall discourage agricultural conversion that is discontinuous with urban development.

Policy 11. Minimize the alteration of natural drainage areas. Require development plans to include necessary mitigation to stabilize runoff and silt deposition through utilization of grading and flood protection ordinances.

Policy 14. Emphasize conservation and development of identified mineral deposits.

Policy 16. The County will encourage development of alternative energy sources by tailoring its Zoning and Subdivision Ordinances and building standards to reflect Alternative Energy Guidelines published by the California State Energy Commission.

Policy 19. Work with other agencies to define regulatory responsibility concerning energy-related issues.

Policy 25. Discourage incompatible land use adjacent to Map code 8.4 (Mineral and Petroleum) areas.

1.10 General Provisions

1.10.1 Public Services and Facilities (pages 61 through 64)

Goal 1. Ensure that the County can accommodate anticipated future growth and development while maintaining a safe and healthful environment and a prosperous economy by preserving valuable natural resources, guiding development away from hazardous areas, and assuring the provision of adequate public services.

Policy 9. New development should pay its pro rate share of the local cost of expansions in services, facilities, and infrastructure which it generates and upon which it is dependent.

Policy 16. The developer shall assume full responsibility for costs incurred in service extension or improvements that are required to ensure the project. Cost sharing or other forms of recovery shall be available when the service extensions or improvements have a specific quantifiable regional significance.

Chapter 5. Energy Element (pages 183 through 185)

The Energy Element has three primary objectives:

- Ensuring resource management and protection;
- Establishing development standards to protect the environment, public health and safety;
- Promoting and facilitating energy development.

Goal: To assert Kern County's position as California's leading energy producer, to encourage safe and orderly energy development within the County, including research and demonstration projects, and to become actively involved in the decisions and actions of other agencies as they affect energy development in Kern County.

Policy 7. The processing of all discretionary energy project proposals shall comply with California Environmental Quality Act (CEQA) Guidelines directing that the environmental effects of a project must be taken into account as part of a project consideration.

Policy 8. The County should work closely with local, State, and federal agencies to assure that energy projects (both discretionary and ministerial) avoid or minimize direct impacts to fish, wildlife, and botanical resources, wherever practical.

Policy 9. The County should develop and implement measures which result in long term compensation for wildlife habitat, which is unavoidably damaged by energy exploration and development activities.

5.4 Electricity Resources and Generation (pages 202 and 203)

5.4.5 Solar Energy Development (page 209)

Goal: [To] encourage safe and orderly commercial solar development

Policy 3. The County should encourage solar development in the desert and valley planning regions that does not pose significant environmental or public health and safety hazards.

Policy 4. The County should encourage solar development in the desert and valley regions previously disturbed, and discourage development of energy projects on undisturbed land supporting State or federally protected plant and wildlife species.

5.4.7 Transmission Lines (page 212)

Goal: To encourage the safe and orderly development of transmission lines to access Kern County's electrical resources along routes, which minimize potential adverse environmental effects.

Policy 1. The County should encourage the development and upgrading of transmission lines and associated facilities (e.g., substations) as needed to serve Kern County residents and access the County's generating resources, insofar as transmission lines do not create significant environmental or public health and safety hazards.

Circulation Element

2.3 Highways

2.3.3 Highway Plan (pages 91 through 93)

Goal 1. To set up a simple way to protect rights-of-way. Protecting corridors for future transportation facilities is the most important transportation planning activity in any high-growth area.

Goal 2. To reserve rights-of-way to meet future needs resulting from development allowed by land use plans.

Goal 3. To maintain a minimum level of service (LOS) of D.

Policy 1. Development of roads within the County shall be in accordance with the Circulation Diagram Map. The chartered roads are usually on section and mid-section lines.

Kern County Zoning Ordinance

The Zoning Ordinance contains regulations through which the General Plan's provisions are implemented. The Covered Lands are zoned A (Exclusive Agriculture) by the Kern County Zoning Ordinance. The purpose of the Exclusive Agriculture (A) District is to designate areas suitable for agricultural uses and to prevent the encroachment of incompatible uses onto agricultural lands and the premature conversion of such lands to nonagricultural uses. Permitted land uses in this district include agriculture, commercial uses, utility lines and substations, resource extraction, energy development, and miscellaneous accessory structures related to permitted uses.

Kern County Draft Valley Floor Habitat Conservation Plan

The Draft Valley Floor HCP was designed in 2006 to conserve federally-protected species, State-protected species, and/or other species of concern. This HCP encompasses 3,100 square miles and generally includes most of the San Joaquin Valley floor portion of Kern County up to an elevation of 2,000 feet AMSL. On the west side, the HCP extends to the San Luis Obispo County line. It does not include incorporated cities, and does not provide incidental take coverage for the Kern Water Bank, Coles Levee Ecosystem Preserve, Occidental Elk Hill, Inc., or Buena Vista Naval Petroleum Reserve No. 2. The Covered Lands, as described in this EIS, are located within this HCP. The issuance of an incidental take permit by the U.S. Fish and Wildlife Service is contingent upon Kern County's approval of the HCP. Because this HCP has not been approved, an incidental take permit has not yet been issued.

3.9.2 Environmental Setting

3.9.2.1 Existing Land Uses

The Covered Lands have historically been used for agricultural production. The Covered Lands are designated under the FMMP as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Grazing Land, and a small amount of Vacant or Disturbed Land and Nonagricultural and Natural Vegetation.

Lands that are not actively farmed have been left fallow due to a lack of available water. The land in the immediate vicinity of the Covered Lands is cultivated and uncultivated farmland, industrial, residential, and a vacant mineral resource area. The Covered Lands are within agricultural preserves. The Project Area is also included within the Draft Valley Floor HCP area. However, because a separate HCP is planned for the Project Area, the landowner has opted out of the Draft Valley Floor HCP. The Covered Lands are not within the administrative boundaries of an oil field; however there are three plugged oil wells within the Covered Lands.

3.10 MINERAL RESOURCES

This section describes the existing mineral resources within the Covered Lands.

3.10.1 Regulatory Setting

Mineral resources situated on (surface) or beneath (subsurface) a tract of land can be owned. The owner of the land may have surface rights, while a different owner may have subsurface rights. When this is the case, it is referred to as "split estate" or "severed estate land." This may occur when a landowner sells his/her right to the surface land, and retains the rights to the subsurface minerals.

3.10.1.1 Federal

Bureau of Land Management

The Bureau of Land Management is responsible for managing mineral production and commercial energy on federal lands. There are no federal lands within the Project Area.

3.10.1.2 State

California Geological Survey

In 1860 the California Legislature established the Geological Survey of California, which is today the California Geological Survey. Its mission is to provide scientific products and services concerning the State's geology, seismology and mineral resources that affect the health, safety, and business interests of the State's residents. The Office of Mine Reclamation, which oversees the Surface Mining and Reclamation Act of 1975, is within this agency.

Division of Oil, Gas, and Geothermal Resources

The Division of Oil, Gas, and Geothermal Resources (DOGGR) is a State agency under the Department of Natural Resources. DOGGR is responsible for supervising the drilling, operation, maintenance, plugging and abandonment of oil, gas, and geothermal resources in California, including fracking operations. DOGGR's regulatory program promotes the sensitive development of these resources through sound engineering practices, prevention of pollution, and implementation of public safety programs. Regulations require remediation of wells to current DOGGR standards, and include the avoidance of building over or near plugged or abandoned oil and gas wells.

Special Publication 51

The State Policy for Surface Mining and Reclamation Practice (1977), also known as Special Publication 51, was prepared by the State Mining and Geology Board. The publication contains the California Surface Mining and Reclamation Policies and Procedures.

Surface Mining and Reclamation Act of 1975

The Surface Mining and Reclamation Act of 1975 (SMARA), Public Resources Code, Section 2710-2796, 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 conditions. 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 , Chapter 9, Division 2 of the Public Resources Code, requires the State Mining and Geology Board to adopt State policy for the reclamation of mined lands and the conservation of mineral resources. These policies are prepared in accordance with the Administrative Procedures Act, and are found in California Code of Regulations, Title 14, Division 2, Chapter 8, Subchapter 1.

Mineral resources addressed in this EIS are classified under SMARA. This classification, initiated by the State Geologist of mineral land classification, was intended to identify and protect mineral resources in areas of the State subject to urban development and other irreversible land uses that would preclude mineral extraction. In 1980 SMARA was updated to include classification in other, non-urban, areas that were also subject to land uses incompatible with mining activities. Mineral lands are mapped using the California Mineral Land Classification System, using a priority list to determine the classification of a mine or specific area. Priority is given to areas where future mineral resource extraction could be precluded by incompatible land use or mineral resources likely to be mined during the 50 year period following their classification. This list is maintained and updated by the State Mining and Geology Board, and is on file with Kern County.

Designation of Regionally Significant Aggregate Resources in the Bakersfield Production-Consumption Region

This publication, published by the Department of Conservation, Natural Resources Agency in November 2011 includes the designation of lands containing mineral resources of regional or statewide economic significance that are needed to meet the demands of the future. Designation is the formal recognition of significant mineral resources by the State Mining and Geology Board. The designation of regionally significant aggregate resources in the Bakersfield Production-Consumption Region of Kern County was enacted on August 30, 2011. The

Production-Consumption Region is identified as Sectors A through K. Alluvial deposits of San Emidgio Creek, located south of State Highway 166 and south and east of the Covered Lands, is the nearest designated area to the Project Area.

3.10.1.3 Local

Kern County General Plan

The Kern County General Plan includes goals, policies and implementation measures regarding mineral resources. Those applicable to the proposed project are as follows:

Chapter 1. Land Use, Open Space, and Conservation Element

1.9 Resource (pages 52 through 59)

Goal 1. To contain new development within an area large enough to meet generous projections of foreseeable need, but in locations that will not impair the economic strength derived from the petroleum, agriculture, rangeland, or mineral resources or diminish the other amenities that exist in the County.

Goal 2. To protect areas of important mineral, petroleum, and agricultural resource potential for future use.

Goal 3. To ensure that the development of resource areas minimizes effects on neighboring resource lands.

Policy 14. Emphasize conservation and development of identified mineral deposits.

Policy 17. Lands classified as MRZ-2, as designated by the State of California, should be protected from encroachment of incompatible land uses.

Policy 25. Discourage incompatible land use adjacent to Map 8.4 (Mineral and Petroleum) areas.

Implementation Measure H. Use the California Geological Survey's latest maps to locate mineral deposits until the regional and Statewide importance mineral deposits maps has been completed, as required by the Surface Mining and Reclamation Act.

Implementation Measure I. Periodically review the Zoning Ordinance to reflect new technology and energy sources, and encourage these types of uses for new development.

Implementation Measure J. The County shall continue to monitor new legislation as it relates to energy production and periodically review the General Plan and Zoning Ordinance for any required updates.

Implementation Measure K. Protect oilfields and mineral extraction areas through the use of appropriate implementing zone districts: A (Exclusive Agriculture), DI (Drilling Island), NR (Natural Resource), or PE (Petroleum Extraction).

Chapter 5. Energy Element

Reuse of Nonproductive Petroleum Resource Areas (pages 195 through 196)

The oil and natural gas reservoirs in Kern County are finite resources, which will eventually be depleted. It should be noted that recoveries from these reservoirs are only partial, and that upon abandonment a reservoir may retain a major portion of the original oil in place. Based upon oil price and available technology, both individual wells and entire oilfields have been abandoned and subsequently reactivated. It is important to provide for the productive reuse of these areas. The State Division of Oil, Gas, and Geothermal Resources (DOGGR) regulate abandonment of wells, including the removal of surface equipment.

Wells that were abandoned prior to the 1950s were abandoned in accordance to law and regulation in place at that time, however, additional requirements have subsequently been added in order to better protect fresh groundwater and protect the public from hazards at the surface. Previously abandoned wells may not be precisely at the location on record, and may be hazardous or leaking.

Goal To ensure the proper abandonment of petroleum production operations in accordance with DOGGR requirements, when petroleum resource areas are depleted or are no longer productive, to provide for conversion of these areas to other land uses.

Policy 3. The County shall promote and encourage the safe reuse of former petroleum production lands by developments compatible with surrounding land use designations. The guidelines for site reestablishment include the following:

a. Removal of oil-laden soil;

b. Shaping of disturbed lands back to natural grade and the elimination of pad areas, settling ponds, and similar disturbances;

c. Stabilization of sites by seedlings and plantings as appropriate;

d. Other measures as may be stipulated by the State Division of Oil, Gas, and Geothermal Resources; and

e. Proper identification and abandonment of all oil and natural gas wells.

The General Plan also includes Policies and Implementation measures regarding the proper disposal of petroleum wastes, and the identification and mitigation for any adverse impacts on

the environment (including air quality, water quality, and sensitive plant and animal species) from new or continued petroleum development.

3.10.2 Environmental Setting

3.10.2.1 Existing Mineral Resources

Mineral and petroleum resources are basic to Kern County's economy. Kern County has the distinction of producing more oil than any other county in California. In addition, borax, cement production, and construction aggregates constitute major economic mineral resources, and trends for increasing demand of these resources are expected to continue. Adjacent to the Covered Lands, the J.W. Brown Rock Plant, an aggregate, sand and gravel operation, is located on Gardener Field Road, approximately one mile east of the California Aqueduct.

The Kern County General Plan (2009) includes one land use designation for mineral and petroleum production, with a minimum parcel size of five acres gross. Although the Covered Lands are not within the administrative boundaries of an oil field, there are three plugged oil wells within the Covered Lands. Some lands surrounding the Covered Lands are classified as "8.4 Mineral and Petroleum." DOGGR-recognized oil fields, including Midway Sunset, Buena Vista, San Emidio Nose, Rio Viejo, and Yowlumne are in the close proximity to the Covered Lands.

Sand and gravel operations are found primarily along stream beds in alluvial fans. In Kern County, these occur along the eastern side of the San Joaquin Valley and in the foothills of the Sierra Nevada Mountains east of the Covered Lands. Alluvial fans also occur along the north flank of the San Emidio and Tehachapi Mountains to the south and east of the Covered Lands. The publication, *Designation of Regionally Significant Aggregate Resources in the Bakersfield Production-Consumption Region,* produced by the State Mining and Geology Board in 2011, includes sand and gravel operations throughout the County. The Sector Group F includes deposits of the alluvial fan of San Emigdio Creek, 25 miles southwest of Bakersfield, north and south of State Highway 166. Sector F is divided into eleven subsectors identified as F-1 through F-11. The combined area of the subsectors is 11,271 acres.

This page intentionally left blank.

3.11 PUBLIC SERVICES

This section describes public facilities including police, fire, and other public facilities, including an overview of all applicable regulations and a description of the physical environment.

3.11.1 Regulatory Setting

3.11.1.1 State

California Building Standards Code

Title 24 of the California Code of Regulations, also known as the California Building Standards Code, is a compilation of three types of building standards from three different origins:

- Building standards that have been adopted by state agencies without change from building standards contained in national model codes;
- Building standards that have been adopted and adapted from the national model code standards to meet California conditions; and,
- Building standards, authorized by the California legislature, that constitute extensive additions not covered by the model codes that have been adopted to address particular California concerns.

The California Fire Code is a component of the California Building Standards Code and contains fire safety-related building standards.

Senate Bill 267

SB 267 modifies the existing requirements to prepare a water supply assessment for projects that meet certain size thresholds. Under the new law, a photovoltaic or wind energy generation facility that demands no more than 75 acre-feet of water per year is exempt from the water supply assessment requirements. By eliminating this aspect of project analysis, this law is expected to help reduce the time and cost associated with permitting new photovoltaic and wind projects, which typically do not have high water demand.

Climate Change Response for Clean and Safe Drinking Water Act of 2014

Water Quality; Safe and Clean Drinking Water - Eligible projects include but are not limited to improving drinking water quality; wastewater treatment facilities; stormwater quality; etc.

- Up to $100 million to the SWRCB for the State Water Pollution Control Revolving Fund Small Community Grant Fund for wastewater treatment projects.
- Up to $250 million for stormwater management projects.

Ecosystem and Watershed Protection Projects - Eligible projects include projects that protect economic benefits of healthy watersheds; help watersheds adapt to climate change; restore river parkways; remove barriers to fish passage, etc.

- $500 million to fulfill state obligations for Klamath River, Salton Sea, and San Joaquin River restoration.
- $250 million to the Natural Resources Agency for allocation to State Conservancies.

Climate Change Preparedness for Regional Water Security - Eligible projects must be included in an adopted Integrated Regional Water Management plan.

- $1 billion allocated to DWR hydrologic regions for general IRWM program implementation.
- Up to $250 million for direct expenditures, grants, and loans for urban and agricultural water conservation projects.
- Up to $500 million for grants and loans for water recycling and advanced treatment technology.

Delta Sustainability - Eligible projects include Delta levee improvements, ecosystem restoration, and Delta sustainability.

Water Storage for Climate Change - Fund continuously appropriated to the CA Water Commission for public benefits associated with water storage projects. Eligible projects include:

- Calfed Reservoirs (except Shasta).
- Groundwater storage and groundwater clean-up projects.
- Local and regional surface water projects.
- Conjunctive use and reoperation projects.
- Projects that restore the capacity of existing reservoirs.

California Integrated Waste Management Act

To minimize the amount of solid waste that must be disposed of by transformation and land disposal, the State Legislature passed Assembly Bill 939, the California Integrated Waste Management Act of 1989 (AB 939), effective January 1990. The legislation requires each local jurisdiction in the State to set diversion requirements of 25 percent in 1995 and 50 percent in 2000; establishes a comprehensive statewide system of permitting, inspections, enforcement, and

maintenance for solid waste facilities; and authorizes local jurisdictions to impose fees based on the types or amounts of solid waste generated. In 2007, Senate Bill (SB) 1016, (Wiggins, Chapter 343, Statutes of 2008) introduced a new per capita disposal and goal measurement system which moves the emphasis from an estimated diversion measurement number to using an actual disposal measurement number as a per capita disposal rate factor. As such, the new disposal-based indicator (pounds per person per year) uses only two factors: a jurisdiction's population (or in some cases employment) and its disposal as reported by disposal facilities. Unincorporated Kern County's disposal rate goal is 7.6 pounds per person per year. In 2009, unincorporated Kern County's disposal rate was 5.6 pounds per person per year.

California Public Utilities Commission

The California Public Utilities Commission (CPUC) regulates privately owned telecommunication, electric, natural gas, water, railroad, rail transit, and passenger transportation companies. It is the responsibility of the CPUC to (1) assure California utility customers' safe, reliable utility service at reasonable rates; (2) protect utility customers from fraud; and (3) promote a healthy California economy. The Public Utilities Code, adopted by the legislature, defines the jurisdiction of the CPUC.

3.11.1.2 Local

Kern County General Plan

The Kern County General Plan establishes the following applicable goals and policies related to public services that are relevant to the project:

Chapter 1. Land Use, Open Space, and Conservation Element

1.4 Public Facilities and Services (page 21 and 22))

Policy 1. New discretionary development will be required to pay its proportional share of the local costs of infrastructure improvements required to service such development;

Policy 6. The County will ensure adequate fire protection to all Kern County residents; and

Policy 7. The County will ensure adequate police protection to all Kern County residents.

1.10 General Provisions (pages 61 through 64)

Goal 1. Ensure that the County can accommodate anticipated future growth and development while maintaining a safe and healthful environment and a prosperous economy by preserving viable natural resources, guiding development away from hazardous areas, and assuring the provision of adequate public services.

Policy 9. New development should pay its pro rata share of the local cost of expansions in services, facilities, and infrastructure that it generates and upon which it is dependent;

Policy 15. Prior to approval of any discretionary permit, the County shall make the finding, based on information provided by the California Environmental Quality Act (CEQA) documents, staff analysis, and the applicant, that adequate public or private services and resources are available to serve the proposed development; and

Policy 16. The developer shall assume full responsibility for costs incurred in service extension or improvements that are required to ensure the project. Cost sharing or other forms of recovery shall be available when the service extensions or improvements have a specific quantifiable regional significance.

Chapter 4. Safety Element

4.6 Wildland and Urban Fire (pages 172 through 173)

Policy 1. Require discretionary projects to assess impacts on emergency services and facilities.

Policy 3. The County will encourage the promotion of fire prevention methods to reduce service protection costs and costs to taxpayers.

Policy 4. Ensure that new development of properties have sufficient access for emergency vehicles and for the evacuation of residents.

Policy 6. All discretionary projects shall comply with the adopted Fire Code and the requirements of the Fire Department.

Capital Improvement Plan

A proposed Countywide Capital Improvement Plan (CIP), was presented to the Board of Supervisors on October 9, 2007 and adopted in 2008. This report represents the best current understanding of the new public facilities that will be needed to serve the County's projected development through 2030. The scope of services includes: parks, libraries, sheriff (public protection and investigation), fire, animal control, public health, landfill/transfer stations, and general government. Roads and sewer costs and impacts are not part of this program. The program, authorized by the Board in 2005, includes three phased components:

- Phase One: Develop a conceptual CIP for the included facility categories, assessing what additional capacity and conceptual projects are required to provide needed infrastructure for new development through 2030;

- Phase Two: Evaluate existing and potential funding sources, and outline options available as financing mechanisms, including a development fee proposal; and,
- Phase Three: Perform a fiscal (operational) analysis for use in evaluating the ongoing operating and maintenance impact of a new development on the County's general fund.

The adopted CIP includes a summary of proposed service levels for the included facilities and a conceptual list of planned projects, upon which the CIP was based.

Public Facilities Mitigation Program

The changing fiscal landscape in California during the past 30 years has steadily undercut the financial capacity of local governments to fund infrastructure. Three dominant trends stand out:

- The passage of a string of tax limitation measures, starting with Proposition 13 in 1978 and continuing through the passage of Proposition 218 in 1996;
- Declining popular support for bond measures to finance infrastructure for the next generation of residents and businesses; and,
- Steep reductions in Federal and State assistance.

Faced with these trends, the County has adopted a policy of "growth pays its own way" through use of a public facilities mitigation program. The primary policy objective of this program is to ensure that new development pays the capital costs associated with growth. In 2008, the County adopted a CIP that identifies the best current understanding of the public facilities that would be needed to accommodate new development anticipated through 2030. The CIP further identified appropriate existing facility demand standards to be used as a basis for estimating future facility needs and levels of service. The basic purpose of the CIP is to identify the facilities and infrastructure needed to serve the population in 2030.

Continued growth within the County and the associated impacts resulting from that growth have increased the demands on Countywide public services and have made it difficult to implement and fund many of the facilities identified in the CIP, and also to maintain existing public service demand standards.

The purpose of the Public Facilities Mitigation Program is to identify impacts on public services and the CEQA–required mitigation (in dollars) that would be needed to adequately address the growth impacts. The following categories would help determine the specific public needs that would be impacted by the Proposed Action:

- Sheriff patrol and investigation facilities; and,
- Fire facilities.

3.11.2 Environmental Setting

3.11.2.1 Fire Protection

The Kern County Fire Department (KCFD) provides primary fire protection to unincorporated areas of the County and on regional transportation corridors, such as Interstate 5. The KCFD protects an area that covers over 8,000 square miles and provides fire protection services for over 500,000 citizens living in the unincorporated areas of Kern County and the cities of Arvin, Delano, Maricopa, McFarland, Ridgecrest, Shafter, Taft, Tehachapi, and Wasco.

The KCFD has 46 fire stations throughout Kern County and is divided into seven battalions for operational management. Each battalion covers a large geographical area and includes between seven and nine fire stations.

Battalion 2 of the Kern County Fire Department (KCFD) provides fire suppression and emergency medical services to the program and project parcels, with Kern County Fire Station 21, located at 303 North 10th Street in the City of Taft, providing primary service. The majority of responses in the area are for medical aid, including accidents on Interstate 5.

3.11.2.2 Public Protection and Law Enforcement Services

Kern County Sheriff's Department

The Kern County Sheriff's Department provides primary police protection for the Covered Lands and surrounding areas within unincorporated Kern County.

The Sheriff's Department provides law enforcement services through the enforcement of local, State, and Federal laws. The sheriff's office is responsible for crime prevention, field patrol (ground and air), crime investigation, apprehension of offenders, regulation of noncriminal activity, and a number of related and support services. Traffic and parking control functions are also provided, with some investigation of property damage, traffic accidents, and complete investigations of all injury, fatal, intoxication, and hit-and-run accidents.

The Kern County Sheriff's Office administers police services throughout the County, including jail system management, bailiff and prisoner transportation services to the courts, search and rescue operations, coroner services, and civil processing (serving lawsuit papers). The Kern County Sheriff's Department has 1,239 sworn and civilian employees. There are 572 authorized deputy sheriff positions deployed in patrol, substations, detectives, courts services, and special investigations units. There are 336 detention deputy positions deployed in the detention facilities and 331 Sheriff's professional support staff assigned throughout the County.

The Kern County Sheriff's Office also operates the Inmate Reception Center, the Lerdo Maximum Security Facility, Lerdo Minimum/Medium Security Facility, and the Lerdo Pre-Trial Facility.

The main headquarters facility is located on 1350 Norris Road in the city of Bakersfield; 17 substations have access to all department support services. The substation closest to the Covered Lands is the Taft Substation.

California Highway Patrol

As a major Statewide law enforcement agency, the California Highway Patrol (CHP) is responsible for the management and regulation of traffic to achieve safe, lawful and efficient use of the California highways as well as provide disaster and lifesaving assistance.

The purpose of the CHP is to ensure safety and provide service to the public on the highway transportation system and to assist local government during emergencies when requested. The primary responsibility of the CHP is to patrol State highways and all County roadways, enforce traffic regulations, respond to traffic accidents, and provide service and assistance to disabled vehicles. The CHP maintains a mutual aid agreement with the Kern County Sheriff's Department.

The CHP is divided into eight different divisions. The Covered Lands are located in the CHP Central Division, which includes 15 area offices, six resident posts, and 667 uniformed officers.

The closest CHP facility is located in the Buttonwillow area at 29449 Stockdale Highway near Interstate 5.

3.11.2.3 Other Public Facilities

Public protection facilities in the County include criminal detention facilities, courthouse, coroner, 911 communications, and Kern County Sheriff's Office administrative buildings and equipment. In contrast with sheriff patrol and investigation facilities, which are used primarily to provide services in unincorporated areas of the County, public protection facilities serve residential and nonresidential development Countywide.

Emergency medical services are managed and coordinated by the Kern County Emergency Medical Services Department and include a system of services organized to provide rapid response to serious medical emergencies, including immediate medical care and patient transport to definitive care in an appropriate hospital setting. San Joaquin Hospital and Bakersfield Memorial Hospital are the two major hospitals nearest the Covered Lands and are located in the city of Bakersfield.

The nearest library is the Kern County Library Taft Branch in the city of Taft. The city of Taft and community of Maricopa each have federal post offices as well.

3.12 TRAFFIC AND TRANSPORTATION

This section describes the affected environment and regulatory setting for transportation and traffic of the Covered Lands.

3.12.1 Regulatory Setting

3.12.1.1 State

California Department of Transportation

Caltrans has jurisdiction over State highways and sets maximum load limits for trucks and safety requirements for oversized vehicles that operate on highways. The following Caltrans regulations apply to potential transportation and traffic impacts of the project:

California Vehicle Code (CVC), division 15, chapters 1 through 5 (Size, Weight, and Load): Includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways.

California Street and Highway Code §§660–711, 670–695: Requires permits from Caltrans for any roadway encroachment during truck transportation and delivery, includes regulations for the care and protection of State and County highways and provisions for the issuance of written permits, and requires permits for any load that exceeds Caltrans' weight, length, or width standards for public roadways.

3.12.1.2 Regional

Kern Council of Governments Congestion Management Plan

All urbanized areas with populations of more than 200,000 are required to have a congestion management system, program, or process. The Kern Council of Governments (Kern COG) refers to its congestion management activities as the Congestion Management Program (CMP). Kern COG has been designated as a congestion management agency.

The CMP provides a systematic process for managing congestion and information regarding (1) transportation system performance and (2) alternative strategies for alleviating congestion and enhancing the mobility of persons and goods to levels that meet State and local needs. The purpose of the CMP is to ensure that a balanced transportation system is developed that relates population growth, traffic growth, and land use decisions to transportation system LOS performance standards and air quality improvement. The program attempts to link land use, air quality, transportation, and advanced transportation technologies as integral and complementary parts of the region's plans and programs.

The purpose of defining the CMP network is to establish a system of roadways that will be monitored in relation to established level of service (LOS) standards. At a minimum, all State highways and principal arterials must be designated as part of the Congestion Management System of Highways and Roadways. Kern County has 18 designated State highways.

Kern County Regional Transportation Plan

The Regional Transportation Plan (RTP) establishes regional transportation policy for the Kern County region. The RTP focuses on achieving a coordinated and balanced multimodal transportation system, while maintaining the integrity of the existing system. The RTP includes projects located throughout the Kern County region for all forms or modes of transportation, including automobiles, transit, nonmotorized (including bicycle), passenger rail, freight and aviation facilities.

3.12.1.3 Local

Kern County General Plan

The policies, goals, and implementation measures in the Kern County General Plan for transportation applicable to the project are provided below:

Chapter 2 Circulation Element:

2.1 Introduction (page 80)

Goal 4: Kern County will plan for a reduction of environmental effects without accepting a lower quality of life in the process.

Goal 5: Maintain a minimum Level of Service (LOS) D for all roads throughout the County.

2.3.3 Highway Plan (pages 91 through 92)

Goal 1: To carry out this plan in a manner consistent with needs and standards of the County.

Goal 2: This plan proposes to improve access to Kern County using all available methods of transportation.

Goal 3: This plan sets up a simple way for protecting road right-of-way. Protecting corridors for future transportation facilities is the most important transportation planning activity in any high growth area.

Goal 4: To reserve right-of-way to meet future road needs that result from development allowed by land use plans.

Goal 5: Maintain a minimum Level of Service (LOS) D.

Policy 1: Development of roads within the County shall be in accordance with the Circulation Diagram Map. The charted roads are usually on section and midsection lines. This is because the road centerline can be determined by an existing survey.

Policy 2: This plan requires, as a minimum, construction of local road widths in areas where the traffic model estimates little growth through and beyond year 2010. Where Planning Department's growth estimates indicate more than a local road is required, expanded facilities shall be provided. The timing and scope of required facilities should be set up and implemented through the Kern County Land Division Ordinance. However, the County shall routinely protect all surveyed section lines in the Valley and Desert Regions for arterial right-of-way. The County shall routinely protect all mid-section lines for collector highways in the same regions. The only possible exceptions shall be where the County adopts special studies and where Map Code 4.1 (Accepted County Plan) areas occur. In the Mountain Region where terrain does not allow construction on surveyed section and mid-section lines, right-of-way width shall be the size shown on the diagram map. No surveyed section and mid-section "grid" will comprehensively apply to the Mountain Region.

Policy 3: This plan's road width standards are listed below. These standards do not include State highway widths that would require additional right-of-way for rail transit, bike lanes and other modes of transportation. Kern County shall consider these modifications on a case-by-case basis:

- Expressway [Four Travel Lanes] Minimum 110 foot right-of-way;
- Arterial [Major Highway] Minimum 110-foot right-of-way (County Standard 110-feet);
- Collector [Secondary Highway] Minimum 90-foot right-of-way (County Standard 90-feet);
- Commercial-Industrial Street Minimum 60-foot right-of-way (County Standard 60-feet); and,
- Local Street [Select Local Road] Minimum 60-foot right-of-way; and County Standard 60-feet.

2.3.4 Future Growth (pages 94 through 95)

Goal 1: To provide ample flexibility in this plan to allow for growth beyond the 20 year planning horizon.

Policy 2: The County should monitor development applications as they relate to traffic estimates developed for this plan. Mitigation is required if development causes affected roadways to fall below Level-of-Service (LOS) D. Utilization of the California Environmental Quality Act

(CEQA) process would help identify alternatives to or mitigation for such developments. Mitigation could involve amending the Land Use, Open Space, and Conservation Element to establish jobs/housing balance if projected trips in any traffic zone exceed trips identified for this Circulation Element. Mitigation could involve exactions to build off-site transportation facilities. These enhancements would reduce traffic congestion to an acceptable level.

Policy 4: As a condition of private development approval, developers shall build roads needed to access the existing road network. Developers shall build these roads to County standards unless improvements along State routes are necessary then roads shall be built to California Department of Transportation (Caltrans) standards. Developers shall locate these roads (width to be determined by the Circulation Plan) along centerlines shown on the circulation diagram map unless otherwise authorized by an approved Specific Plan Line. Developers may build local roads along lines other than those on the circulation diagram map. Developers would negotiate necessary easements to allow this.

Policy 5: When there is a legal lot of record, improvement of access to County, city or State roads will require funding by sources other than the County. Funding could be by starting a local benefit assessment district or, depending on the size of a project, direct development impact fees.

Policy 6: The County may accept a developer's road into the county's maintained road system. This is at Kern County's discretion. Acceptance would occur after the developer follows the above requirements. Roads are accepted into the County road system.

Chapter 4: Safety Element (page 173)

4.6 Wildland and Urban Fire

Policy 4: Ensure that new development of properties have sufficient access for emergency vehicles and for the evacuation of residents.

Kern County Airport Land Use Compatibility Plan

The Kern County Airport Land Use Compatibility Plan (ALUCP) establishes procedures and criteria to assist the County of Kern and affected incorporated cities in addressing compatibility issues for the Covered Lands regarding airports and the land uses around them.

3.12.2 Environmental Setting

The Covered Lands are located in an unincorporated, southwestern portion of Kern County, in an east–west alignment approximately 1.5 miles west of Interstate 5 (I-5) and 5 miles east of the city of Taft.

Transportation in the surrounding area is dominated by automobile traffic and conditions are characterized by a sparse roadway system stemming from SR-166 and I-5. This section discusses the existing conditions related to transportation and traffic in the area, including a general explanation of the roadways that traverse the site and the surrounding area, and a description of the existing site access.

The circulation system in the vicinity of the project is made up of a combination of State and County jurisdiction facilities. Major components of the system are discussed below in the next section.

3.12.2.1 Regional

Highways and Roadways

The Covered Lands and its vicinity are served primarily by I-5, which is a 4-lane north–south highway designated as an arterial/major highway by the Kern County General Plan Circulation Element, with an operating speed limit of 65 miles per hour (mph). I-5 is a major, multi-lane freeway that provides access for goods movement, shipping, and travel. Within the regional area, I-5 is a four-lane facility, with two lanes in each direction. This highway is under the jurisdiction of the California Department of Transportation (Caltrans) and crosses the western portion of the County, just east of the Covered Lands.

The latest 2010 traffic volume counts from the Caltrans Traffic Count Database for I-5, SR-166, SR- 119, and SR-33 are shown below in Table 3.12-1.

Table 3.12-1
Peak Hour Trips for Nearby Highways

Roadway	Peak Hour Trips
I-5	4,750
SR-119	410
SR-166	322
SR-33	630

Source: California Department of Transportation, 2010.

SR-166, also known as Maricopa Highway, provides east–west service between I-5 and the Pacific coast. The Covered Lands are located north of SR-166. SR-166 is the main transportation connection to Kern County for the cities of Maricopa and Taft. The highway is a two-lane facility, with one lane in each direction. The primary industry in the Taft/Maricopa area is petroleum exploration and production as well as agricultural production; as a result there are increased levels of truck traffic to and from the area to serve the oil fields and neighboring farms.

Non-Motorized Transportation

There are no dedicated pedestrian or bicycle facilities in the immediate project vicinity or along the surrounding roadways.

Public Transit

Public transportation in the area is provided by Taft Area Transit, which provides service between the cities of Taft and Maricopa; however, direct service to the Covered Lands is not available. Taft Area Transit provides a total of three daily trips Monday through Friday and is closed on weekends. In addition, Kern Regional Transit provides a non-emergency medical dial-a-ride service for passengers traveling to or from metropolitan Bakersfield for medical appointments. Amtrak provides rail service to and from Bakersfield. The Amtrak station is located in Bakersfield.

Airport Facilities

The nearest public airport to the Covered Lands is the Taft-Kern Airport, which is one of the six County owned airports. The Taft-Kern Airport is located northwest of the program sites and covers approximately 71 acres. The airport is surrounded by single-family residential homes to the north and west, undeveloped and industrial uses to the south, and undeveloped and agricultural land to the east. No commercial airline services are available, but the facility is open to the public; there are tie-downs and hangars available for airplane parking. The airport's 3,550-foot runway serves agricultural, business, and personal aviation needs, including skydiving activities.

A privately owned airstrip is located adjacent to one parcel along Copus Road (APN 295-130-25). The airstrip is not available for public use or public access. It consists of a single 3,000-foot paved runway, hangar and accessory building. The airstrip is used by the property owner for personal use, as well as by the Skydive San Joaquin Valley Skydiving School. Because of its small size and as a result of access restrictions, the facility sees relatively few flights.

3.12.2.2 Local

Within the vicinity of the Covered Lands there are a number of local roadways that provide access to the area, including:

- Copus Road
- South Lake Road
- Gardner Field Road

- Cadet Road
- Basic School Road
- Old River Road

Copus Road is a paved County facility running east to west, and provides local access to parcels in the southern portion of the area. It originates from SR-99 in the east, crosses I-5, and terminates at the intersection of Basic School Road approximately 15.5 miles west of the I-5. Copus Road runs parallel to and north of SR-166. The I-5/Copus Road intersection is located approximately 2 miles east of the nearest site within the Covered Lands, and the Covered Lands are located to the north of Copus Road. The remaining Covered Lands parcels are located north, north-west of where Copus Road ends at Basic School Road.

South Lake Road, located parallel to and north of Copus Road, provides access to parcels located in the northern portion of the Covered Lands, and also crosses diagonally through one of the parcels (APN 220-110-08).

Gardner Field Road and Cadet Road begin in the western portion of the Covered Lands area. Gardner Field Road originates at Basic School Road and heads west, where it forks at its intersection with Cadet Road and trends in a northerly direction; it continues in a westerly direction until it reaches and terminates at the City of Taft.

Cadet Road also heads in a westerly direction from its origin at Gardner Field Road, running for approximately 4 miles before terminating at SR-33 (West Side Highway), which provides access to both the cities of Taft and Maricopa.

Basic School Road is a paved road, with one-lane in each direction, and provides access to four of the southern parcels located along the California Aqueduct. Basic School Road originates at SR-166, heading in a northerly direction, crossing the California Aqueduct, and terminating at Gardner Field Road.

Old River Road is located in the eastern portion of the project and provides access to parcel number 295-130-25. Old River Road is a paved, single-lane road running north to south. It is one of the longest local roads in the project area, approximately 18 miles in length, and provides local access between the project area and the City of Bakersfield. It originates at SR-166 and heads diagonally north until it intersects with Copus Road approximately 1 mile west of the nearest parcel. It then continues northward through the project area toward the I-5 and the City of Bakersfield.

The Covered Lands are located in an area dominated by agricultural use and are at least 3 miles from any population area. Due to the general vacancy of most of these agricultural parcels, there

is very little existing traffic within the area. Most of the parcels are accessible through unnamed dirt roads and paths.

The Kern County Roads Department provided 2007 Average Daily Traffic (ADT) for these roads:

- Copus Road
    - East of Basic School Road: 940
    - West of Old River Road: 1240
    - East of Old River Road: 2600
- South Lake Road
    - East of Gardner Field Road: 450
- Gardner Field Road
    - East of Cadet Road: 730
- Cadet Road (no data available)
- Basic School Road
    - North of SR-166 (Maricopa Hwy): 520
- Old River Road
    - North of Copus Road: 3200
    - South of SR-119(Taft Highway): 3050
    - South of SR-223 (Bear Mountain Boulevard) 5000

Although there is no level of service determined for these roads, most are not heavily travelled. Based on the average daily traffic counts, the potentially affected roads are currently at LOS C or better.

3.13 ENVIRONMENTAL JUSTICE

This section describes community resources in the Covered Lands study area. For this section, the study area is considered concurrent as the Covered Lands, with the exception of demographic data pertaining to socioeconomics and environmental justice, which is also presented in the context of Kern County. Topics include current land uses and land designations of the project area; socioeconomic conditions, including overall demographics and population growth, race and ethnicity, educational attainment, income and poverty levels; as well as labor and unemployment rates. There are four communities in the vicinity of the Covered Area, including unincorporated Maricopa, Taft Heights CDP, South Taft CPD, and the incorporated city of Taft.

3.13.1 Regulatory Setting

3.13.1.1 Federal

Executive Order 12898

Title VI of the Civil Rights Act of 1964 (Public Law 88-352, 78 Stat.241) prohibits discrimination on the basis of race, color, or national origin in all programs or activities receiving federal financial assistance. Executive Order 12898, "Federal Actions to address environmental justice in Minority Populations and Low-Income Populations," focuses federal attention on the environment and human health conditions of minority communities and calls on agencies to achieve environmental justice as part of this mission (59 Fed. Reg. 7629 (Feb. 16, 1994)). The order requires the U.S. Environmental Protection Agency (USEPA) and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

Council on Environmental Quality

The U.S. Council on Environmental Quality's *Environmental Justice Guidance Under the National Environmental Policy Act* (CEQ 1997) provides an overview of Executive Order 12898; summarizes its relationship to NEPA; recommends methods for the integration of environmental justice into NEPA compliance; and incorporates definitions, established by the Interagency Federal Working Group on Environmental Justice, of key terms and concepts containing in Executive Order 12898.

The fundamental question to be addressed in a NEPA document is:

> Would the proposed federal action result in human health or environmental impacts to minority or low-income populations that are disproportionately high and adverse when compared to the impacts on the general population?

CEQ guidance identifies minority populations where the percent minority is greater than 50 percent, or "meaningfully greater" than that of the general population (usually the next larger geographic unit relevant for a specific impact with a specific geographic scope; for this analysis, the general population is Kern County). "Meaningfully greater" is not defined in CEQ (1997) guidance; for this analysis, "meaningfully greater" is interpreted to mean simply "greater," which provides for a conservative analysis. CEQ guidance identifies low-income populations where the percent low-income is meaningfully greater than the general population.

According to environmental justice guidance, "low income populations in an affected area should be identified with the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty. The Census Bureau's 2011 poverty thresholds set the poverty level for an individual at $11,484 and for a family of four at $23,021 (University of Wisconsin, Institute for Research on Poverty, 2012).

As noted in the demographic data presented in Section 3.13.3.2, Table 3.13-4, Kern County as a whole has 21.4% of individuals and 17.6% of families living below the poverty line. The only community within the vicinity of the Covered Area to exceed County levels is Maricopa, where 34.1% of individuals and 25.3% of families are below federal poverty levels. However, the population in Census Designated Places (Taft Heights and South Taft) as well as Taft city, and within Kern County as a whole, does not meet the environmental justice criteria for identifying a low-income population that may be affected by the proposed action.

According to a breakdown of self-identified race and ethnicity for Kern County as a whole, and for the cities, and Census Designated Places that are in the vicinity of the Covered Area as illustrated in Table 3.13.-2 in Section 3.13.3.2, none of the communities meet the criteria as having minority greater than 50 percent or significantly greater than the overall population of the County.

3.13.1.2 State

California Government Code Section 65040.12

For the purposes of GC §65040.12, environmental justice is defined as "the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations and policies."

3.13.1.3 Local

Kern County General Plan

The Covered Lands are located solely within Kern County and contain no incorporated cities. As a result, the County of Kern exercises the primary land use regulatory authority over the area. The County adopted its General Plan in 2004, with the most recent amendment adopted by the

Board of Supervisors in 2009. The General Plan land use element identifies certain classes of land that are consistent with Kern County's planning goals and objectives throughout the area of its jurisdiction. Applicable policies are listed below.

The policies, goals, and implementation measures in the General Plan for population and housing applicable to the Covered Lands are provided below. The General Plan contains additional policies, goals, and implementation measures that are more general in nature and not specific to development such as the Covered Lands. Therefore, they are not listed below.

Chapter 1. Land Use, Open Space, and Conservation Element

1.0 General Provisions (page 62)

Policy 6. The County shall ensure the fair treatment of people of all races, cultures, incomes and age groups with respect to the development, adoption, implementation and enforcement of land use and environmental programs.

Policy 7. In administering land use and environmental programs, the County shall not deny any individual or group the enjoyment of the use of land due to race, sex, color, religion, ethnicity, national origin, ancestry, lawful occupation or age.

Under the General Plan, the Covered Lands have the following land use designations: 8.1 (Intensive Agriculture (20 ac min)), 8.1/2.3 (Intensive Agriculture (20 ac min)/Shallow Groundwater) and 8.1/2.5 (Intensive Agriculture (20 ac min)/Flood Hazard), 8.3/2.5 (Extensive Agriculture (20 ac min)/Flood Hazard), 8.5/2.5 (Resource Management (20 ac min)/Flood Hazard). A brief description of applicable land use designations follows.

- Intensive Agriculture (Map Code 8.1). Areas devoted to the production of irrigated crops or having a potential for such use. Other agricultural uses, while not directly dependent on irrigation for production, may also be consistent with the intensive agriculture designation. Minimum parcel size is 20 acres gross.

- Extensive Agriculture (Map Code 8.3). Agricultural uses involving large amounts of land with relatively low value-per-acre yields, such as livestock grazing, dry land farming, and woodlands. Minimum parcel size is 20 acres gross, except lands subject to a Williamson Act Contract/Farmland Security Zone Contract, in which case the minimum parcel size shall be 80 acres gross.

- Mineral and Petroleum (Map Code 8.4). Areas which contain producing or potentially productive petroleum fields, natural gas, and geothermal resources, and mineral deposits of regional and statewide significance. Uses are limited to activities directly associated with the resource extraction. Minimum parcel size is five acres gross.

- Resource Management (Map Code 8.5). Primarily open space lands containing important resource values, such as wildlife habitat, scenic values, or watershed recharge areas. These areas may be characterized by physical constraints, or may constitute an important watershed recharge area or wildlife habitat or may have value as a buffer between resource areas and urban areas. Other lands with this resource attribute are undeveloped, non-urban areas that do not warrant additional planning within the foreseeable future because of current population (or anticipated increase), marginal physical development, or no subdivision activity.

- Shallow Groundwater (Map Code 2.3). Groundwater within 15 feet of the land surface is delineated on the Kern County Seismic Hazard Atlas.

- Flood Hazard (Map Code 2.5). Special Flood Hazard Areas (Zone A), as identified on the Flood Insurance Rate Maps (FIRM) of the Federal Emergency Management Agency (FEMA) and supplemented by floodplain delineating maps that have been approved by the Kern County Engineering and Survey Services Department.

Kern County Zoning Ordinance

The Covered Lands are within the A (Exclusive Agriculture) zone district described in the Kern County Zoning Ordinance, and have historically been used for agricultural production. However agricultural productivity of the land has been severely limited due to the lack of suitable, reliable water. The purpose of the Exclusive Agriculture (A) District is to designate areas suitable for agricultural uses and to prevent the encroachment of incompatible uses onto agricultural lands and the premature conversion of such lands to nonagricultural uses. Permitted land uses in this district include agriculture, commercial uses, utility lines and substations, resource extraction, energy development, and miscellaneous accessory structures related to permitted uses. Pursuant to Section 19.12.030 of the Kern County Zoning Ordinance, solar facilities are permitted with the approval of a Conditional Use Permit.

Lands that are not actively farmed have been left fallow due to a lack of available water. The land in the immediate vicinity of the Covered Lands consists of cultivated and uncultivated farmland, industrial, residential, and a vacant mineral resource area. The Covered Lands are not within the administrative boundaries of an oil field; however there are three plugged oil wells within the Covered Lands.

The Covered Lands are designated under the Department of Conservation Farmland Mapping and Monitoring Program (FMMP) as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Grazing Land, and a small amount of Vacant or Disturbed Land and Nonagricultural and Natural Vegetation. The Covered Lands are within Agricultural Preserve 12.

3.13.2 Socioeconomic Conditions

This section describes the current population, demographics, economic conditions and environmental justice conditions in the Covered Area. Information in this section is based on the 2010 U.S. Census data, as well as Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2012, 2012 Population Estimates , the 2007-2011 American Community Survey 5-Year Estimates and Labor Force and Unemployment Rate for Cities and Census Designated Places.

3.13.2.1 Population

The Permit Area of this HCP encompasses a total of 5,784.3 acres, located in the southwestern portion of unincorporated Kern County (see Figure 2-1). The surrounding area is predominantly rural, with few scattered residences and some heavy industrial uses. The nearest unincorporated community is Maricopa, 3 miles to the west; Taft is the closest incorporated city, located about 5 miles to the west. Taft Heights is about 1 mile southwest and South Taft 0.5 miles south, of the city of Taft. Both are designated as Census Designated Places (CDP), and are also included in this analysis. A Census Designated Place (CDP) is an unincorporated area designated by the U.S. Census Bureau for the decennial census.

Kern County encompasses 8,202 square miles and is the third largest County in California, located at the southern end of the Central San Joaquin Valley. As shown in Table 3.13-1, from 2000 to 2010, the population of Kern County grew by 26.9% to 839,631. In that decade, Taft increased population from 6,400 to 9,327, a 45% increase; Taft Heights grew by 4.5% to 1,949; South Taft increased by 14,2% and Maricopa grew by 3.8% to 1,154 (U.S. Census Bureau 2012).

However, between 2010 and 2012, Kern County grew only 1.9%. In the same period, the communities near the study area, Maricopa had a growth rate of 0.78 %, while the Taft population decreased by -3.8% from 9,312 to 8,954. According to the California Department of Finance projections the County's population is anticipated to grow to 1.0 million people by 2020 and 1.3 million people by 2030 (CA Department of Finance 2011).

Table 3.13-1
2000-2012 U.S. Census Population Estimates

				Population Estimates 2012**		
	Census 2000	Census 2010	Estimates Base	2010	2011	2012
Kern County	661,645	839,631	839,631	839,631	849,457	856,158
Maricopa	1111	1,154	1,154	1,154	1,156	1,163
Taft city	6400	9,327	9,327	9,327	9,310	8,954
Taft Heights CDP	1865	1949	*	*	*	*
South Taft CDP	1989	2169	*	*	*	*

	Census 2000	Census 2010	Estimates Base	Population Estimates 2012**		
				2010	2011	2012

* Data not available ** Estimates as of July 1, 3012
Source: http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=PEP_2012_PEPANNRES

3.13.2.2 Demographics

Race and Ethnicity

Table 3.13-2 lists the self-identified race and ethnicity for Kern County as a whole, and for the cities, and Census Designated Places that are in the vicinity of the Covered Area (US Census Bureau, 2012).

Table 3.13-2
Race and Ethnicity (2010 Census)

Geography	Total Population	White	Hispanic or Latino (of any race)	Black or African American	American Indian and Alaska Native	Total Asian	Other Race	One Race	Two + Races Total Population Two+ Races
Kern County	839,631	499,766	413,033	48,921	12,676	34,846	239,160	801,775	37,856
Maricopa	1,154	958	232	1	27	16	114	1,116	38
Taft city	9,327	7,388	3,353	396	118	93	1,088	9,083	244
Taft Hgts CDP	1,949	1,602	441	15	35	11	220	1,883	66
South Taft CDP	2,169	1,404	931	21	55	5	601	2,092	77

Source: CA Department of Finance, 2011

The racial makeup of Kern County was 61.6% White, 6.0% African American, 3.4% Asian, 1.5% Native American/Alaskan, 23.2% from other races, and 4.1% from two or more races. 38.4% of the population were Hispanic or Latino of any race. The racial makeup of Maricopa was 958 (83.0%) White, 1 (0.1%) African American, 27 (2.3%) Native American/Alaskan, 27 (2.3%) Asian, 2 (0.2%) Some Other Race, 114 (9.8%), and 38 (3.3%) from two or more races. Hispanic or Latino of any race were 232 persons (20.1%). The racial makeup of Taft was 7,388 (79.2%) White, 396 (4.2%) African American, 118 (1.3%) Native American/Alaskan, 93 (1.0%) Asian, 1,088 (11.6%) from other races, and 244 (2.6%) from two or more races. Hispanic or Latino of any race were 3,353 persons (35.9%). The racial makeup of South Taft was 1,404 (64.7%) White, 21 (1.0%) African American, 55 (2.5%) Native American/Alaskan, 5 (0.2%) Asian, 11 (0.5%) 601 (27.7%) from other races, and 77 (3.6%) from two or more races. Hispanic or Latino of any race were 931 persons (42.9%). The racial makeup of Taft Heights was 1,602 (82.2%) White, 15 (0.8%) African American, 35 (1.8%) Native American/Alaskan, 11 (0.6%) Asian, 220 (11.3%) from other races, and 66 (3.4%) from two or more races. Hispanic or Latino of any race were 441 persons (22.6%).

Educational Attainment

Table 3.13-3 lists the graduation success rate for County residents, as well as for the cities, and Census Designated Places that are in the vicinity of the Covered Area (CA Department of Finance, 2011).

Table 3.13-3
Educational Achievement

	Percentage (%) of High School Graduate or Higher
Kern County	71.2%
Maricopa	70.1%
Taft city	67.9%
Taft Heights CDP	86.6%
South Taft CDP	57.0%

Source: CA Department of Finance, 2011

Income and Poverty Levels

Income levels for individuals and families in 2010 are illustrated in Table 3.13-4 (2007-2011 American Community Survey). The city of Taft had the highest household median income ($46,136), while Maricopa experienced the lowest median household ($34,167) and per capita income ($15,062) levels in the vicinity of the Covered Area.

Table 3.13-4
Income (In 2011 Inflation-adjusted dollars)

	Median Household Income	Per Capita Income	Individuals Below Poverty Level	Families Below Poverty Line
Kern County	**$48,021**	**$20,167**	**21.40%**	**17.6%**
Maricopa	**$34,167**	**$15,062**	**34.1%**	**25.3%**
Taft city	**$46,136**	**$16,198**	**14.1%**	**12.8%**
Taft Heights CDP	**$37,465**	**$16,440**	**19.8%**	**15.9%**
South Taft CDP	**$39,375**	**$11,524**	**15.4%**	**19.5%**

Source: CA Department of Finance, 2011

The US Census Bureau has identified income thresholds that vary by family size and composition to define the applicable poverty level within a population (U.S. Census Bureau, 2010). Under these thresholds, in 2010, Maricopa had the highest percentage of individuals (34.1%) and families (25.3%) living below the poverty line. Taft had the lowest poverty rates (14.1% for individuals, 12.8% for families).

Labor Force and Unemployment Rates

Table 3.13-5 shows the number of people considered to be in the labor force (i.e., actively working or seeking work), and the employment rate for Kern County and the city and unincorporated Census Designated Places near the Covered Area for the year 2008 to 2012. Only not seasonally-adjusted labor force (unemployment rates) data are developed for cities and CDPs.

Monthly sub–county data are derived by multiplying current estimates of county–wide employment and unemployment by the respective employment and unemployment shares (percentages) in each sub–county area at the time of the 2000 Census. Sub–county labor force is then obtained by totaling employment and unemployment, and the result is divided into unemployment to calculate the unemployment rate. Based on Each Area's 2000 Census Share of County Employment and Unemployment*

Maricopa consistently has the highest unemployment rate among the communities in the vicinity of the project, which ranges from 16.7% in 2010 to 10.3% in 2008. Taft Heights CDP shows the lowest rate of unemployment, ranging from 10.6% in 2010 to 6.3% in 2008.

Table 3.13-5
Annual average Unemployment (not seasonally adjusted)

	Kern County	Maricopa	South Taft CDP	Taft	Taft Heights CDP
2012					
Labor Force	396,700	600	1,000	3,800	1,200
Employment	344,000	500	900	3,300	1,100
# Unemployed	52,700	100	100	500	100
% Unemployment	13.3%	14.10%	11.6%	13.0%	8.70%
2011					
Labor Force	384,900	600	1,000	3,700	1,100
Employment	327,600	500	900	3,100	1,000
# Unemployed	57,300	100	100	500	100
% Unemployment	14.9%	15.7%	13.0%	14.6%	9.8%
2010					
Labor Force	373,700	600	1,000	3,500	1,100
Employment	314,300	500	800	3,000	1,000
# Unemployed	59,400	100	100	600	100
% Unemployment	15.9%	16.7%	14.0%	15.6%	10.6%
2009					
Labor Force	363,200	600	900	3,400	1,100
Employment	311,100	500	800	3,000	1,000
# Unemployed	52,200	100	100	500	100
% Unemployment	14.4%	15.2%	12.5%	14.1%	9.5%

	Kern County	Maricopa	South Taft CDP	Taft	Taft Heights CDP
2008					
Labor Force	359,700	500	900	3,400	1,100
Employment	324,500	500	900	3,100	1,000
# Unemployed	35,100	100	100	300	100
% Unemployment	9.8%	10.3%	8.5%	9.6%	6.3%

Source: California Employment Development Department (2012)

This page intentionally left blank.

4.0 ENVIRONMENTAL CONSEQUENCES

4.0.1 Introduction

This chapter describes the environmental consequences, including the cumulative effects, for each of the alternatives evaluated in this Draft EIS, as described in Chapter 2.0. Each of the topical sections includes a description of the criteria and methods used to characterize the direct, indirect, and cumulative effects of the alternatives, an analysis of the alternatives and their potential effects and mitigation measures, and a comparison of the effects of the alternatives relative to potential effects.

As was indicated in Chapter 2.0 of this Draft EIS, the project description for the Maricopa Sun Solar Complex project was analyzed in the Environmental Impact Report (EIR) prepared for the County of Kern (Kern County, 2010). Subsequent to certification of the EIR, the project proponent for the Solar Complex has elected to reduce the acreage of the project for which the draft HCP has been prepared. The Permit Area described in the EIR totaled 6,046 acres, whereas the Permit Area in the draft HCP and this EIS total 5,784.3 acres. While it can be reasonably assumed that potential effects associated with implementation of the Proposed Action described in this EIS are less than those described in the EIR as a result of the reduced project size, a proportional reduction of the associated effects and resulting mitigation measures cannot be accurately calculated in every instance.

4.0.2 Methods of Assessing Direct and Indirect Effects

The National Environmental Policy Act (NEPA) requires federal agencies to consider the direct and indirect effects of their actions (40 Code of Federal Regulations [CFR] 1502.16). Direct effects are caused by the federal action and occur at the same time and place as the action (40 CFR 1508.8(a)). Indirect effects are those that are "caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems" (40 CFR 1508.8(b)).

The description of the affected environment in Chapter 3.0, serves as the baseline against which direct and indirect effects are assessed in each environmental topic area for each alternative. The level of detail in an analysis of indirect effects is driven by the underlying action before the agency. The federal action analyzed in this EIS is the approval and implementation of the Habitat Conservation Plan (HCP) and the issuance of an ITP for the Covered Species, pursuant to Section 10(a)(1)(B) of the Federal ESA. As noted previously, an EIR for the proposed project was prepared under the requirements of the California Environmental Quality Act and certified by the County of Kern. Additional project-specific authorizations, including permits from other

federal, State, regional, or local entities would also be required. Through these planning, review, and entitlement processes, mitigation measures for the direct and indirect effects described in this chapter would be implemented. With the exception of potential effects on Covered Species (which would be addressed by the Service as part of the ESA Section 10 process), the implementation of these mitigation measures would be the responsibility of agencies other than the Service. In other words, the Service would have responsibility for ensuring that mitigation measures pertaining to Covered Species are implemented and monitored. The County of Kern would have primary responsibility for ensuring that all other mitigation measures are implemented and monitored, since it will issue a conditional use permit for the Covered Action and has the authority to issue the grading and building permits that are required to construct the solar facilities.

Additionally, species-specific conservation measures would be implemented under each of the alternatives to varying degrees (depending on species covered under an alternative), with the exception of the No Action Alternative.

4.0.3 Methods for Assessing Cumulative Effects

NEPA requires agencies to consider the effects of both cumulative actions and cumulative Effects (40 CFR 1508.25, 1508.7). A cumulative impact is defined as "The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7). A cumulative action is one "which when viewed with other proposed actions have cumulatively considerable effects and should therefore be discussed in the same impact statement" (40 CFR 1508.25(a)(2)). Cumulative effects can be beneficial, detrimental, or both.

In a general sense, all effects on affected resources are cumulative; however, it is the goal of this EIS to provide analysis of the important resource issues and to discuss the effects that are of regional or local significance. In this case, cumulative effects are the incremental effects on the environment that would result from implementation of the HCP and the issuance of the ITP under one of the alternatives, when added to other past, present, and reasonably foreseeable future actions in the region, regardless of what agency or person undertakes such actions.

The discussion of cumulative effects includes analyses of both the direct effects attributable to the proposed action, as well as the indirect effects that are not directly attributable to the underlying action but that are facilitated by implementation of the HCP. The cumulative effects analysis attempts to delineate the cause–effect relationships between the underlying federal action and the subsequent decisions of other Federal, state, regional, and local entities that have direct jurisdiction over the specifics of the development. It is not practical or feasible to analyze

all indirect effects related to the possible construction and occupation of all future development. This cumulative analysis therefore considers a reasonable range of project-specific effects that would be subject to review by other agencies at a level of detail sufficient to meet the goals of determining the reasonably foreseeable environmental consequences of each of the alternatives.

The cumulative effects analysis also attempts to address the uncertainty surrounding actions that have not yet been fully developed. Regulations promulgated by the Council on Environmental Quality (CEQ) provide for the inclusion of uncertainties in the EIS analysis, and state that "[w]hen an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking" (40 CFR 1502.22). Consequently, the analysis contained in this EIS includes what could be reasonably anticipated to occur related to construction and long-term occupation of the Covered Lands, as described below.

4.0.4 Cumulative Effects Analysis Area

Cumulative effects occur at the landscape or regional level; therefore, for purposes of evaluating the cumulative effects of the alternatives, a regional-scale analysis is focused on growth in the southern San Joaquin Valley. The regional-scale analysis area is referred to as the cumulative effects analysis area in this chapter. For some resource areas, the cumulative effects analysis area described above has been expanded or modified to adequately address the combined effects of the alternatives and other reasonably foreseeable projects.

The cumulative setting encompasses the project area and its surroundings. This definition may extend to all of Kern County and its environs and beyond, depending on the resource area. For example, effects on cultural resources are generally static and unmoving. Whereas, effects related to air quality may have ramifications over a larger area – for example, as particulate matter disperses in the atmosphere; accordingly, the areal extent for assessing cumulative effects on air quality is much larger than that for assessing effects on cultural resources.

To understand how the Proposed Action fits into the larger development "picture" of Kern County, a list of proposed, pending, and recently approved projects within a radius of 6 miles from the Covered Lands was obtained from the Kern County Planning and Community Development Department. This distance from the Covered Lands is appropriate, given the generally site-specific, non-regional nature of the potential effects associated with the proposed photovoltaic solar facility. This listing is shown in Table 4.0-1. The projects in the table are colored-coded into five categories: solar, agricultural or livestock, zoning actions, cell towers, and miscellaneous. As can be seen from the project listing, the majority of the projects listed are either agricultural or solar.

Table 4.0-1
Proposed, Pending, and Recently Approved Projects
Within a Radius of 6 Miles from the Covered Lands – Kern County, CA

Yellow	Solar Projects	695
Blue	Agricultural or livestock	5829.85
Red	Zoning	76.62
Green	Cell towers	48.05
Orange	Miscellaneous	610.5
other		3.65
	Total	7263.67

Name	Project Location	Request	Case Type	MAP	SECTION	APN	Acreage
ENXCO DEVELOPMENT CORPORATION	(ELK HILLS)	7 MW SOLAR PROJECT	CUP	139		298-170-27	, 47.30
RECURRENT ENERGY BY SETH ISRAEL	ACACIA AND CHERRY, TAFT	20 MW SOLAR PROJECT	CUP	139		298-190-15	,160.00
HARRINGTON, BILLY	28323 HWY. 119, DUSTIN AC RES	AG SUPPLY SERVICE	CUP	139	14	298-110-21	, 0.00
SELINGER, STEVE	SEC 13 - BUENA VISTA HILLS	SPECIFIC PLAN	GPA	139			
VAN PELT, DON	DUSTIN ACRES RD & VAN PELT RD.	TO E (1) RS MH (Mobilehome)	ZCC	139	22	298-120-49	, 7.50
TORRES SANDRA BY AARON BYRD	SW cor Isaac & Ferrel	ZC to A-1, limited agriculture (inconsistent with GP) or E (5) RS (estate residence)	ZCC	139	34	298-300-15	, 40.12
R.T. Martin	13453 Olen Ave	CUP for Equestrian Facility	CUP	140		184-012-18	, 0.00
RESPONSIBLE COMPOST MNG/COFFIN, JOHN	1 MI S/TAFT HWY, 1/2 MI W/I-5	COMPOSTING FACILITY	CUP	141		184-090-09	,200.00
CRUZ, GABRIEL/B ANDERSON	W/S S "H" ST, N/BEAR MTN BLVD	AG TRUCKING, PRODUCTS & SERVICES	CUP	142			
HUSEY, JOSHUA	8120 HOSEY AVE	2NDARD R.U. EXCEEDING SIZE	CUP	142		184-420-26	, 2.50
RECURRENT ENERGY BY SETH ISRAEL	SHAFTER RD AND ASHE RD METRO AREA	28 MW SOLAR PROJECT	CUP	142		184-490-04	,235.00

Name	Project Location	Request	Case Type	MAP	SECTION	APN	Acreage
SINGH/SAN JOAQUIN ENGINEERING	11354 WIBLE RD.	AG TRUCKING FACILITY	CUP	142		184-230-01	, 2.30
ATHWAL, CRISTINA/BRET DAWSON	10402 COMPAGNONI ST	RETENTION OF AG TRUCKING FACILITY	CUP	142	1	184-470-12	, 2.84
OLDENKAMP TRUCKING	11314 WIBLE RD.	AG TRUCKING FACILITY	CUP	142		184-150-42	, 19.09
G I C Corp (Gabriel Cruz)	NWC of Bear Mtn and South H St	Ag Trucking	CUP	142		184-392-61	, 0.00
JON MOULE	NEC OF PROGRESS RD & SHAFTER RD.	GPA FROM R-IA TO RR (residential)	GPA	142	17	184-420-04	, 20.00
GILL, PUNIT K BY GW WILSON	NE CORNER GOSFORD & CHAIDEZ	CHANGE TO E (2 1/2) RS (estate residential)	ZCC	142	21	184-491-14	9.218
JUAREZ, ETHEL	10604 SO. "H"	ZC TO C-2 (general commercial)	ZCC	142		184-150-29	, 4.00
JON MOULE	NEC PROGRESS RD & SHAFTER RD	ZCC A TO E 2 1/2 (estate)	ZCC	142	17	184-420-04	, 20.00
HERNANDEZ, JOSE	GARDENER FIELD RD.	COMMUNITY CENTER	CUP	157		220-030-13	, 10.50
COSTAMAGNA, ERNIE/MACEDO ENG'G	S/S S LAKE RD, 2.5 MI E/GDNR FLD RD	DAIRY (GARDNER VIEW)	CUP	158	29	220-170-07	1,124.00
COSTAMAGNA, ERNIE/MACEDO ENG'G	N/S S LAKE ROAD, 2 MI W/SUNSET RR	DAIRY (SUNSET EXPRESS)	CUP	158			
R. WYATT SANDERS TRUST BY T-SQUARED	23102 SOUTH LAKE RD. TAFT, CA 93268	CUP & WILLIAMSON ACT LAND USE CANCELLATION TO ALLOW FOR THE DEVELOPMENT OF A 253 ACRE SOLAR FARM	CUP	158		220-120-09	,253.00
MARICOPA SUN LLC	LAKE ROAD AREA	700 MW SOLAR PROJECT	CUP	158	19	220-110-08	6,046.00
QUAN PHU BY ROGER FRYMIRE (VIKON)	SOUTH LAKE ROAD	Poultry PROCESSING PLANT	CUP	158		220-110-14	,120.00
MARICOPA SUN LLC	LAKE ROAD AREA	700 MW SOLAR PROJECT	GPA	158	19	220-110-08	6,046.00
BANDUCCI FARMING, LLC	DAIRY RD & ADOHR RD	DAIRIES (2)	CUP	159			
COSTAMAGNA, ERNIE/MACEDO ENG'G	S/S SO LAKE RD, 1/2 MI W/HILL RD	DAIRY (BUENA VIEW)	CUP	159	17	295-040-36	1,285.00
MARICOPA SUN LLC	COPUS RO AREA, W OF I-5	700 MW SOLAR PROJECT	CUP	159		295-030-17	6,046.00

Name	Project Location	Request	Case Type	MAP	SECTION	APN	Acreage
MARICOPA SUN LLC	COPUS ROAD AREA W OF I-5	700 MW SOLAR PROJECT	GPA	159	23	295-030-17	6,046.00
RUDNICK FEEDLOT/PHILIP & DANIEL RUDNICK	OLD RIVER RD, 2 MI S/I - 5	FEEDLOT	CUP	160	19	295-110-31	,320.00
GRIMMWAY ENTERPRISES	COPUS RD. EAST OF I-5	ANIMAL WASTE COMPOSTING FACILITY	CUP	160		295-120-48	,160.00
GRIMMWAY ENTERPRISES BY MCINTOSH	N/S COPUS RD E/S I-5	COMPOSTING FACILITY	CUP	160	36	295-120-48	,160.00
GRIMMWAY ENTERPRISES BY MCINTOSH	N/S COPUS RD E/S I-5	3.7/3.7.1 COMPOSTING FACILITY - CUP TOO	GPA	160	36	295-120-48	,160.00
SILVER OAK/DAVID & DOUGLAS KAISER	NEC TEALE RD & ADOBE RD	DAIRY	CUP	161		445-041-01	,632.00
BLOOMFIELD/TILLEMA, RICH/JOHN SCHAAP	BEAR MTN RD & COTTONWOOD RD	DAIRY	CUP	161	28	185-340-12	1,274.00
ROSA DAIRY/AGRICULTURAL MAN SYSTEMS	S/HERRING, W/WHEELER RIDGE RD (S14)	DAIRY	CUP	161	14	445-041-19	,640.00
AT&T Mobility	9307 Copus Rd	150' Cell Tower	CUP	161		445-062-03	, 9.55
DE LA TORRE, CECELIA/J.R. DESIGN GROUP	1835 METTLER ROAD	COMMERCIAL COACH, PERMANENT INSTALLATION	CUP	203	1	238-281-08	, 1.15
GARONE, FRANK/RICKLES	VALPREDO RD FRONTAGE/HWY. 99	TO 7.1/2.5	GPA	203	1	238-205-29	, 33.00
GARONE, FRANK/RICKELS	VALPREDO FRONTAGE RD/HWY.99	ZC TO M-1 PD (light industrial)	ZCC	203	1	238-205-29	, 33.00
William Bonderov	Camelia & Wildflower St	R-1 to MP (mobile-home park)	ZCC	203	1	238-205-14	, 10.40
Fresno MSA Limited	West of Old River and SR-166	150 Cell Tower	CUP	204		239-350-09	, 38.50
CalMat Co	16101 HWY 166	SMARA for expansion of existing mine site. EIR will be required	CUP	205			, 0.00
CALIFORNIA VISION, INC	N&S GOLDEN CAT RD, 1 MIW/O MARICOPA	RECLAMATION PLAN ON BLM ADMINISTERED LAND	CUP	207		239-200-03	,600.00

Source: Kern County Planning and Community Development Department, 2013.

4.0.5 Determination of Scope of Cumulative Effects

In general, the determination of the cumulative effects of a proposed Federal action involves the following elements:

- analysis of the direct and indirect effects of the proposed action;
- determination of which resources, ecosystems, and human communities would be affected by the proposed action;
- consideration of the additive, synergistic and environmental consequences over time of other reasonably foreseeable actions; and

analysis of the magnitude of effects on these resources from a cumulative effects perspective. As noted above, direct effects identified in this EIS are those effects associated with implementation of the HCP and the issuance of the ITP. Indirect effects are those that would be caused by the action and would occur later in time. Where identified, the cumulative effects analysis considers the incremental effects of previous, ongoing and proposed activities within the Covered Lands, in combination with similar effects from other reasonably foreseeable projects.

This page intentionally left blank.

4.1 AESTHETICS / VISUAL RESOURCES

4.1.1 Overview

This section describes the potential effects of the alternatives on visual resources in the Project area compared to existing conditions as of the date when the Notice of Intent was issued. As described in Section 3.1, Aesthetics/Visual Resources, the proposed Project consists of approximately 5,784 acres of vacant agricultural land. The Project sites include a number of noncontiguous parcels in the Westside Subarea of the San Joaquin Valley within Kern County's Valley Region. Approximately 3,798 acres would be utilized for the solar arrays and supporting infrastructure, as well as movement corridors and required setbacks, with the remaining approximate 1,894 acres set aside as conservation areas.

Although the specific design and type of solar panels to be installed is not known, the Project will include either crystalline silicon or thin film photovoltaic (PV) technology on tilted or horizontal, single-axis trackers, or fixed tilt supports. If tilted trackers are used, drive motors will rotate the solar panels from east to west to follow the sun throughout the day. The highest point on the tilted tracker units (the uppermost solar panel) will be approximately 22 feet above the ground surface at a maximum, but could be as few as eight feet from the ground surface. A substation will be constructed along the western edge of the Project site, to measure approximately 150 feet by 150 feet, with a height of approximately 60 feet.

This portion of the valley, known as Maricopa Flat is surrounded by the San Emigdio Mountains to the south, the Temblor Range to the northwest, and the Tehachapi Mountain to the northeast. The Los Padres Valley is located to the southwest, with a long expanse of the southern San Joaquin Valley to the north.

4.1.2 Methodology

Extensive data and resources were consulted in preparation for the Maricopa Sun Solar Project EIR in 2010 (Kern County 2010, 4.1-1 to 4.1-42). Existing visual conditions data were collected by the County using an approach that incorporated a combination of information review, agency consultation, aerial photography and satellite imagery review (i.e., Google Earth Pro), map review, field reconnaissance, U.S. Geological Survey (USGS) digital elevation models, and onsite photography. Baseline visual information for projects within Kern County, used in (then) recently completed CEQA documents for the proposed action, were also referenced and used as appropriate. Sensitive receptors were identified on topographic maps, and GIS viewshed modeling techniques were used where appropriate.

The project proponent for the Solar Complex has elected to reduce the amount of land within the Covered Lands for which the Draft HCP has been prepared. The Permit Area described in the EIR totaled 6,046 acres, whereas the Permit Area in the Draft HCP and this EIS total 5,784.3

acres. While it can be reasonably assumed that potential effects associated with implementation of the Proposed Action described in this EIS are less than those described in the EIR as a result of the reduced project size, a quantitative measurement of the reduced effects and resulting mitigation measures cannot be accurately described, especially for resources such as visual quality.

4.1.3 No Action Alternative

This section summarizes the potential visual effects associated with the No Action Alternative. As discussed in Section 2.3.2, the No Action Alternative assumes that the HCP would not be implemented, the proposed Incidental Take Permit (ITP) would not be issued, and the Covered Activities for the Maricopa Sun Solar complex would not occur. The 5,784.3 acres identified as the Permit Area would likely remain vacant, the 1,894.4 acres identified as Conservation Sites would not be permanently conserved, and the proposed Conservation Management Plan would not be implemented. Although the status of the land as farmland probably would not change, the land could be converted to another use, including commercial, industrial, mining, or energy production (solar or wind turbines) if another project were proposed. Roadways, access areas, solar panels, associated infrastructure and buildings would not be constructed for the proposed Project. If the proposed Project did not occur, no associated Movement Corridors would be installed to encourage wildlife and native vegetation. It is likely that no effects to visual resources would occur under this Alternative, except, and unless, another project were proposed for the Covered Lands.

Agricultural activities, including grazing or disking, would likely continue resulting in reduced habitat quality as a result of vegetation removal and soil compaction.

4.1.3.1 Solar Areas

Within the 3,798.3-acre Solar Area, no Project-related development would occur under the No Action Alternative. The landscape is dominated by vacant agricultural lands within the broad, flat valley, with distant views of mountains to the south, east and west. Views also include roadways, occasional agricultural buildings, and scattered residences, as well as occasional oil and natural gas extraction infrastructure. It is likely that the land would remain designated as agricultural, and there would be no use of irrigation to support active agriculture, such as orchards or row crops. Unless another project, such as oil or mineral extraction, or industrial or commercial use were proposed, requiring construction of facilities or structures, the viewshed would be unlikely to change. There would be no Project-related physical changes to the landforms, or direct or indirect effects to the aesthetics or visual landscape.

4.1.3.2 Conservation Areas

No ground disturbance or other Project-related activities would occur within the Conservation Areas under the No Action Alternative. As with the Solar Permit Area, there would be no physical changes to the landforms, or direct or indirect effects to the aesthetics or visual landscape unless irrigation agriculture, mining, or other projects were proposed in the Covered Lands.

4.1.3.3 Mitigation Measures

There are no mitigation measures imposed under the No Action Alternative.

4.1.3.4 Cumulative Effect

Visual effects of any project are not limited to the project site, but may be viewed from many miles away. Because the Covered Lands are within the San Joaquin Valley, the relatively uniform, flat landscape extends approximately 40 miles around the Covered Lands, and includes parts of SR 33, SR 166 and SR 119. Within the Solar Areas and Conservation Areas, the scenic character and visual quality of the project will not be altered by the Project. The agricultural production, mining, and other activities found throughout this portion of the valley are likely to continue. Cumulative effects from the No Action Alternative would likely be limited to the effects already occurring, including the visual effects of disking fields, planting crops and orchards, operations of drilling rigs and other localized activities.

All past projects in the vicinity of the Covered Lands were subject to review in separate environmental documents that would have required conformance to the Kern County General Plan, which required mitigation of visual effects. Thus, the cumulative effect from past, present, and reasonably foreseeable future projects under the No Action Alternative would be less than cumulatively considerable.

4.1.4 Proposed HCP Alternative

4.1.4.1 Solar Areas

The existing view of the Project area is primarily vacant, undeveloped agricultural land or row crops or orchards. The Project is located within a wide, open valley with views of mountains in the distance. The visual landscape, as viewed by one traveling along SR 166 are of open, agricultural land, occasionally broken by agricultural accessory buildings, oil and natural gas infrastructure, utility structures and overhead lines, and similar cultural modifications. Figures 4.1-1, 4.1-2, and 4.1-3 provide typical views of the Covered Lands, including undeveloped and fallow farmlands, existing transmission lines, and distant mountains. This landscape would be altered during both the construction and the operations phases of the Project.

This page intentionally left blank.

Figure 4.1 - 1

SITE AND VICINITY CONDITIONS, LOOKING SOUTH TOWARD EXISTING HIGH-TENSION TRANSMISSION LINE FROM 170TH STREET WEST AND AVENUE A, MARICOPA SUN SOLAR LLC

Quad Knopf

This page intentionally left blank.

Figure 4.1 - 2

SITE AND VICINITY CONDITIONS WITH VIEWS OF ACTIVE FARMLAND AND MOUNTAIN BACKGROUND FROM HOLIDAY AVENUE AND 120TH STREET WEST, MARICOPA SUN SOLAR LLC

Quad Knopf

This page intentionally left blank.

Quad Knopf

SITE AND VICINITY CONDITIONS, LOOKING EAST FROM 120TH STREET WEST AT UNDEVELOPED LANDS, MARICOPA SUN SOLAR LLC

Figure 4.1 - 3

This page intentionally left blank.

Construction Phase

During the construction phase, heavy equipment would be needed to install access roads, parking areas, staging and laydown areas, and to remove vegetation. Equipment may include excavators, graders, dump trucks, concrete trucks, trenchers, water trucks, forklifts and cranes. Once these tasks were completed, foundations for the solar array foundations and paved building sites would be constructed.

The removal of vegetation and creation of graded roads, staging areas, and solar array foundations will be visible as cleared areas from both nearby and from a distance. Water trucks will be on site to reduce airborne dust and its appearance, although some slow-moving dust clouds would be anticipated. Because the construction is scheduled to occur over the entire Project area over a period of eight to ten years, there may be temporary periods when dust causes temporary, reduced long-range visibility.

Construction Phase

Movement corridors will also be established to allow wildlife connectivity between the sites and nearby native habitats. These Movement Corridors will be established along the perimeters of four of the Solar Sites (Sites 2-S, 3-S, 4-S, and 7-S). Within the 50-foot wide Movement Corridors, artificial raised earthen berms will be created to provide refugia for small mammals during flooding events, and to provide burrowing, denning, and perching opportunities for a variety of species. All berms will be created using topsoil from the project site. A general access dirt road may be maintained alongside a drainage ditch created at the base of the berm. The berms will be linear to facilitate construction by mechanical means, but they will not necessarily be continuous; gaps will be provided at strategic locations to allow flood waters to pass without causing undue damage to the berms. The Movement Corridors comprise approximately 33 acres within the Solar Sites. Visual quality and scenic value may be temporarily decreased during the construction phase while berms are being installed; however, vegetation will not be disturbed during this process and air borne dust will be controlled by watering.

Implementation of Mitigation Measures MM4.1-1, MM4.1-2, and MM 4.1-3 will reduce the potential effects to the visual character of the Solar Panel Sites during construction and operations of the Project.

Under approved conditions, such as the use or hand-operated power tools, ancillary lighting will be used to adequately illuminate construction operations during periods of darkness. These light sources will be sited and designed so that light only illuminates intended equipment areas and will be shielded so that lighting does not spill over onto adjacent areas. Maximum lighting will consist of vehicle-mounted lights used during night construction operations, vehicle activated

lights at each main gate, and lighting activated by motion detectors located at the operations and maintenance building and/or switchyard. It is anticipated that less lighting than this will be required, but this description establishes a maximum values for the purpose of establishing maximum project impacts. The illumination value of project lighting shall comply with "Dark Sky" lighting guidelines. All installed outdoor lighting shall meet safety and security standards. Routine maintenance of lighting may include replacement of bulbs, wiring, and fixtures.

Operations Phase

The solar arrays and associated infrastructure, such as maintenance and substation buildings, transformers, transmission lines, inverters, and circuit breakers would be constructed and remain during the operations phase. The Project could be viewed by motorists traveling on SR-166, SR-133, SR-119, and local roads including, Old River Road, Copus Road, S. Lake Road and Gardner Field Road, as well as by residents, employees, visitors, and other travelers.

From roadways, the solar arrays and other infrastructure could block fore- or middle-ground views of vegetation and landforms, replacing them with smooth-surfaced, geometric PV solar panels, transmission lines, transformers, and other human-made forms. The solar panels would be installed above the level of the surface, with the possible installation of a maximum of 22-foot high tilted tracker units or eight-foot high horizontal trackers.

Distant views of mountains and foothills would also be obscured from some locations. Although the Project would introduce new forms, textures, and colors into the viewshed, the scenic quality of the Covered Lands as a whole would not be significantly diminished, as the existing scenic quality is considered average. Conversely, because the Project would introduce new features that would appear as "large, geometric, industrial land uses on a landscape that currently feels open and rural," (Kern County 2010), the Project's effects to the existing visual character from some viewpoints would be considered substantial.

The Project would be visible from surrounding recreation areas. Because they are engaged in activities that are focused, at least to some degree, on their surroundings and the views, recreationalists are considered to be one of the most sensitive groups of visible receptors. Nearby recreation areas include the Wind Wolves Preserve, approximately five miles southwest of the nearest solar site. From the Crossing Picnic Area in the Wind Wolves Preserve, the Project would be visible in the middle ground as a broken pattern of solar arrays, interspersed with vacant land and the conservation areas, agriculturally productive land, roadways, and scattered structures across a 13-mile area from west to east (Figure 4.1-4). From this vista, the viewer would also see the San Emigdio Mountains and its foothills, Midway-Sunset, and Buena Vista Oil Fields in the distance, as well grasses and spring wildflowers in the foreground. When evaluated in 2010 (Kern County 2010) before implementation of the Project, this landscape was

recognized as a relatively high level of scenic value because of the topographic relief, and the harmonious variety of vegetative textures and colors.

During the operations phase the solar arrays will have replaced much of the vacant agricultural land within the approximate 3,007-acre solar development area. The 2010 analysis conducted for the EIR of the original, larger project determined that, "the introduction of PV solar arrays and associated infrastructure [would] have a moderately high influence on the existing scenic quality…" at this site. This is especially true because the site would be viewed from a higher elevation, and the solar arrays' appearance would be incongruent with the existing features. Although the visual effects of the Project would be limited to a smaller project area within the viewshed than under the 2010 analysis, the effects to scenic quality would still be considered "moderately high" in this smaller construction area, as demonstrated in the computer generated photograph included here as Figure 4.1-5.

Additionally, within the Movement Corridors, vegetation height would be controlled during the operations phase primarily through the use of sheep for grazing. The berms would be expected to level off somewhat, to a height of three to four feet. Once the Movement Corridors have been improved, encroachment of construction activities and vegetation removal will be restricted by erecting security fencing along the boundaries of the Movement Corridors that adjoin Solar Development Footprints. The Movement Corridors would provide a transition zone of sorts, between the highly altered solar areas and other uses, adjacent vacant lands, or conservation areas, giving the viewer an impression of the original, more rural landscape.

The Project would include a new source of light for security during the Operations Phase. Lighting during the operations and maintenance phase will consist of shielded, motion-detector lights on the operations and maintenance buildings. To minimize the effects of lighting on Covered Species, all outdoor lighting shall emit light toward the blue spectrum. "White" light sources, such as metal halide lamps and white light-emitting diodes, shall not be used. Acceptable light sources include high- and low-pressure sodium lamps, incandescent bulbs, and "yellow" light-emitting diodes. The addition of minimal security lighting is not anticipated to result in light trespass and sky glow that would create a substantial change in the existing nightsky view for the few nearby residents. Lighting would be in compliance with all development standards, the Kern County Zoning Ordinance, and the goals, policies, and implementation measures in the Kern County General Plan. Implementation of Mitigation Measures MM 4.1-5, MM 4.1-6 and MM 4.1-7 would reduce the potential for spillover lighting to affect residents, motorists, recreationists, and workers to a minimal level.

The Project would include a new source of light for security during the Operations Phase. Lighting would most likely be installed near the maintenance building, and near the onsite substation and perhaps at gates on the perimeter. The addition of minimal security lighting is not anticipated to result in light trespass and sky glow that would create a substantial change in the

existing nightsky view for the few nearby residents. Lighting would be in compliance with all development standards, the Kern County Zoning Ordinance, and the goals, policies, and implementation measures in the Kern County Plan. Implementation of Mitigation Measures MM 4.1-5, MM 4.1-6 and MM 4.1-7 would reduce the potential for spillover lighting to affect residents, motorists, recreationists, and workers to a minimal level.

Potential glare from the solar panels would not be substantial, as the panels would be expected to incorporate anti-reflective design measures that would reduce excessive glare. However, if the panels were installed on trackers that elevated them to their most vertical position, glare could affect motorists passing at certain times of the day, so that glare could be considerable to these viewers. Glare could also occur at further distances at the times of day (early morning and evening) and times of year when the sun is lowest in the sky. Typically, glare effects could be expected to last from approximately 30 to 60 or 70 minutes. Mitigation Measures MM 4.1-8 and MM 4.1-9 will minimize glare and its affects to motorists and others to minimal levels.

Figure 4.1 - 4

VIEW OF THE COVERED LANDS FROM THE WIND WOLVES PRESERVE CROSSING PICNIC AREA, MARICOPA SUN SOLAR LLC

Quad Knopf

This page intentionally left blank.

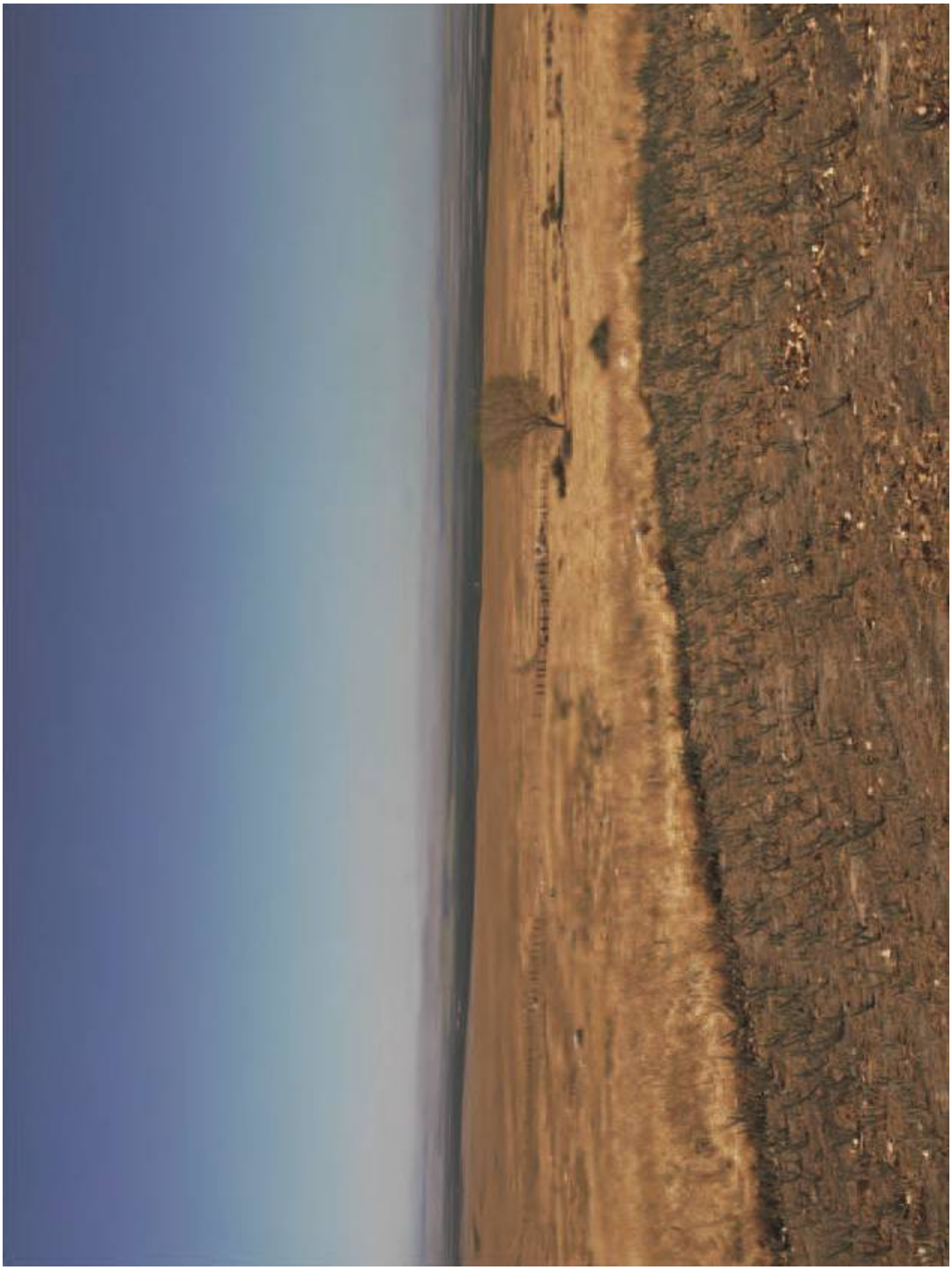


Figure 4.1 - 5

VIEW OF THE COVERED LANDS WITH COMPUTER GENERATED SOLAR PANEL FACILITY FROM THE WIND WOLVES PRESERVE CROSSING PICNIC AREA, MARICOPA SUN SOLAR LLC

Quad Knopf

This page intentionally left blank.

4.1.4.2 Conservation Areas

Construction Phase

The visual quality and character of the approximate 1,895 acres to be set aside as Conservation Areas will not be negatively affected by the Project during the construction phase of the Project. The intent of the Conservation Areas is to encourage the return of native vegetation and wildlife, which will maintain the scenic value and character of the sites. This will be accomplished by re-establishing the habitat, which will include the cessation of disking in areas where it occurred in the past. Some sites will require no action, as they have not been actively farmed or tilled. Natural vegetation will be encouraged within all sites in the Conservation Areas, and seeding will occur where needed to re-establish a semblance of native habitat. Within two to three years of cessation of disking, re-vegetation will occur, so that vegetation will be well-established by the completion of the eight-to-ten year construction phase. Approximately 720 acres of the Conservation Areas are considered off site conservation land, including a 640-acre parcel south of SR 166. In this area, and in other areas where the land has been impacted in the past by disking, repeated plantings of row crops, mining, or other activities, the quality of the habitat and the resulting scenic quality of the viewsheds within the Conservation Areas would be beneficially affected under the Proposed HCP Alternative.

Operations Phase

Once disking of the conservation areas has ceased, the re-establishment of native vegetation will replace vacant, disked agricultural fields in the Conservation Areas. Long-term management of these areas through managed grazing and restoration, where needed, will also be implemented. Other activities intended to improve the habitat within the Conservation Areas will continue during the Operations Phase. Again, the Conservation Areas will not be negatively affected by the Project, and the visual quality and scenic value will be beneficially affected in these areas.

4.1.4.3 Proposed Mitigation Measures

MM 4.1-1: Drought tolerant native plants, in minimum of 15-gallon size containers, approved by the Kern County Planning and Community Development Department, shall be planted along the fence line at 500-foot intervals where the adjoining property is zoned for residential use (E [Estate Residential], R-2 [Medium Density Residential], or R-3 [High-Density Residential]). This vegetative treatment should also be implemented along local rural routes.

MM 4.1-2: Prior to the final site plan approval and the issuance of grading or building permits, the project boundary setbacks shall be increased by an additional 50 feet near heavily used travel ways (e.g., SR-166, South Lake Road, and Old River Road), and residences. This technique would create separation by reducing the immediate adjacency of the proposed project, effectively

reducing the project's proximity to visual receptors. This would also help create a sense of space where project parcels are on both sides of the travel way.

MM 4.1-3: The Project Operator, to the extent feasible, shall install underground, onsite electrical collection systems to reduce the random tall vertical lines created by the electrical poles. Undergrounding would also remove the dark horizontal lines of the conductors. This would create a project footprint that has a considerably smaller vertical presence, resulting in a less cluttered skyline and a more benign industrial nature.

MM 4.1-4: The Project Operator shall clear debris from the project area at least twice per year; this can be in conjunction with regular panel washing and site maintenance activities. The applicant shall erect signs with contact information for the facility operator's maintenance staff at regular intervals along the site boundary, as required by Kern County Planning and Community Development Department. Maintenance staff shall respond within two weeks to resident requests for additional cleanup.

MM 4.1-5: All outdoor lighting shall be the minimum required to meet safety and security standards. The color of all light fixtures shall emit a minimum of blue in their spectrum. "White" light sources, such as metal halide lamps and white light-emitting diodes, shall not be used. Acceptable light sources include high- and low-pressure sodium lamps, incandescent bulbs, and "yellow" light-emitting diodes. Project facility lighting shall be designed to provide the minimum illumination needed to achieve safety and security objectives.

MM 4.1-6: All light fixtures shall have a flat lens recessed within a shield or hood to direct light to the intended illumination area. This will reduce the potential for glare effects that otherwise may create light trespass to residents or motorists and will minimize the amount of light spilling upward into the sky, which would potentially affect local dark-sky conditions. Appropriate lighting at that time will be used and this will be in compliance with all development standards, the Kern County Zoning Ordinance Chapter 19.81, and the goals, policies and implementation plans of the Kern County General Plan Land Use, Open Space and Conservation Element.

MM 4.1-7: Security lighting shall utilize advanced security technologies, such as motion detectors or remote security surveillance that would activate the security lighting only when the sensors identify a perimeter breach or other security threat. Additionally, lights shall use timers limiting their activation time. Dusk till dawn security lighting is prohibited. Operation and maintenance activities shall be conducted during daylight hours.

MM 4.1-8: Solar panels and hardware shall be designed to minimize glare and spectral highlighting. To the extent possible, emerging technologies shall be utilized that introduce diffusion coatings and nanotechnological innovations that will effectively reduce the refractive

index of the solar cells and protective glass. These technological advancements are intended to make the polar panels more efficient at converting incident sunlight into electrical power, but have the tertiary effect of reducing the amount of light that escapes into the atmosphere in the form of reflected light, which would be the potential source of glare and spectral highlighting.

MM 4.1-9: As needed along the boundaries of the facility, appropriately colored privacy slats shall be woven into the perimeter fencing to reduce the potential for glare and spectral highlighting of the solar panels, which may be a source of distraction or discomfort to motorists along I-5, SR 166, South Lake Road, Copus Road, and Old River Road, and to scattered rural residents, especially along Copus Road.

4.1.4.4 Cumulative Effect

Visual effects of any project are not limited to the project site, but may be viewed from many miles away. Because the Covered Lands are within the San Joaquin Valley, the relatively uniform, flat landscape extends approximately 40 miles around the Covered Lands, and includes parts of SR 33, SR 166 and SR 119. The Project would result in substantial scenic quality effects by introducing new colors, textures, and forms into the view in the Solar Panels Areas that would be incongruent with the existing visual environment. However, because of the existing scenic quality from nearby and short-range viewpoints, considered “average” in the EIR analysis (Kern County 2010), implementation would not substantially degrade the existing scenic quality for these viewers. The existing scenic quality of the Covered Lands and its surrounding area is high from topographically superior viewpoints within 10 miles of the sites, and therefore the Project would result in a substantial effect on the visual quality for viewers at a distance. Also the Project would result in a considerable effect on the existing visual character of the Covered Lands because it would introduce an industrial element into a predominantly open, agricultural landscape. Views within the Conservation Areas would be altered as well, although the resulting improvements in the vegetation and overall habitat conditions would generally be perceived as a beneficial effect of the Project.

Overall, the proposed Project would result in a substantial effect on the existing visual character of the Covered Lands as viewed from distant viewpoints. Additionally, the proposed Project would increase the utilitarian character of the viewshed by introducing additional utility-grade infrastructure for the life of the Project. As such the program would contribute to the cumulative, considerable alteration of the existing visual character and scenic quality of the Covered Lands and its surroundings. Although some potential effects can be reduced or avoided with the implementation of mitigation measures, effects of the proposed Project would have the potential, when considered with effects for past, present, and reasonably foreseeable projects in the Kern County viewshed to result in a cumulative effect on daytime views. With the implementation of the mitigation measures, nighttime views would be minimally affected.

4.1.5 Reduced Permit Area Alternative

Under the Reduced Permit Area Alternative, the Permit Area would be reduced from 5,784.3 acres to 3,682 acres by removing from the Project: Sites 4-S/4-M (652.5 acres), 6-S (320.9 acres), 7-S/7-M (481.2 acres) and 17-C (647.7 acres). The lands excluded from the Permit Area would likely remain vacant and would continue to be disked on a regular basis for weed control. If water became available, these lands would likely be converted to active agricultural production.

4.1.5.1 Solar Areas

Construction Phase

As discussed in the Methodology section, with the reduction in acres in the Permit Area one could assume that effects to resources would be proportionally reduced; however this is not necessarily the case with Visual Resources. Of the 2,102.3 acres to be removed from consideration under this Alternative, 1,454.6 acres were in the Solar Areas, and the remaining 647.7 acres were in the Conservation Areas. The Reduced Permit Area Alternative includes a 48 percent reduction in acreage for solar panels, associated infrastructure and Movement Corridors.

During the construction phase, heavy equipment would be needed to install access roads, parking areas, staging and laydown areas, and to remove vegetation. Equipment may include excavators, graders, dump trucks, concrete trucks, trenchers, water trucks, forklifts and cranes. Once these tasks were completed, foundations for the solar array foundations and paved building sites would be constructed.

The removal of vegetation and creation of graded roads, staging areas, and solar array foundations would be visible as cleared areas from both nearby and from a distance. Water trucks will be on site to reduce airborne dust and its appearance, although some slow-moving dust clouds are anticipated. Because the construction is scheduled to occur over the entire Project area over a period of eight to ten years, there may be temporary periods when dust causes temporary, reduced long-range visibility.

Movement corridors will also be established to allow wildlife connectivity between the sites and nearby native habitats. These Movement Corridors will be established along the perimeters of four of the Solar Sites (Sites 2-S, 3-S, 4-S, and 7-S). Within the 50-foot wide Movement Corridors, artificial raised earthen berms will be created to provide refugia for small mammals during flooding events, and to provide burrowing, denning, and perching opportunities for a variety of species. All berms will be created using topsoil from the project site. A general access dirt road may be maintained alongside a drainage ditch created at the base of the berm. The berms will be linear to facilitate construction by mechanical means, but they will not necessarily be continuous; gaps will be provided at strategic locations to allow flood waters to

pass without causing undue damage to the berms. Visual quality and scenic value may be temporarily decreased during the construction phase while berms are being installed; however, vegetation will not be disturbed during this process and air borne dust will be controlled by watering.

During the construction phase, potential effects from heavy equipment and airborne dust may be reduced proportionally to the reduction in acreage; however the effects to visual quality and scenic value are not as simple to quantify. Sites 4-S/4-M, 6-S, and 7-S/7-M are the easternmost sites. Although potential effects that are apparent from the eastern side of the Project Area may be reduced or eliminated, the near and middle-distance views of the Solar Areas, and the distant views from the north, west, and southwest will be substantially altered. However, the existing fore- and middle-distance views have no outstanding characteristics, so that implementation of the Project would not substantially degrade the existing scenic quality or visual character for these viewers.

Operations Phase

The solar arrays and associated infrastructure, such as maintenance and substation buildings, transformers, transmission lines, inverters, and circuit breakers would be constructed and remain during the operations phase, although the PV solar panels would be reduced from 5,784.3 acres of the Proposed HCP Alternative to 3,682 acres under the Reduced Permit Area Alternative. The Project could be viewed by motorists traveling on SR-166, SR-133, SR-119, and local roads including, Old River Road, Copus Road, S. Lake Road and Gardner Field Road, as well as by residents, employees, visitors, and other travelers.

From roadways, the solar arrays and other infrastructure could block fore- or middle-ground views of vegetation and landforms, replacing them with smooth-surfaced, geometric PV solar panels, transmission lines, transformers, and other human-made forms. The parcels to be eliminated from this Alternative are in the eastern portion of the Covered Lands, and therefore views from S. Lake Road would be of more distant solar panels, not PV solar panels directly along the roadway.

Although distant views of mountains and foothills would be obscured from some locations, these views would be visible from Sites 4-S/4-M, 6-S, and 7-S/7-M. The Project would introduce new forms, textures, and colors into the viewshed. However, the scenic quality of the Covered Lands as a whole would not be substantially diminished, as the existing scenic quality is considered average. Conversely, because the Project would introduce new geometric, industrial features on the open, rural landscape, the Project's effects to the existing visual character from some viewpoints would be considered considerable.

The Project would also be visible from more distant views, including surrounding recreation areas. From the Crossing Picnic Area in the Wind Wolves Preserve, approximately five miles southwest of the nearest solar permitted parcel, the Project would be visible in the middle ground as a broken pattern of solar arrays, interspersed with vacant land and the conservation areas, agriculturally productive land, roadways, and scattered structures. This pattern would be visible across a five-mile area from west to east with two other parcels visible approximately two and one half and five miles further east. From this vista, the viewer would also see the San Emigdio Mountains and its foothills, Midway-Sunset and Buena Vista Oil Fields in the distance, as well grasses and spring wildflowers in the foreground. When evaluated in 2010 before implementation of the Project, this landscape was recognized as a relatively high level of scenic value because of the topographic relief, and the harmonious variety of vegetative textures and colors. Although the visual effects of the Project would be limited to a smaller project area within the viewshed than under the 2010 analysis, the effects to scenic quality would still be considered "moderately high" in this smaller construction area.

During the operations phase the solar arrays will have replaced vacant agricultural land within the approximate 2,343.7-acre solar development area under the Reduced Permit Area Alternative. The Solar Areas will be visible from distant views, and will appear, especially from higher elevations, as incongruent with the existing features.

Movement Corridors will be included in the Reduced Permit Area Alternative on the north side of Parcels 2, and the east and south sides of Parcel 16. Vegetation height would be controlled during the operations phase primarily through the use of sheep for grazing. The berms would be expected to level off somewhat, to a height of three to four feet. Once the Movement Corridors have been improved, encroachment of construction activities and vegetation removal will be restricted by erecting security fencing along the boundaries of the Movement Corridors that adjoin Solar Development Footprints. The Movement Corridors would provide a transition zone of sorts, between the highly altered solar areas and other uses, adjacent vacant lands, or conservation areas, giving the viewer an impression of the original, more rural landscape. However, under this Alternative, the Movement Corridors would be located in areas not viewed by many along roadways, and would not be apparent to most viewers from a distance.

The Project would include a new source of light for security during the Operations Phase. Lighting during the operations and maintenance phase will consist of shielded, motion-detector lights on the operations and maintenance buildings, and perhaps at gates on the perimeter. The addition of minimal security lighting is not anticipated to result in light trespass and sky glow that would create a substantial change in the existing nightsky view for the few nearby residents. Lighting would be in compliance with all development standards, the Kern County Zoning Ordinance, and the goals, policies, and implementation measures in the Kern County General Plan. Implementation of Mitigation Measures MM 4.1-5, MM 4.1-6 and MM 4.1-7, as described

in Section 4.1.4.3 for the Proposed HCP Alternative would reduce the potential for spillover lighting to affect residents, motorists, recreationists, and workers to a minimal level.

Glare is not evaluated under the criteria used to determine scenic quality and visual character, but is evaluated instead on the potential to cause visual discomfort or impairment of vision (dazzling). Potential glare from the solar panels would not be substantial, as the panels would be expected to incorporate anti-reflective design measures that would reduce excessive glare. However, if the panels were installed on trackers that elevated them to their most vertical position, glare could affect motorists passing at certain times of the day, so that glare could be substantial to these viewers. Mitigation Measures MM 4.1-8 and MM 4.1-9 as described in 4.1.4.3 will minimize glare and its effects to motorists and others to minimal levels.

4.1.5.2 Conservation Areas

Construction Phase

The visual quality and character of the approximate 647 acres to be set aside as Conservation Areas under the Reduced Permit Area Alternative will not be negatively affected by the Project during the construction phase of the Project. The intent of the Conservation Areas is to encourage the return of native vegetation and wildlife, which will maintain the scenic value and character of the sites. This will be accomplished by re-establishing the habitat, which will include the cessation of disking in areas where it occurred in the past. Some sites will require no action, as they have not been actively farmed or tilled. Natural vegetation will be encouraged within all sites in the Conservation Areas, and seeding will occur where needed to re-establish a semblance of native habitat. Within two to three years of cessation of disking, re-vegetation will occur, so that vegetation will be well-established by the completion of the eight-to-ten year construction phase. In areas where the land has been impacted in the past by disking, repeated plantings of row crops, mining, or other activities, the quality of the habitat and the resulting scenic quality of the viewsheds within the Conservation Areas would be beneficially affected under the Proposed HCP Alternative.

Operations Phase

Once disking of the conservation areas has ceased, the re-establishment of native vegetation will replace vacant, disked agricultural fields in the Conservation Areas. Long-term management of these areas through managed grazing and restoration, where needed, will also be implemented. Other activities intended to improve the habitat within the Conservation Areas will continue during the Operations Phase. Again, the Conservation Areas will not be negatively affected by the Project, and the visual quality and scenic value will be beneficially affected in these areas.

4.1.5.3 Proposed Mitigation Measures

The same mitigation measures as proposed under Section 4.1.3.3, the Proposed HCP Alternative, would be implemented under the Reduced Permit Area Alternative.

4.1.5.4 Cumulative Effect

Visual effects of any project are not limited to the project site, but may be viewed from many miles away. Because the Covered Lands are within the San Joaquin Valley, the relatively uniform, flat landscape extends approximately 40 miles around the Covered Lands, and includes parts of SR 33, SR 166 and SR 119. The Project would result in substantial scenic quality effects by introducing new colors, textures, and forms into the view in the Solar Panels Areas that would be incongruent with the existing visual environment. However, because of the existing scenic quality from nearby and short-range viewpoints, considered "average" in the EIR analysis (Kern County 2010), implementation would not substantially degrade the existing scenic quality or visual character for these viewers. The existing scenic quality of the Covered Lands and its surrounding area is high from topographically superior viewpoints within 10 miles of the sites, and therefore the Project would result in a substantial effect on the visual quality for viewers at a distance. Also the Project would result in a substantial and unavoidable effect on the existing visual character of the Covered Lands because it would introduce an industrial element into a predominantly open, agricultural landscape. Views within the Conservation Areas would be altered as well, although the resulting improvements in the vegetation and overall habitat conditions would generally be perceived as a beneficial effect of the Project.

Overall, the proposed Project would result in a substantial effect on the existing visual character of the Covered Lands as viewed from distant viewpoints. Additionally, the proposed Project would increase the utilitarian character of the viewshed by introducing additional utility-grade infrastructure for the life of the Project. As such the program would contribute to the cumulative alteration of the existing visual character and scenic quality of the Covered Lands and its surroundings. Although some potential effects can be reduced or avoided with the implementation of mitigation measures, effects of the proposed Project would have the potential, when considered with effects for past, present, and reasonably foreseeable projects in the Kern County viewshed to result in a cumulative effect on daytime views.

4.1.6 Comparison of Alternatives

A summary of results comparing the No Action Alternative to the Proposed HCP Alternative and Reduced Permit Area Alternative is shown in Table 4.1-1. Each of the potential effect areas, which includes effects to visual quality and visual character from the construction and operations phases of the proposed Project, is measured with a less, more, or similar, effect ranking as compared to the No Action Alternative.

Table 4.1-1
Comparison of Alternatives to the No Action Alternative

Potential Effect	No Action	Proposed HCP	Reduced Permit Area
AESTHETICS			
Solar Panel Areas	-		
Construction Phase	-	More	More
Operations Phase	-	More	More
Conservation Areas			
Construction Phase	-	Less	Less
Operations Phase	-	Less	Less
LIGHT/GLARE			
Solar Panel Areas	-		
Construction Phase	-	Similar	Similar
Operations Phase	-	More	More
Conservation Areas			
Construction Phase	-	Similar	Similar
Operations Phase	-	Similar	Similar
Cumulative Effect	-	More	More

Source: Kern County, 2010.

There would be no changes in the existing visual character or scenic value under the No Action Alternative, unless other projects were proposed. If this were the case, any proposed project would be required to complete an environmental evaluation to determine effects to visual quality.

The Proposed HCP Alternative would, in general, have a greater effect on the near view, the mid-view, and the distant view than the Reduced Permit Area Alternative. Because the Reduced Permit Area Alternative contains fewer acres than the Proposed HCP Alternative, the effects to the overall viewshed would be less under the former than the later Alternative, although effects from either of these Alternatives would be greater than under the No Action Alternative.

Four aspects must be considered when determining potential effects to the Covered Lands, including scenic quality, visual character, light and glare. Within the Covered Lands effects to the Solar Sites will vary significantly from effects to the Conservation Areas. The Conservation Areas will be left in their current state, or modifications will be implemented to improve habitat for native species, resulting in views of natural habitat rather than lands disturbed from agricultural activities. Therefore, the dramatic changes from rural to more industrial views that occur on the Solar Sites will be most noticeable to viewers from near, middle, and far view sights.

The Covered Lands will be visible from a distance, and the 3,798.3-acre Covered Lands considered under the Proposed HCP Alternative will be more prominent than would the 2,343.7-acre solar development area under the Reduced Permit Area. The distant mountains and foothills would not be visible when viewed from the Proposed HCP Alternative or the Reduced Permit Area Alternative; however, the Reduced Permit Area Alternative would block fewer distant

views. Changes from an agricultural landscape to one broken by large, geometric industrial features would be more apparent in the larger Covered Lands of the Proposed HCP Alternative than in the smaller footprint of the Reduced Permit Area Alternative. Therefore, the Proposed HCP Alternative would have a greater effect on the visual character of the area than the Reduced Permit Area Alternative. Either Action Alternative would, however, change the visual character from one of rural agriculture to one interspersed with industrial features, whereas the visual character would not change under the No Action Alternative.

The scenic quality of the Covered Lands would not be degraded substantially, under any of the Alternatives. The view of the vacant agricultural lands, interspersed with productive fields and orchards, and other uses was determined to be of average scenic quality. The change from this unremarkable landscape to one with parcels of organized rows of solar panels, interspersed with natural habitat, vacant agricultural land, and scattered residences and oil wells was determined to be minimal.

Similarly, because the Reduced Permit Area Alternative has a smaller footprint for the Solar Panel Areas, the potential for effects from lighting and glare would be less than these potential effects under the Proposed HCP Alternatives. However, lighting is not anticipated for the construction phase under either Action Alternative, and will not be used in the Conservation Areas under either Action Alternative. Lighting is proposed in limited areas only during the operations phase on the Solar Sites to include only lighting on gates and perhaps at gates. Glare would be a factor only on the Solar Sites as well. With the implementation of mitigation measures MM 4.1-5 through MM 4.1-9 would reduce potential effects of lighting and glare to minimal levels in both of the Action Alternatives. Lighting and glare would not affect the Covered Lands under the No Action Alternative. Although lighting and glare would occur to a lesser extent under the Reduced Permit Area Alternative, both Action Alternatives would result in greater affects to the Covered Lands than the No Action Alternative.

4.2 AGRICULTURE

4.2.1 Overview

This section describes the potential effects of the alternatives on agricultural resources in the Covered Lands compared to existing conditions when the Notice of Intent was issued. As described in Section 3.2, Agriculture, the Covered Lands consist of approximately 5,784 acres of primarily, vacant agricultural land. The Project sites include a number of noncontiguous parcels in the Westside Subarea of the San Joaquin Valley within Kern County's Valley Region. Approximately 3,798 acres would be utilized for the solar arrays and supporting infrastructure, as well as movement corridors and required setbacks, with the remaining approximate 1,894 acres set aside as Conservation Areas.

4.2.2 No Action Alternative

This section summarizes the potential effects to agriculture associated with the No Action Alternative. As discussed in Section 2.3.2, the No Action Alternative assumes that the Draft HCP would not be implemented, the proposed Incidental Take Permit (ITP) would not be issued, and the Covered Activities for the Maricopa Sun Solar complex would not occur. The 5,784.3 acres identified as the Permit Area would likely remain vacant, the 1,894.4 acres identified as Conservation Sites would not be permanently conserved, and the proposed Conservation Management Plan would not be implemented.

The Covered Lands include approximately 5,784 acres of nearly flat land, some of which was previously cultivated for agricultural production. The land in the immediate vicinity of the Covered Lands is cultivated and uncultivated farmland, industrial, residential, and a vacant mineral resource area. The Covered Lands have the following land use designations in the Kern County General Plan: 8.1 (Intensive Agriculture); 8.1/2.5 (Intensive Agriculture/Flood Hazard); 8.3/2.5 (Extensive Agriculture/Flood Hazard); 8.5/2.5 (Resource Management/Flood Hazard); and 8.1/2.3 (Intensive Agriculture/Shallow Groundwater). The Covered Lands are zoned A (Exclusive Agriculture) or A-1 (Limited Agriculture) by the Kern County Zoning Ordinance.

The Covered Lands are designated under the Farmland Protection Policy Act (FMMP) as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Grazing Land, and a small amount of Vacant or Disturbed Land and Nonagricultural and Natural Vegetation. The Covered Lands have not been farmed for at least 12 years and would not be farmed in the foreseeable future because they lack a developed, dependable irrigation water supply. Lands in this vicinity receive irrigation water from the Wheeler Ridge Maricopa Water Storage District. Surface water received under contract appurtenant to this land is aggregated to all local ranches together as one allocation, and the landowners have disbursed this allocation for use on planted acreage. The allocation of water is not expected to increase to allow usage on addition farmland. A change in

the disbursement of water among the local ranches/farms is unlikely in the foreseeable future, as much of the productive land is planted in established orchards that depend on irrigation water, and not annual crops (i.e., tomatoes or melons) that would allow land to remain fallow if water were not available. Consequently, the lack of water for crop irrigation limits the potential agricultural productivity of the land, and the cultivation of crops is infeasible. Therefore, according to the California Department of Conservation criteria, parcels within the Covered Lands do not qualify as Prime Farmlands. In this arid region, the land would qualify only as Grazing land, although a source of water would be needed for livestock, and it is unlikely that the fallow farmlands would provide vegetation suitable for grazing.

The Covered Lands are within the boundaries of Agricultural Preserve No. 12. The Covered Lands were granted a certificate of cancellation of the Williamson Act land use contracts (Resolution No. 2011-078) by the Kern County Board of Supervisors on March 29, 2011 (Kern County 2010). The landowner will pay associated taxes, fees, and penalties that are needed to complete the cancellation process.

4.2.2.1 Solar Sites

Under the No Action Alternative, the Proposed Action would not occur. The inactive farmland is unlikely to become productive, because of the lack of water for irrigation or grazing. Inactive agricultural lands would remain under the classification of Farmlands by the State. Because the land is currently under nonrenewal of the Williamson Act, the contract would not be renewed. Although the status of the land as farmland would not change, the land could be converted to another use, including commercial, industrial, mining, or energy production (solar or wind turbines) if another project were proposed. Roadways, access areas, solar panels, associated infrastructure and buildings would not be constructed for the proposed Project. If the Proposed Action did not occur no effects to agricultural resources would result under this Alternative.

4.2.2.2 Conservation Areas

Under the No Action Alternative, no changes in land use that are associated with the project would occur. Vacant agricultural lands would remain under the classification of Farmlands, but would most likely not become productive. Areas where agricultural production occurred in the past might continue to be disked and tilled, so that native vegetation would be removed. No Conservation Areas would be established, and the land would most likely remain fallow; neither agriculturally productive nor conducive to natural vegetation or wildlife. Unless another project was proposed, no effects to agricultural resources would occur under this Alternative.

4.2.2.3 Mitigation Measures

There are no mitigation measures imposed under the No Action Alternative.

4.2.2.4 Cumulative Effect

The geographic scope for considering cumulative effects on agriculture is not limited to the extent of the Covered Lands, but to Kern County as a whole. The loss of Farmland to "conversion to another use" is tracked by the State in individual counties. Kern County reported in 2009 that a large number of property owners decided not to renew contracted acreage, resulting in a loss of 14,008 acres of prime and non-prime farmland that year under NRCS criteria. Typically, but not always, "conversion to another use" indicates that lands have been sold for use for industrial, commercial, or residential development and is no longer available for agricultural use. This has proven to be a trend that occurred both before and after 2009. In the Covered Lands and the surrounding areas, landowners who do not have access to dependable irrigation water have chosen to let lands remain vacant or fallow. Although these lands are not productive, they remain classified as "farmland" by the County and the State until/unless "converted to another use."

Lands to be used for this and other solar projects in the County are considered "farmlands" in the State NRCS program. As discussed above, the Covered Lands are considered by NRCS as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Grazing Land, and a small amount of Vacant or Disturbed Land and Nonagricultural and Natural Vegetation. The Covered Lands have not been farmed for at least 10 years and would not be farmed in the foreseeable future because they lack a developed, dependable irrigation water supply. Soils and water play an important role in agricultural production in the vicinity of the Covered Lands. The Covered Lands are not irrigated, and the soils, according to the Class 7 description, "have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland or wildlife habitat." Therefore, the "farmlands" do not meet the NRCS criteria for Prime farmlands. Because the lands have not been actively farmed in the recent past, solar projects would not decrease productivity on these sites. Should projects occur on lands currently utilized as irrigated farmlands, however, the acres in agricultural production would decrease during the lifetime of the project.

Other solar projects, if approved would also utilize agricultural land for solar facility use. The Covered Lands are zoned A (Exclusive Agriculture) or A-1 (Limited Agriculture) by the Kern County Zoning Ordinance. Solar facilities are permitted on properties zoned for exclusive agricultural use with approval of a conditional use permit (CUP). As with this proposed Project, other proposed solar projects would require CUP approval, and would be active for a period of approximately 30 years, which would not be considered a permanent conversion of agricultural land to a non-agricultural designation under the Kern County General Plan.

The proposed Project, unlike other proposed solar facilities in the area, is guided by the HCP, which outlines the use of the land during and after the life of the Project. The Draft HCP requires that Conservation Areas be set aside in perpetuity, and that upon decommissioning the

Solar Sites also be set aside in perpetuity, making them unavailable for agricultural production. Typically, solar facility projects would not conflict with the County's General Plan or zoning ordinances regarding the use of the agricultural lands for solar facilities, although the proposed solar complex would be considered as a permanent conversion of agricultural land to a non-agricultural designation under the HCP.

Additionally, the Covered Lands were under Williamson Contract, and a certificate of cancellation was issued in 2011 by the Kern County Board of Supervisors. In order to cancel the contract, the landowner must provide the County with evidence that farming is impractical or infeasible. In this case, because irrigation water was not available, the land could not support row crops, orchards, or livestock or other agricultural production. The cancellation will be complete upon payment by the landowner of fees associated with the request for cancellation. The overall development of Kern County, including implementation of related solar projects, could result in the cancellation of Williamson Act contracts on additional parcels that are greater than 100 acres, when conditions there are similar to those of the Covered Lands. Typically, once a Project has been decommissioned, the land would once again be available for farming activities, so that it could once again be entered into contract under the Williamson Act. Because other solar projects would be limited to twenty to thirty years, at which time the lands would be available for agricultural production, the cumulative effect on agricultural resources resulting from solar projects is temporary, and limited to the duration of the Project. However, for the proposed Project, unless irrigation water became available in the future, or it was otherwise determined upon decommissioning of the project that farmland was the best use of the land, the removal of the Covered Lands from Williamson Act contract would remain in effect whether or not the Project occurred. The cancellation does not automatically withdraw the land from agricultural use, and it could be cultivated if water became available.

Under the No Action Alternative, no conditional use permit would be required by the County in support of a solar facility on farmland. It is likely that the Covered Lands would be remain designated as farmland under the County's General Plan but would remain uncultivated, unless a source of reliable irrigation water were found. Because water allocation for that area is not expected to increase, and the available water has been fully allocated, a source of additional reliable water is unlikely.

In summary, because the land is not currently under cultivation there would be no loss of productive farmland as a result of the Project or similar projects. A change in designation of the land from "farmland" to "grazing" land by the State would occur as a result of their review of the soils, lack of irrigation water, and other criteria, and not as a result of the proposed Project or similar solar projects. Cancellation of the Williamson Act contract, initiated after the project was proposed, would not be reversed if the Project did not go forward. Although the loss of advantages of the Williamson Act contract would affect the landowner, there would be no

change in the ability of the land to be agriculturally productive unless/until the landowner leased the land for other purposes, such as the temporary use for solar facilities. Therefore, cumulative effects under the No Action Alternative would be less than significant.

4.2.3 Proposed HCP Alternative

4.2.3.1 Solar Sites

The Covered Lands are primarily vacant, undeveloped agricultural land, with scatted agricultural buildings, residences, and oil and gas operations. The entirety of the Covered Lands is considered agricultural by the State and County.

Construction Phase

During the construction phase, approximately 3,007.8 acres of the Covered Lands will be converted to solar development, and another 33 acres will be converted to Movement Corridors to allow wildlife continued access to nearby habitat for foraging, mating, denning, etc. Vegetation would be removed, and roadways, access roads, parking areas, and staging and laydown areas would be installed. Once these tasks were completed, foundations for the solar array foundations and paved building sites would be constructed.

Movement corridors will also be established to allow wildlife connectivity between the sites and nearby native habitats. These Movement Corridors will be established along the perimeters of four of the Solar Sites (Sites 2-S, 3-S, 4-S, and 7-S). Within the 50-foot wide Movement Corridors, artificial raised earthen berms will be created to provide refugia for small mammals during flooding events, and to provide burrowing, denning, and perching opportunities for a variety of species. A general access dirt road may be maintained alongside a drainage ditch created at the base of the berm. The berms would be linear to facilitate construction by mechanical means, and gaps will be provided at strategic locations to allow flood waters to pass without causing undue damage to the berms.

Land designated as “Agricultural” or “farmland,” but which is vacant or uncultivated would be altered to accommodate development of solar facilities during the Construction Phase. Although the Covered Lands are designated as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland in accordance with the FMMP, the parcels do not otherwise meet the criteria established by the NRCS for each of these designations. The Covered Lands have not been cultivated since at least 2004 and therefore, have not been cultivated within four years of the 2010 mapping date. Additionally, under the NRCS soils criteria, successful agricultural production depends not only on the suitability of the land for agricultural production, but also the existence of a developed and dependable irrigation water supply. In past years, several parcels have been leased for the commercial cultivation of crops that were irrigated using a portion of the leaseholder’s water allotment. The property owner has removed any water allocation from

all the subject properties. Because water for irrigation is not available and is not likely to be available in the foreseeable future, agricultural productivity of the land is restricted and cultivation of crops is not feasible. If it were irrigated, "farmland" as defined under the FMMP would include portions of the Covered Lands.

As noted earlier, without irrigation, the quality of the soil on the Solar Sites is not considered productive agricultural land, and its conversion to use for the Solar Sites would be considered a minimal effect. Additionally, the use of the land, designated as "Agricultural" by the Kern County General Plan, is permitted for solar facilities (page 53, Map Provisions: Resource). Because no farming has occurred on these lands for at least 10 years, and the lands do not meet the NRCS criteria for "farmlands," covered activities during the Construction Phase will have a minimal effect on agriculture.

Operations Phase

During the Operations Phase, the land designated for Solar Sites would be converted from vacant, uncultivated land for use as roadways, access areas, parking, concrete pads for solar facilities and associated infrastructure, buildings, and the Movement Corridors. The lands would remain in use as a solar facility throughout the life of the Project (20-30 years). The Solar Sites would be converted to conservation areas in perpetuity upon decommissioning, making them unavailable for agricultural production in the future. However, because no farming has occurred on these lands for at least 10 years, and the lands do not meet the NRCS criteria for "farmlands," covered activities during the Operations Phase will have a minimal effect on agriculture.

4.2.3.2 Conservation Areas

Construction Phase

Approximately 1,895 acres of land designated as agricultural, will be set aside as Conservation Areas, and will be left as fallow. It will not be disked or tilled, although some of this acreage will be seeded to encourage native habitat to re-establish during the construction phase of the Project. The intent of the Conservation Areas is to encourage the return of native vegetation and wildlife, which will maintain the scenic value and character of the sites. Natural vegetation will be encouraged within all sites in the Conservation Area, and seeding will occur where needed to re-establish a semblance of native habitat. Within two to three years of cessation of disking, re-vegetation will occur, so that vegetation will be well-established by the completion of the eight-to-ten year construction phase. Approximately 720 acres of the Conservation Areas are considered off site conservation land, including a 640-acre parcel south of SR 166. Because no farming has occurred on these lands for at least 10 years, and the lands do not meet the NRCS criteria for "farmlands," covered activities during the Construction Phase will have a minimal effect on agriculture.

Operations Phase

During the Operations Phase, the land designated for Conservation Areas would either be left untreated, or be seeded to encourage native vegetation to re-establish. This treatment of the Conservation Areas would continue throughout the Operations Phase of the Project. Where needed, sheep grazing would occur to control vegetative growth, and limit the maximum height of grasses and forbes.

The Conservation Areas would remain as such in perpetuity, making them unavailable for agricultural production in the future. However, because no farming has occurred on these lands for at least 10 years, and the lands do not meet the NRCS criteria for "farmlands," covered activities during the Operations Phase will have a minimal effect on agriculture.

4.2.3.3 Mitigation Measures

Compliance with the goals, policies, and implementation measures of the Kern County General Plan is required. No additional mitigation measures are proposed.

4.2.3.4 Cumulative Effect

The geographic scope for considering cumulative effects on agriculture is not limited to the extent of the Covered Lands, but to Kern County as a whole. The Covered Lands, and much of the surrounding land in this portion of the county are zoned A (Exclusive Agriculture) or A-1 (Limited Agriculture) by the Kern County Zoning Ordinance. Solar facilities are permitted on properties zoned for exclusive agricultural use with approval of a conditional use permit (CUP). As with this proposed Project, other proposed solar projects would require CUP approval, and would be active for a period of approximately 30 years, which would not be considered a permanent conversion of agricultural land to a non-agricultural designation under the Kern County General Plan.

Four other solar projects, totaling approximately 695 acres are proposed in Kern County, in the areas in and north of Taft. The Draft HCP requires that Conservation Areas be set aside in perpetuity, and that upon decommissioning the Solar Sites also be set aside in perpetuity, making them unavailable for agricultural production. Typically, solar facility projects would not conflict with the County's General Plan (page 53) or zoning ordinances regarding the use of the agricultural lands for solar facilities, although this Project would be considered as a permanent conversion of agricultural land to a non-agricultural designation under the Draft HCP.

Agriculture can be compared under three different criteria: designation as Farmland by the State NRCD using its definition; productivity of the land as agricultural; and land under Williamson Act contract. Cumulative effects of the proposed Project and similar solar projects in the region can be considered under these criteria.

As noted under the No Action Alternative, the loss of Farmland to "conversion to another use" is tracked by the State in individual counties. Lands to be used for this and other solar projects in the County are considered "farmlands" in the State NRCS program. Lands in this area may not meet the necessary NRCS criteria for Prime or other farmland designations, especially when irrigation water is not available, so that they should be designated as "grazing land" instead. The proposed Project and similar solar facilities in the area will not cumulatively affect the amount of land designated as "Prime," "Important" or Unique, under the NRCS definitions.

Because the Covered Lands have not been actively farmed in the recent past, the proposed solar project would not decrease productivity on these sites. However, should similar projects occur on lands currently utilized as irrigated farmlands, the acres in agricultural production would decrease during the lifetime of each project.

Additionally, the Covered Lands were under Williamson Contract, and a certificate of cancellation was issued in 2011 by the Kern County Board of Supervisors. The cancellation will be complete upon payment by the landowner of fees associated with the request for cancellation. The overall development of Kern County, including implementation of related solar projects, could result in the cancellation of Williamson Act contracts on additional parcels that are greater than 100 acres. Typically, once solar projects have been decommissioned after twenty to thirty years, the lands would once again be available for farming activities, so that they could once again be entered into contract under the Williamson Act. When irrigation water is available, the cumulative effect on agricultural resources under Williamson Act resulting from solar projects is temporary, and limited to the duration of the Project. However, it is anticipated that with the propose Project, the removal of the Covered Lands from Williamson Act contract will remain in effect after decommissioning. As the Covered Lands would remain as conservation areas in perpetuity, the lands would not be available for Williamson Act contract once the Project has been decommissioned. Therefore, cumulative effects on farmlands under Williamson Act contract would generally be temporary, based on the life of each project. One other project of approximately 253 acres has requested cancellation of a Williamson Act contract. It is unknown whether this property includes irrigated farmland, and whether or not this land is currently under production.

Cumulative effects from the Reduced Permit Area alternative would be similar to those under the Proposed HCP alternative, although fewer acres would be affected. Cumulative effects to farmlands under the County designation would be permitted with a CUP, and would not conflict with the Kern County General Plan or Zoning Ordinances. Under the Draft HCP for the proposed Project only, lands converted to Conservation Areas in perpetuity would be considered a permanent conversion of agricultural land to non-agricultural designation. Prime and other Farmlands as designated by NRCS do not meet the agency's criteria for these designations, and would most likely be determined to be "grazing" land. The "farmland" or "grazing" lands with

solar facilities would be considered a conversion of farmland to other use for the life of the solar projects. The proposed Project will not affect the number of acres of productive farmland in the area, as none are, or have been under production for many years. However, any lands under irrigated cultivation that were utilized for other solar projects would become unavailable for the duration of the project, resulting in a temporary reduction in acres of productive farmland. Farmlands in Williamson Act contract would be cancelled for at least the duration of the project. Therefore, cumulative effects to agricultural resources would be temporary but significant for the duration of the projects.

4.2.4 Reduced Permit Area Alternative

4.2.4.1 Solar Sites

The entirety of the Covered Lands is considered agricultural by the State and County. Under the Reduced Permit Area Alternative, the Permit Area would be reduced from 5,784.3 acres to 3,682 acres by removing from the Project: Sites 4-S/4-M (652.5 acres), 6-S (320.9 acres), 7-S/7-M (481.2 acres) and 17-C (647.7 acres) (Refer to Figure 2-2 in Chapter 2.0). The lands excluded from the Permit Area would likely remain vacant and would continue to be disked on a regular basis for weed control. If water became available, these lands would likely be converted to active agricultural production.

Construction Phase

During the construction phase, approximately 2,343.7 acres of the Covered Lands would be converted to solar development. Vegetation would be removed, and roadways, access roads, parking areas, and staging and laydown areas would be installed. Once these tasks were completed, foundations for the solar array foundations and paved building sites would be constructed.

Movement corridors would also be established to allow wildlife connectivity between the sites and nearby native habitats. These Movement Corridors would be established along the perimeters of Solar Sites 2-S and 3-S. Within the 50-foot wide Movement Corridors, artificial raised earthen berms would be created to provide refugia for small mammals during flooding events, and to provide burrowing, denning, and perching opportunities for a variety of species. A general access dirt road might be maintained alongside a drainage ditch created at the base of the berm. The berms would be linear to facilitate construction by mechanical means, and gaps would be provided at strategic locations to allow flood waters to pass without causing undue damage to the berms.

Land designated as “Agricultural” or “farmland,” but which is vacant or uncultivated would be altered to accommodate development of solar facilities during the Construction Phase. Although the Covered Lands are designated as Prime Farmland, Farmland of Statewide Importance, and

Unique Farmland in accordance with the FMMP, the parcels do not otherwise meet the criteria established by the NRCS for each of these designations. The Covered Lands have not been cultivated since at least 2004 and therefore, have not been cultivated within four years of the current 2010 mapping date. Additionally, under the NRCS soils criteria, successful agricultural production depends not only on the suitability of the land for agricultural production, but also the existence of a developed and dependable irrigation water supply. In past years, several parcels have been leased for the commercial cultivation of crops that were irrigated using a portion of the leaseholder's water allotment. The property owner has removed any water allocation from all the subject properties. Because water for irrigation is not available and is not likely to be available in the foreseeable future, agricultural productivity of the land is restricted and cultivation of crops is not feasible. If it were irrigated, "farmland" as defined under the FMMP would include portions of the Covered Lands.

As noted earlier, without irrigation, the rankings for soils on the Solar Sites are not considered sufficient for productive agricultural land, and its conversion to use for the Solar Sites would not be considered a substantial effect. Additionally, the use of the land, designated as "Agricultural" by the Kern County General Plan, is permitted for solar facilities. Because no farming has occurred on these lands for at least 10 years, and the lands do not meet the NRCS criteria for "farmlands" activities during the Construction Phase will have a minimal effect on agriculture.

Operations Phase

During the Operations Phase, the land designated for Solar Sites would be converted from vacant, uncultivated land for use as roadways, access areas, parking, concrete pads for solar facilities and associated infrastructure, buildings, and the Movement Corridors. The Solar Sites would be converted to conservation areas in perpetuity upon decommissioning, making them unavailable for agricultural production in the future. However, because no farming has occurred on these lands for at least 10 years, and the lands do not meet the NRCS criteria for "farmlands" activities during the Operations Phase will have a minimal effect on agriculture.

4.2.4.2 Conservation Areas

Construction Phase

The approximate 647.7 acres of land designated as agricultural to be set aside as Conservation Areas would be left as fallow and would not be disked or tilled, and some areas would be seeded to encourage native habitat to re-establish during the construction phase of the Project. The intent of the Conservation Areas is to encourage the return of native vegetation and wildlife, which will maintain the scenic value and character of the sites. Natural vegetation will be encouraged within all sites in the Conservation Area, and seeding will occur where needed to re-establish a semblance of native habitat. Within two to three years of cessation of disking, re-vegetation will occur, so that vegetation will be well-established by the completion of the eight-

to-ten year construction phase. Because no farming has occurred on these lands for at least 10 years, and the lands do not meet the NRCS criteria for "farmlands," activities during the Construction Phase will have a minimal effect on agriculture.

Operations Phase

During the Operations Phase, the land designated for Conservation Areas would be either left untreated, or would be seeded to encourage native vegetation to re-establish. This treatment of the Conservation Areas would continue throughout the Operations Phase of the Project. Where needed, sheep grazing would occur to control vegetative growth.

The lands would remain in the use throughout the life of the Project (20-30 years). The Solar Sites would be converted to conservation areas in perpetuity upon decommissioning, making them unavailable for agricultural production in the future. However, because no farming has occurred on these lands for at least 10 years, and the lands do not meet the NRCS criteria for "farmlands" activities during the Operations Phase will have a minimal effect on agriculture.

4.2.4.3 Mitigation Measures

Compliance with the goals, policies, and implementation measures of the Kern County General Plan is required. No additional mitigation measures are proposed.

4.2.4.4 Cumulative Effect

Cumulative effects from the Reduced Permit Area alternative would be similar to those under the Proposed HCP alternative, although fewer acres would be affected. Cumulative effects to farmlands under the County designation would be permitted with a CUP, and would not conflict with the Kern County General Plan or Zoning Ordinances. Under the Draft HCP for the proposed Project only, lands converted to Conservation Areas in perpetuity would be considered a permanent conversion of agricultural land to non-agricultural designation. Prime and other Farmlands as designated by NRCS do not meet the agency's criteria for these designations, and would most likely be determined to be "grazing" land. The "farmland" or "grazing" lands with solar facilities would be considered a conversion of farmland to other use for the life of the solar projects. The proposed Project will not affect the number of acres of productive farmland in the area, as none are, or have been under production for many years. However, any lands under irrigated cultivation that were utilized for other solar projects would become unavailable for the duration of the project, resulting in a temporary reduction in acres of productive farmland. Farmlands in Williamson Act contract would be cancelled for at least the duration of the project. Therefore, cumulative effects to agricultural resources would be temporary but significant for the duration of the projects.

4.2.5 Comparison of Alternatives

A summary of results comparing the No Action Alternative to the Proposed HCP Alternative and Reduced Permit Area Alternative is shown in Table 4.2-1. Each of the potential effect areas, including the Solar Sites, the Conservation Areas, and the cumulative effects is measured with a less, more, or similar effect ranking as compared to the No Action Alternative.

Table 4.2-1
Comparison of Alternatives to the No Action Alternative

Potential Effect	No Action	Proposed HCP	Reduced Permit Area
Solar Panel Areas	-		
Construction Phase	-	Similar	Similar
Operations Phase	-	Similar	Similar
Conservation Areas			
Construction Phase	-	Similar	Similar
Operations Phase	-	Similar	Similar
Cumulative Effect	-	More	More

Source: Kern County, 2010.

Agriculture can be compared under three different criteria: designation as Farmland by the State NRCD using its definition; productivity of the land as agricultural; and land under Williamson Act contract.

Most of the acreage within the Covered Lands is designated by the State as Prime Farmland or Farmland of Statewide Importance. However, the land does not meet NRCD criteria under the definition of Prime Farmland, as it has neither been farmed within the required period, nor been under irrigation. Land classified as Farmland of Statewide Importance is typically used for grazing land, although this has not been the case within the Covered Lands, where the land has remained fallow or vacant. If the land met the NRCS criteria for Prime Farmland, and was actively farmed, the No Action Alternative would have the least effect, with the Proposed HCP having the greatest effect, as the land would have to be reclassified as "converted to another use." However, because the land is not under agricultural production, the proposed Project would have no effect on the designation as "Farmland" under any of the Alternatives. Cumulatively, the Project would not contribute to a change in designation. If other projects required the conversion of irrigated farmland from Prime Farmland to another use, however, those projects would individually contribute to the change in designation.

In terms of agricultural production on the Covered Lands, none of the Alternatives will affect the lands because none of the acreage is, or has been under agricultural production for some time. It is unlikely that the land will become productive, as a source of reliable irrigation is improbable. Under the No Action Alternative, no changes in land use would occur. The lands designated as agricultural would remain vacant, uncultivated farmland. Under the Proposed HCP Alternative and the Reduced Permit Area Alternative, the land would change from uncultivated farmland to

Solar Sites and Conservation Areas Within both the Solar Sites and the Conservation Areas, agricultural production would not occur once the construction phase began, as all the lands will be converted to conservation areas in perpetuity once the Project has been decommissioned. None of the land is under currently under agricultural production, so that the Action Alternatives would have an effect on land productivity only if the landowner had intended to use the land for crop production or grazing in the future. Farming would be dependent on a reliable source of irrigation water was unlikely to become available. If another proposed project required the conversion of productive, irrigated farmland within the region, it would contribute to a cumulative, temporary reduction in agricultural production for the duration of that project. Most of the land within the Covered Lands was formerly included in Williamson Act contracts, as are many of the surrounding parcels. However, the landowner's request for cancellation of the Williamson Act contracts was approved by the Kern County Board of Supervisors in 2011. The request for cancellation occurred after the land was considered for the proposed solar Project, but before the Project was approved. The County and State data, when next updated, will reflect the Williamson Act cancellation as a reduction of total acreage under contract. The cancellation will remain in effect regardless of whether the Project is approved and goes forward. Therefore, none of the Alternatives will have an effect on agriculture as tracked under Williamson Act contracts by Kern County and the State.

Other projects may or may not contribute to a cumulative decrease in County agricultural acreage under Williamson Act contract. If a landowner in the area determines that his/her land will not support agriculture, he/she can petition the County to cancel the contract, regardless of whether the land is proposed for another use. However, there are criteria that must be met, and fees and penalties to be paid in order for the cancellation to occur. This is intended to dissuade landowners from cancelling contracts on lands where agriculture is viable. Referring to Table 4.2-1, the ranking of "more" effects to agricultural resources from cumulative projects would occur only if the lands were currently 1) under agricultural production, or 2) irrigated and met the criteria for Prime Farmland under the NRCS, or 3) cancelled under Williamson Act contract for the purpose of installing and operating solar projects. In any of these cases the project would make the land unavailable for agriculture for at least the duration of the project, which would be considered a temporary effect to agricultural resources.

This page intentionally left blank.

4.3 AIR QUALITY AND GREENHOUSE GAS

4.3.1 Overview

This section describes the potential effects of the alternatives on air quality in the region compared to existing conditions when the Notice of Intent was issued. The analysis of air quality focuses on the issues that arise within the Covered Lands. Cumulative effects to air quality usually occur because they are often global, regional, and site specific. Effects of other projects in combination with the Covered Activities analyzed in this EIS create greater effects.

4.3.2 Methodology

Methodology for determining potential effects associated with Covered Activities on air quality includes an examination of how each Alternative would contribute to exceeding applicable air quality thresholds resulting from construction and/or operations, possible exposure to toxic air contaminants (TACs), and carbon monoxide hotspots. Exposures to objectionable odors were eliminated from the scope of analysis based on the findings made in the Notice of Preparation/Initial Study published for the 2010 EIR (Kern County 2010). The EIR utilized the "Urban Emissions Model" (URBEMIS) (version 9.2.4) and Emissions Factors 2007 (EMFAC2007) for assessing criteria air pollutants[1]. Due to a lack of precise construction details available during analysis, URBEMIS defaults were utilized for equipment values for short-term construction emissions. Project specific GHG emissions were estimated using the California Climate Action Registry General Reporting Protocol and the URBEMIS model (version 9.2.4) which employs on- and off-road equipment emission factors from the California Air Resources Board's (CARB's) EMFAC 2007 and OFFROAD 2007 models. Results are carried over to the EIS as part of the methodology. The EIR concluded that significant and unavoidable effects would occur from the Proposed Action activities. However, since the Permit Area of the HCP has been reduced to 5,784.3 acres, those same effects would also be reduced as mentioned in Section 4.3.1.

[1] URBEMIS computer program that estimates construction, area source, and operational air pollution emissions from a wide variety of land use development projects in California, such as residential neighborhoods, shopping centers, office buildings, etc.(South Coast Air Management District 2008). The model also identifies mitigation measures and emission reductions associated with specific mitigation measures. The model uses the California Air Resources Board's EMFAC2007 model for on-road vehicle emissions and the OFFROAD2007 model for off-road vehicle emissions (California Air Resources Board 2013).

Applicable Thresholds

NATIONAL

The General Conformity Rule ensures that federal actions comply with the national ambient air quality standards. In order to meet this CAA requirement, a federal agency must demonstrate that every action that it undertakes, approves, permits or supports will conform to the appropriate state implementation plan (SIP) (United States Environmental Protection, 2013). Table 4.3-1 lists the de minimis thresholds for the six criteria pollutants.

Table 4.3-1
De Minimis Level Thresholds

Pollutant	Area Type	Tons/Year
Ozone (VOC or NOx)	Serious nonattainment	50
	Severe nonattainment	25
	Extreme nonattainment	10
	Other areas outside an ozone transport region	100
Ozone (NOx)	Marginal and moderate nonattainment inside an ozone transport region	100
	Maintenance	100
Ozone (VOC)	Marginal and moderate nonattainment inside an ozone transport region	50
	Maintenance within an ozone transport region	50
	Maintenance outside an ozone transport region	100
Carbon monoxide, SO2 and NO2	All nonattainment & maintenance	100
PM-10	Serious nonattainment	70
	Moderate nonattainment and maintenance	100
Lead (Pb)	All nonattainment & maintenance	25

Source: United States Environmental Protection Agency, 2013a.

As discussed in Section 3.3.1.1 of this EIS, the Proposed Action is subject to the EPA's "general conformity" rule because it is in nonattainment for ozone-eight hour and PM2.5. Conformity requirements only apply to nonattainment and maintenance pollutants. As defined by 40 CFR 93 § 153 (PDF) (4 pp, 52KB), *de minimis* levels are the minimum threshold for which a conformity determination must be performed for various criteria pollutants in various areas. These thresholds are listed in Table 4.3-1.

STATE

CARB is the California agency responsible for the coordination and administration of both State and federal air pollution control programs within California. CARB performs the following functions: undertakes research, sets California Ambient Air Quality Standards (CAAQS), provides technical assistance to local air quality management districts and air pollution control districts, compiles emission inventories, develops suggested control measures, and provides oversight of local programs.

Under the Cap and Trade Program, CARB has set 25,000 tons per year threshold. The proposed project does not meet the definition as a "Covered Entity" however, so is not subject to this threshold (California Air Resource Board 2012).

REGIONAL

The San Joaquin Valley Air Pollution Control District (SVAPCD) thresholds provide a useful method of assessing the magnitude of air quality effects of the various alternatives. Air district thresholds were designed for purposes of conducting analysis pursuant to the California Environmental Quality Act (CEQA), and are not specifically intended for use in National Environmental Policy Act (NEPA) analyses. However, in the absence of federal thresholds, they provide a helpful point of measurement to determine the magnitude of an alternative's effects on air resources. "In addition, these thresholds represent the generally accepted approach to determining whether a project's emissions would result in a substantial contribution to existing violations of California or National Ambient Air Quality Standards (CAAQS or NAAQS) and are generally considered the most stringent thresholds available (U.S. Fish and Wildlife Service 2012)."

Each alternative is compared against the SVAPCD thresholds for criteria air pollutants and GHG emissions. Thresholds are included in the SJVAPCD's 2002 Guide for Assessing and Mitigation Air Quality Impacts (GAMAQI) for air criteria pollutants. Table 4.3-2 lists each of the thresholds for the following pollutants: reactive organic gases (ROG), oxides of nitrogen (NOx), carbon monoxide (CO), sulfur oxides (SOx), particulate matter less than 10 microns in diameter (PM10), and particulate matter less than 2.5 microns in diameter (PM2.5).

Table 4.3-2
San Joaquin Valley Air Pollution Control Board Thresholds

	ROG	NOx	CO	SOx	PM10	PM2.5
Criteria air pollutants	10 tons	10 tons	-	-	15 tons	-

Source: San Joaquin Valley Air Pollution Control District, 2002.

As shown in the table, criteria air pollutants ROG and NOx both have a significance level of 10 tons, and PM10 is 15 tons. The SJVAPCD has not established regional emission thresholds for CO, PM2.5, and SOx.

The SJVAPCD does not have significance thresholds for GHG pollutants which includes: carbon dioxide (CO2), Methane (CH4), Nitrous Oxide (N2), and fluorinated Gases (HFCs, PFCs, and SF6). The County of Kern has not developed a quantified threshold of significance for GHG emissions either, but if a project is found to contribute to a net decrease in emissions, and is consistent with the adopted implementation of the CARB Assembly Bill (AB) 32 Scoping Plan, it is presumed to have minimal GHG effects (California Air Resources Board 2008).

Construction Assumptions

The construction assumptions for this EIS rely primarily on the default construction assumptions in URBEMIS. While these assumptions are representative for many development projects, use of the default in URBEMIS may over or underestimate the activity levels associated with actual development under the Alternatives. The following construction and operational sources and activities were analyzed for emissions:

- Onsite construction equipment emissions were estimated using URBEMIS 2007 v9.2.4.
    - Paving of the access road was estimated to cover 10 acres and would last 1–2 months at the beginning of construction in 2011.
    - Construction of solar arrays was estimated to be constructed at a rate of 757.5 acres per year over 8 years from 2011 through 2018.
- Construction employees' vehicular emissions were estimated using EMFAC2007 based on miles traveled.
    - An average of 200 employees per day was assumed.
    - Employees were estimated to travel a roundtrip distance of 40 miles per day during 260 working days per year (Workers will originate from Maricopa, Taft, and Bakersfield. However, to account for the worst case scenario, the roundtrips are estimated from Old River Road to Bakersfield).
- Construction delivery truck emissions were estimated using EMFAC2007 based on miles traveled.
    - Twelve delivery trucks per 1 MW was assumed.

- Delivery trucks were estimated to travel from the Port of Long Beach with a roundtrip distance of 260 miles per day during 260 working days per year.

Operation Assumptions

Long-term emissions are related to the activities that will occur indefinitely because of project operations and are the primary focus of the SJVAPCD. Long-term emissions are caused by operational (mobile) sources and area (heating, cooling, and structural) sources. However, the project's long-term emission would be minimal because there will be no emissions associated with the operation of the facility other than occasional maintenance that will require employees to travel to the site. Otherwise, the site will be monitored from a remote location with no onsite emission emitting equipment.

- Operational water truck emissions were estimated using EMFAC2007.
  - Module cleaning may require additional negligible numbers of personnel for short periods of time would require a total of 4,412 truck trips per year. This averages out to approximately 12 trips per day.
  - Based on the location of the available water wells proposed to provide water for panel cleaning, it is anticipated that the trucks would travel approximately 5 miles between wells and the solar facilities.
- Operational worker truck emissions were estimated using EMFAC2007.
  - It was assumed that two worker trucks would service the project site.
  - Worker trucks were estimated to travel a total of 4 miles per truck per day twice a year on site.
  - Worker trucks were estimated to travel a total of 60 miles per truck per day twice a year off site.
- Operational maintenance truck emissions were estimated using EMFAC2007.
  - It was assumed that one maintenance truck would service the project site.
  - The maintenance truck was estimated to travel a total of 4 miles per day twice a year on site.
  - The maintenance truck was estimated to travel a total of 60 miles per day twice a year off site.

- Operational fugitive dust emissions were estimated using AP-42 Chapter 13, Section 13.2.2, Equation 1a and 1b for vehicular traffic on dirt roads within the project site.

Because the precise construction details about the Covered Activities were unknown at the time this analysis was conducted, the default equipment values provided in URBEMIS were used to estimate the (short-term) construction emissions as mentioned before. An average of 200 employees was estimated and, to be conservative, all employee emissions were calculated based on a 40-mile roundtrip (to and from Bakersfield). Although emissions from the project are expected to vary substantially from day to day, they are expected to be approximately equal over the course of the estimated 8-year construction period. Many variables are factored into the calculation of construction emissions, such as length of the construction period, number of each type of equipment, site characteristics, area climate, and construction personnel activities. In order to present the most conservative approach to estimating construction emissions from the project, all equipment was assumed to be in use 6 to 8 cumulative hours per day at full power, which is the URBEMIS default. In reality, much of this equipment will be used substantially less than this as a result of idling time, operator breaks, equipment breakdowns, etc.

Attainment

Chapter 3.0, Section 3.3 of this EIS discusses the ambient air quality standards and nonattainment classifications of the federal, State, and regional agencies. The USEPA has designated the San Joaquin Valley Air Basin (SJVAB) as an "extreme" nonattainment area under the federal 8-hour ozone standard, and is nonattainment for PM2.5. CARB has designated the SJVAB as severe nonattainment under the 1-hour ozone designation, and as nonattainment for the State's PM10 and PM2.5 standards. The SJVAB meets the federal and State standards, or is unclassifiable for all other pollutants.

CONSTRUCTION EMISSIONS

The Covered Activities have the potential to generate construction emissions for the multi-phased development of solar facilities, including air pollutants such as ROG, NO_x, CO, PM10, PM2.5, and SO_x. Emissions from construction would result from fuel combustion and exhaust from construction equipment as well as vehicle traffic, grading, and the use of toxic materials (e.g., paints and lubricants). Based on the results of the detailed air quality impact analysis from the EIR, which demonstrate that effects would be below thresholds, construction emissions are expected to have a minimal effect that would violate air quality standards. However, a detailed project-level analysis would be required for each of the future developments within the program to determine the emissions relative to thresholds. Each subsequent project would be required to demonstrate that its effects on air quality, through design and/or mitigation, would remain below established levels of significance. Therefore, with mitigation, construction would not violate air quality standards or contribute substantially to an existing or projected air quality standard.

OPERATION EMISSIONS

During operations, employees traveling to the site occasionally to perform maintenance would result in 6 metric tons of emissions. Otherwise, the site will be monitored from a remote location with no onsite emission emitting equipment.

Based on the results of the detailed air quality impact analysis for the project-level parcels, which demonstrate that effects would be below thresholds, operational emissions are not expected to violate air quality standards. However, a detailed project-level analysis would be required for each of the future developments to determine the emissions relative to thresholds. Each subsequent project development would be required to demonstrate that its effects on air quality, through design and/or mitigation, would remain below established levels of significance. Therefore with mitigation, operation of the Proposed Action would not violate or contribute substantially to an existing or projected air quality standard.

For operations of the project, it is anticipated that electricity generated from the project will reduce demand on the electrical generating grid in the future. The potential reductions in demand for electricity generation using fossil fuels could, but not necessarily, result in a reduction in GHGs for the Permit Area.

EXPOSURE OF SENSITIVE RECEPTORS

There are some houses scattered throughout the surrounding area of the Covered Lands, and the community of Maricopa is approximately 5 miles southwest. The closest home is located north of South Lake Road, adjacent to assessor's parcel number (APN) 220-170-07. The second closest home is located on the southeastern corner of Gardner Field Road and Basic School Road, approximately 0.5 mile south of APN 220-170-07. Effects on sensitive receptors, particularly from dust, would vary depending on the level and type of activity, the silt content of the soil and prevailing weather.

One of the health effects that have been associated with ground disturbance in various locations around Kern County is Valley Fever. Valley Fever is caused by Coccidioides, which is a fungus found in the soil of dry, low rainfall areas (Centers for Disease Control and Prevention 2012). "The sickness is acquired by inhaling one or more airborne spores of the fungus Coccidioides spp. Dissemination is the spread of the fungal infection from the lungs to other parts of the body. The most common sites of dissemination in Valley Fever are skin, bones, joints and brain meninges. Cocci meningitis is the most lethal (University of Arizona 2010)." According to the University of Arizona which is the leading expert on Valley Fever, the spores are found in desert soils. Desert soils are classified in the United States as Aridisols. Because of the dry climate in which they are found, Aridisols are mainly used for range, wildlife, and recreation, and not used for agricultural production unless irrigation water is available.

Aridisols are divided into 7 suborders: Cryids, Salids, Durids, Gypsids, Argids, Calcids, and Cambids. According to Section 3.4 of this EIS, the soil types found on the proposed project site consist of the following types:

- Cerini loam;
- Calflax loam;
- Excelsior fine sandy loam;
- Excelsior sandy loam;
- Fages clay;
- Posochanet associations;
- Posochanet silt loam (saline-sodic soil);
- Posochanet silty clay loam (saline-sodic soil);
- Tupman gravelly sandy loam, and
- Guijarral-Klipstein complex.

In addition, according to the Natural Resources Conservation Service's Percent of Land Area in Aridesols (4030) map which uses STATSGO data, the proposed project site is not identified as having Aridisols soils (Natural Resources Conservation Service 2002).

The Proposed Action would have minimal effects related to exposure of sensitive receptors to substantial pollutant concentrations. Implementation of required regulatory dust reduction measures would reduce the effects of fugitive dust on nearby receptors. As mentioned before, both short-term and long-term emissions are anticipated to be within SJVAPCD yearly thresholds.

4.3.3 No Action Alternative

This section summarizes the potential air quality effects associated with the No Action Alternative. As discussed in Section 2.3.2, the No Action Alternative assumes that the HCP would not be implemented, the proposed Incidental Take Permit (ITP) would not be issued, and the Covered Activities for the Maricopa Sun Solar complex would not occur. The 5,784.3 acres identified as the Permit Area would likely remain vacant, the 1894.4 acres identified as Conservation Sites would not be permanently conserved, and the proposed Conservation Management Plan would not be implemented. As a result, there would be no conservation benefit to Covered Species or other listed or sensitive species as a result of the Proposed Action.

Agricultural activities, including grazing or disking, would likely continue, resulting in reduced air quality as a result of vegetation removal, soil disturbance, and soil compaction.

4.3.3.1 Construction and Operation Emissions

Under the No Action Alternative, NO_x and PM2.5 emissions, which could result in substantial effects on air quality in the area, would not be generated. Short-term construction emissions would not contribute to an existing or projected air quality violation of PM2.5 or ozone standards because no short-term construction would occur. Thus, unavoidable cumulative air quality effects would be avoided under this alternative.

The No Action Alternative would not involve construction activities or operation of solar generating facilities; therefore, heavy equipment operation, truck deliveries, and trips by commuting construction workers would not be associated with this Alternative. Construction emissions that contribute to GHGs would be eliminated. However, the potential offset or displacement of GHGs from operation of the solar power generating facility, compared with traditional gas or coal-fired power plants, would not be realized. Specifically, future gas or coal-fired power plants may be built to support energy needs. Although the EPA announced its first steps under President Obama's Climate Action Plan to reduce carbon pollution from power plants (including new coal and natural gas), GHG emissions from both sources would still be emitted, but at a lower rate (United States Environmental Protection Agency 2013b). The GHG effects from this alternative could therefore end up being greater than those of the Proposed HCP Alternative.

4.3.3.2 Exposure of Sensitive Receptors to Substantial Pollutant Concentrations

The No Action Alternative would not affect any sensitive receptors as no new unpermitted uses would occur.

4.3.3.3 Mitigation Measures

There are no mitigation measures imposed under the No Action Alternative.

4.3.3.4 Cumulative Effect

The geographic scope for cumulative air quality effects is a 6-mile radius for regional effects and a 1-mile radius for effects on sensitive receptors. However, greenhouse gas emissions are a global problem. As discussed above, the project area is in nonattainment of both ozone and PM2.5. Air quality effects from the Proposed Action are global in nature, but under the No Action Alternative the project would not occur. The site would likely remain vacant, or periodical agriculture activities may occur. Under the No Action Alternative, NOx and PM2.5 emissions, which could result in substantial effects on air quality in the area, would not be generated. Short-term construction emissions would not contribute to existing or projected air

quality violations because no short-term construction will occur. Thus, unavoidable cumulative air quality effects would be avoided under this alternative.

4.3.4 Proposed HCP Alternative

This section summarizes the potential air quality effects associated with the Proposed HCP Alternative. As discussed in Chapter 2.0, Section 2.3.2 of this EIS, the Proposed HCP Alternative assumes that the HCP would be implemented, the proposed Incidental Take Permit (ITP) would be issued, and the Covered Activities for the Maricopa Sun Solar complex would occur. Activities included in the HCP would include the following: (1) pre-construction, construction, operations and maintenance, and decommissioning activities within Solar Sites; (2) management and maintenance activities associated with Movement Corridors and Conservation Sites, including monitoring and reporting activities; and (3) activities associated with implementation of the conservation program specified in this HCP.

4.3.4.1 Construction and Operation Emissions

As noted in Section 3.3 of this EIS, the SJVAB is a nonattainment area for federal 8-hour ozone and PM2.5 standards and State 1-hour ozone, 8-hour ozone, PM10, and PM2.5 standards. The Proposed HCP Alternative would contribute to the nonattainment while the No Action Alternative would not. Project construction and operational emissions of these pollutants would be below SJVAPCD annual thresholds. Due to the SJVAB nonattainment status though, increased emissions during construction would contribute to cumulative effects. To reduce cumulative effects, mitigation measures MM 4.3-1 through MM 4.3-2 would be incorporated into the Proposed Action.

Long-term emissions are related to the activities that will occur indefinitely. These types of emissions are caused by operational (mobile) sources and area (heating, cooling, and structural) sources. However, the project's long-term emission would be minimal because there will be no emissions associated with the operation of the facility other than occasional maintenance that will require travel to the site. Otherwise, the site will be monitored from a remote location with no onsite emission emitting equipment.

With this alternative a larger amount of disturbance would occur compared to the No Action Alternative and the Reduced Permit Area Alternative. The GHG effects from this Alternative would also be greater than those of the No Action Alternative and the Reduced Permit Area Alternative. However, with the Proposed HCP Alternative, the potential offset or displacement of GHGs from operation of the solar power generating facility, compared with traditional gas or coal-fired power plants, is much greater than under the Reduced Permit Area Alternative.

4.3.4.2 Exposure of Sensitive Receptors to Substantial Pollutant Concentrations

As mentioned previously, there are some houses scattered throughout the surrounding area of the Covered Lands, and the community of Maricopa is approximately 5 miles southwest. The closest home is located north of South Lake Road, adjacent to assessor's parcel number (APN) 220-170-07. The second closest home is located on the southeastern corner of Gardner Field Road and Basic School Road, approximately 0.5 miles south of APN 220-170-07. Effects on sensitive receptors, particularly from dust, would vary depending on the activity, silt content of the soil, and prevailing weather. The implementation of required regulatory dust reduction measures would reduce the effects of fugitive dust on nearby receptors. As discussed above, the Proposed Action's construction and operational emissions of criteria pollutants is anticipated to be within SJVAPCD yearly thresholds and would not affect nearby sensitive receptors. Operation of the Proposed Action would have no air quality effects on nearby sensitive receptors. As mentioned previously, although the Permit Area is not underlain by the type of sediments that are known to contain Valley Fever spores, mitigation measures would reduce the amount of fugitive dust should the risk be present. The Proposed Action would have minimal effects related to exposure of sensitive receptors to substantial pollutant concentrations.

4.3.4.3 Mitigation Measures

MM 4.3-1: Prior to obtaining grading permits for development of Permit Area, the project operator shall provide detailed greenhouse gas impact studies that include a quantification of emissions and identification of appropriate design or mitigation measures to minimize emissions as necessary.

MM 4.3-2: Construction and operation of the proposed project shall be conducted in compliance with applicable rules and regulations set forth by the SJVAPCD. Dust control measures outlined below shall be implemented where they are applicable. The list shall not be considered all inclusive, and any other measures to reduce fugitive dust emissions not listed shall be encouraged.

a. Land Preparation, Excavation, and/or Demolition. The following dust control measures shall be implemented:

    i. All soil excavated or graded shall be sufficiently watered to prevent excessive dust. Watering shall occur as needed with complete coverage of disturbed soil areas. Watering shall take place a minimum of twice daily on unpaved/untreated roads and on disturbed soil areas with active operations.

    ii. All clearing, grading, earth moving, and excavation activities shall cease during periods of winds greater than 20 miles per hour (averaged over 1 hour), if disturbed

material is easily windblown, or when dust plumes of 20% or greater opacity impact public roads, occupied structures, or neighboring property.

iii. All fine material transported off site shall be either sufficiently watered or securely covered to prevent excessive dust.

iv. Areas disturbed by clearing, earth moving, or excavation activities shall be minimized at all times.

v. Stockpiles of soil or other fine loose material shall be stabilized by watering or other appropriate method to prevent wind-blown fugitive dust.

vi. Where acceptable to the fire department, weed control shall be accomplished by mowing instead of discing, thereby leaving the ground undisturbed and with a mulch covering.

b. Site Construction. After clearing, grading, earth moving, and/or excavating, the following dust control practices shall be implemented:

i. Once initial leveling has ceased, all inactive soil areas within the construction site shall be (1) seeded and watered until plant growth is evident, (2) treated with a dust palliative, or (3) watered twice daily until soil has sufficiently crusted to prevent fugitive dust emissions.

ii. All active disturbed soil areas shall be sufficiently watered at least twice daily to prevent excessive dust.

c. Vehicular Activities. During all phases of construction, the following vehicular control measures shall be implemented:

i. Onsite vehicle speed shall be limited to 15 miles per hour.

ii. All areas with vehicle traffic shall be paved, treated with dust palliatives, or watered a minimum of twice daily.

iii. Streets adjacent to the project site shall be kept clean, and project-related accumulated silt shall be removed.

iv. Access to the site shall be by means of an apron into the project site from adjoining surfaced roadways. The apron shall be surfaced or treated with dust palliatives. If

operating on soils that cling to the wheels of vehicles, a grizzly[2] or other such device shall be used on the road exiting the project site, immediately prior to the pavement, in order to remove most of the soil material from vehicle tires.

MM 4.3-3: The project operator and/or its contractor(s) shall implement the following measures during construction of the proposed project:

a. All equipment shall be maintained as recommended by manufacturer manuals.

b. Equipment shall be shut down when not in use for extended periods of time.

c. Construction equipment shall operate no longer than 8 cumulative hours per day.

d. Electric equipment shall be used whenever possible in lieu of diesel- or gasoline-powered equipment.

e. All construction vehicles shall be equipped with proper emissions control equipment and kept in good and proper running order to substantially reduce NOX emissions. On- and off-road diesel equipment shall use diesel particulate filters if permitted under manufacturer's guidelines.

On- and off-road diesel equipment shall use diesel particulate filters if permitted under manufacturer's guidelines.

4.3.4.4 Cumulative Effect

The Proposed Action would result in contributions to cumulative effects in combination with other future projects developed within Kern County. It cannot be determined with certainty that other projects would not be proposed and developed that, when combined with the Proposed Action, would result in construction emissions that could be cumulatively considerable. Therefore, it can be assumed that cumulative effects would result and would interfere with attainment of air quality standards. Construction emissions from these projects would be reduced by compliance with Rules 8021 and 9510, which are applicable to all projects, but some effect would remain.

[2] A device (i.e. rails, pipes, or grates) used to dislodge mud, dirt, and/or debris from the tires and undercarriage of motor vehicles and/or haul trucks prior to leaving the work site (San Joaquin Valley Air Pollution Control District 2001).

4.3.5 Reduced Permit Area Alternative

This section summarizes the potential air quality and GHG effects associated with the Reduced Permit Area Alternative. Under this Alternative the Permit Area would be reduced from 5,784.3 acres to 3,682 acres by removing the following sites: Sites 4-S/4-M (652.5 acres), 6-S (320.9 acres), 7-S/7-M (481.2 acres) and 17-C (647.7 acres). The lands excluded from the Permit Area would likely remain vacant and continue to be disked on a regular basis for weed control. If water became available, these lands may be converted to active agricultural production.

Under this alternative, there would be fewer disturbances of the Covered Species than under the Proposed Action because construction, operations, maintenance and decommissioning activities would occur over a smaller area.

4.3.5.1 Construction and Operation Emissions

With the Reduced Permit Area Alternative, the Proposed Action would result in contributing less to the nonattainment of federal 8-hour ozone and PM2.5 standards and State 1-hour ozone, 8-hour ozone, PM10, and PM2.5 standards than the Proposed HCP Alternative. The Proposed Action's construction and operational emissions would be below the SJVAPCD's annual thresholds. Due to the SJVAB nonattainment status for these pollutants though, increased emissions during construction would contribute to cumulative effects. Although mitigation measures MM 4.3-1 through MM 4.3-3 would be incorporated into the Proposed Action, absent project-level analysis, the conservative conclusion is that cumulative effects would result and therefore will result in a cumulatively considerable net increase in pollutants for which the region is in nonattainment.

Long-term emissions are related to the activities that will occur indefinitely. These types of emissions are caused by operational (mobile) and area (heating, cooling, and structural) sources. However, the project's long-term emission would be minimal because there will be no emissions associated with the operation of the facility other than occasional maintenance that will require travel to the site. Otherwise, the site will be monitored from a remote location with no onsite emission emitting equipment.

With the Reduced Permit Area Alternative fewer disturbances would occur to Covered Lands. The GHG effects would also be greater. However, with this Alternative, the potential offset or displacement of GHGs from operation of the solar power generating facility, compared with traditional gas or coal-fired power plants, is realized.

4.3.5.2 Exposure of Sensitive Receptors to Substantial Pollutant Concentrations

There are some houses scattered throughout the surrounding area of the Covered Lands, and the community of Maricopa is approximately 5 miles southwest. The closest home is located north

of South Lake Road, adjacent to assessor's parcel number (APN) 220-170-07. The second closest home is located on the southeastern corner of Gardner Field Road and Basic School Road, approximately 0.5 miles south of APN 220-170-07. The same types of effects on sensitive receptors that would occur under the Proposed HCP Alternative would also take place under this Alternative, but at a much smaller scale. The implementation of required regulatory dust reduction measures would reduce the effects of fugitive dust on nearby receptors. As discussed above, the Proposed Action's construction and operational emissions of criteria pollutants is anticipated to be within SJVAPCD yearly thresholds. Operation of the Proposed Action would have no air quality effects on nearby sensitive receptors.

4.3.5.3 Mitigation Measures

Mitigation measures MM 4.3-1 and MM 4.3-2 would be applied to reduce cumulative effects.

4.3.5.4 Cumulative Effect

The Proposed Action would result in contributions to cumulative effects in combination with other future projects developed within Kern County. It cannot be determined with certainty that other projects would not be proposed and developed that, when combined with the Proposed Action, would result in construction emissions that could be cumulatively considerable. Therefore, it can be assumed that cumulative effects would interfere with attainment of air quality standards. Construction emissions from these projects would be reduced by compliance with Rules 8021 and 9510, which are applicable to all projects, but some effects would remain.

4.3.6 Comparison of Alternatives

A summary of results comparing the No Action Alternative to the Proposed HCP Alternative and Reduced Permit Area Alternative is shown Table 4.3-3. Each of the potential effect areas which includes construction and operation emissions, exposure of sensitive receptors to substantial pollutant concentrations, and cumulative effect is measured with a less, more, or similar effect ranking as compared to the No Action Alternative.

Table 4.3-3
Comparison of Alternatives to the No Action Alternative

Potential Effect	No Action	Proposed HCP	Reduced Permit Area
Construction and Operation Emissions	-	More	More
Exposure of Sensitive Receptors to Substantial Pollutant Concentrations	-	More	More
Cumulative Effect	-	Similar	Similar

Source: Kern County, 2010.

As shown in Table 4.3-3, the Proposed HCP Alternative and the Reduced Permit Area Alternative would have more effects resulting from construction and operation emissions than

the No Action Alternative. This is because under the No Action Alternative there would be no criteria air pollutants or GHG emissions emitted as the result of the Proposed Action not occurring. The Proposed HCP Alternative would have more of an effect than the Reduced Permit Area, however, because a greater disturbance of land would occur.

The same conclusion can be applied to exposure of sensitive receptors to substantial pollutant concentrations. Compared to the No Action Alternative, which would have less effect on exposing sensitive receptors to pollutants because there would be no project, the Proposed HCP Alternative and Reduced Permit Area Alternative both result in more effects (although the Reduced Permit Area Alternative would be less than the Proposed HCP Alternative).

Under the Proposed HCP Alternative, cumulative effects would occur that are unavoidable even with incorporation of mitigation measures MM 4.3-1 through MM 4.3-3. Cumulative effects would be less under the No Action Alternative because again there would be no solar project. However, air pollution and GHG emissions effects would be similar under both the Proposed HCP Alternative and the Reduced Permit Area Alternative, as predicting future projects throughout Kern County and the rest of the region, as well as determining the size of each project, would be impossible. For example, the Proposed HCP combined with a smaller project, could have the same cumulative effect as the Reduced Permit Area combined with a larger project.

The GHG effects from construction of the Proposed HCP Alternative would also be greater than those of the Reduced Area Alternative, but similar when compared to the No Action Alternative. However, under the Proposed HCP Alternative, the potential offset or displacement of GHGs from operation of the solar power generating facility, compared with traditional gas or coal-fired power plants, may help to meet federal and state goals for reducing GHG emissions.

4.4 BIOLOGICAL RESOURCES

4.4.1 Overview

The potential effects of the alternatives on biological resources within the Covered Lands are described below. The potential effects associated with each alternative are assessed relative to existing conditions when the Notice of Intent was issued (USFWS 2011). The analysis of biological resources focuses on the issues that arise within the Covered Lands. Cumulative effects to biological resources are discussed at the end of each project alternative description.

4.4.2 Methodology

The analysis contained within this EIS considers the results of several studies that were conducted within the Covered Lands, including a preliminary biological evaluation for the program-level-only parcels (Quad Knopf 2009), a biological assessment for the project-level parcels (Quad Knopf 2010a), a supplemental biological assessment for the implementation of transmission lines (Quad Knopf 2010b), a biological evaluation of the west solar complex (2010c), a wetland delineation of the project-level parcels (Quad Knopf 2010d), blunt-nosed leopard lizard and San Joaquin kit fox focused survey and small mammal trapping (Quad Knopf 2010e, 2012), and a conservation plan for the project level parcels (Quad Knopf 2010f).

This analysis considers potential effects to all biological resources in the study area and gives special consideration to the Covered Species. Potential effects to biological resources were determined by analyzing the changes to the existing setting and associated species distributions, particularly as they relate to habitat disturbance and compliance with the existing environmental regulatory framework.

4.4.3 No Action Alternative

This section summarizes the potential effects to biological resources associated with the No Action Alternative. Under this Alternative, an Incidental Take Permit would not be issued for take of the Covered Species and the Project would not occur. “Take” is defined broadly to mean harass, harm, hunt, shoot, wound, kill, trap, capture, or collect; or attempt to engage in any such conduct. “Harm” is defined as an act which actually kills or injures wildlife, including those activities that cause significant habitat modification or degradation resulting in the killing or injuring of wildlife by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering (50 CFR 17.3).

Under the No Action, the 5,784.3 acres identified as the Covered Lands would likely remain vacant or be periodically cultivated for agricultural production. The undeveloped setting of the sites would continue for an indefinite period, and no physical changes within the sites would

occur beyond existing or historical conditions. The No Action Alternative would maintain the current agricultural land use designations of the parcels.

Agricultural activities in Covered Lands could include disking. Disking could reduce habitat quality as a result of vegetation removal and soil compaction (Rathbun et al. 1997).

4.4.3.1 Effects to Wetlands and Waters of the U.S.

Solar Site Activities

Under this alternative, the Solar Sites encompassing 3,798.3 acres would not be developed. Disking of the sites would continue to occur under this alternative and cause adverse effects to Wetlands or Waters of the U.S.

Conservation Site Activities

Under this alternative, the 1,894.4 acres identified as Conservation Sites would not be permanently conserved; thus, there would be no conservation benefit to Wetlands or Waters of the U.S. as a result of the Project.

4.4.3.2 Effects to Species

Solar Site Development Activities

Under this alternative, the Solar Sites encompassing 3,798.3 acres would not be developed. There would continue to be adverse effects to Covered Species because disking of the sites would continue to degrade the habitat and the solar sites would not be conserved and managed in perpetuity (upon decommissioning) for the benefit of Covered Species.

Conservation Site Activities

Under this alternative, the 1,894.4 acres identified as Conservation Sites would not be permanently conserved and the proposed Conservation Management Plan would not be implemented as mitigation; thus, there would be no conservation benefit to Covered Species or other sensitive species as a result of the Project.

4.4.3.3 Mitigation Measures

There are no mitigation measures imposed under the No Action Alternative.

4.4.3.4 Cumulative Effects

The analysis of cumulative effects to biological resources in the general vicinity of the Permit Area consists mainly of proposed Solar Project developments, agricultural developments, and livestock operations within six miles of the Permit Area. As of September 2013, projects within

6 miles of the Permit Area included four solar projects, nineteen agricultural and livestock related projects, two cell tower projects, a proposed community center project, a reclamation plan for the Bureau of Reclamation, and numerous zoning and general plan updates (Kern County Planning and Community Development Department). Not including the Maricopa Sun Solar Complex, solar projects accounted for a total of 695 acres, agricultural and livestock projects for 5,829.85 acres, general plan updates and zoning changes to residential, estate, commercial, or industrial designations, for 76.62 acres, cell towers for 48.05 acres, a reclamation project for 600 acres, a community center project for 10.5 acres, and other projects for 3.65 acres. The total acreage of projects within 6 miles of the Permit Area is approximately 7,264 acres.

For the No Action Alternative, cumulative adverse effects may result from continued disking of the Covered Lands. Such effects will include the continued loss, fragmentation, and degradation of potential habitat, which could prevent Covered Species from inhabiting or foraging within the Permit Area. Combined with all of the proposed, pending, and recently approved projects within 6 miles of the project site, the No Action Alternative may adversely affect approximately 13,048 acres (maximum effects). The No Action Alternative's incremental contribution to the degradation and/or fragmentation of the existing habitat in Kern County would be cumulatively considerable, amounting to approximately 0.25% of the area of Kern County.

Whether or not the combined effects of the No Action Alternative, in conjunction with reasonably foreseeable actions associated with other projects, would result in cumulative adverse effects is primarily dependent on project-specific conservation measures, BMPs, adaptive management strategies, and individual development project reviews and requirements imposed by other Federal, local, and state authorities.

4.4.4. Proposed HCP Alternative

This section summarizes the potential effects to biological resources associated with the Proposed HCP Alternative. Under this Alternative, an Incidental Take Permit would be issued for take of the Covered Species and the Project would occur. Activities included in the Proposed HCP Alternative are identified as Covered Activities and allow for: 1) Construction and operation activities within Solar Sites; 2) Management and maintenance activities within Movement Corridors; 3) Management activities within the areas designated for conservation (Conservation Sites) including monitoring and reporting actions; and 4) Activities associated with implementation of a conservation program.

Under the Proposed HCP Alternative, photovoltaic (PV) power-generating facilities producing up to 700 MW of electricity would be constructed and operated on the Covered Lands. The Covered Lands are comprised of Solar Sites which encompass 3,798.3 acres. The Covered Lands are also comprised of Conservation Sites which encompass 1,894.4 acres. The

Conservation Sites will be permanently conserved, and an associated Conservation Management Plan will be implemented. This will result in conservation benefits to the Covered Species as well as to other sensitive species. The Proposed HCP Alternative includes all actions that are necessary to construct, operate and maintain, and decommission the solar generating facilities, as well as those necessary to manage habitat and conserve biological species.

The Proposed HCP Alternative will cover all activities within the Covered Lands for a period of 35 years that are related to the construction, operation and maintenance of the Solar Complex and its facilities, and to the implementation of the conservation program. Construction of solar facilities on all Solar Sites is anticipated to be completed over an 8 to 10-year period from the commencement of the initial development. However, unknown constraints could extend the development phase to a 10 to 15-year period.

4.4.4.1 Effects to Wetlands and Waters of the U.S.

Solar Site Development Activities

Wetlands that are present on the Solar Sites include one freshwater emergent wetland that has been disked (located within Site 2-S). One ponding basin occurs adjacent to the south side of Site 7-S, but this basin is outside of the Covered Lands. Non-wetland features that are present include a tributary, two unlined canals, and one “other water”.

Neither the fresh emergent wetland nor the ponding basin will be negatively affected by the Project. Exclusion barrier fencing will be established between these features and the work area to eliminate the potential for any adverse affects to them. The freshwater emergent wetland will be enhanced by cessation of disking.

Conservation Site Activities

No wetlands were identified within the Conservation Sites. There is one tributary and one intermittent drain on one of Site 17-C though. These drainages are collectively a substantial feature that are considered Waters of the U.S. because they establish connectivity with a navigable water to the south. However, this feature is located on a Conservation Site, and will not be affected.

4.4.4.2 Effects to Species

There are 20 special-status plant species (Table 3.4-7) known to occur within 5 miles of the Permit Area. Covered Lands do not currently support populations of special-status plant species due to recurring disking on the land and lack of suitable habitat. With the cessation of disking, special-status plant species could potentially establish populations within the Permit Area. If special-status plants do become present, impacts could potentially occur as a result of project activities; however, neither the potential occupation of plants nor the potential impacts to plants

can be predicted. Biological surveys and vegetation management outlined in the HCP (Chapter 5) would provide regular data that will identify the occurrence of special-status plant species. Potential impacts to special-status plants would then be evaluated on a case-by-case basis in consultation with the Service. Maricopa Sun LLC may seek to amend the permit to include non-covered special-status plants.

There are 12 special-status wildlife species reported in the vicinity of the Covered Lands. These include two reptiles, five birds, and five mammals (Table 3.4-8). There is little or no potential for occurrence of most of these species within the Covered Lands because there is currently little or no habitat available for them. However, the five Covered Species and migratory birds could potentially be affected by the Project. These effects are detailed below.

Solar Site Development Activities

Under this alternative, the Solar Sites encompassing 3,798.3 acres would be developed. Development activities have the potential to take Covered Species through harm and harassment through the loss of potential habitat.

Take could occur during all phases of the project on these sites: pre-construction, construction, operations and maintenance, and decommissioning. The potential for take to occur depends on the project phase and the presence of Covered Species during that phase. Some activities are limited to specific phases (e.g., drilling to characterize soil conditions during pre-construction), while other activities could occur throughout the project life (e.g., vehicle use).

No Covered Species are known to occur on the Solar Sites, but all Covered Species may become more abundant during the operations and maintenance phase as a result of improved habitat. San Joaquin Kit Fox is expected to become more abundant as a result of "improved habitat". Cessation of disking is the main reason for this improved habitat, and is mentioned above. Giant kangaroo rat (*Dipodomys ingens*) and Nelson's antelope squirrel have been documented moving onto solar sites with suitable habitat conditions after construction was completed (Howard Clark and Curtis Uptain, August 2, 2013).

Potential indirect effects to Covered Species could result over time due to the paving of roads and building areas and construction of drainages along roads and other paved areas, which could change soil moisture and chemistry in localized areas. Changes in soil moisture and chemistry could result in changes in plant distributions and species composition that could change the local plant community that Covered Species rely upon. This indirect effect would occur during the O&M phase on the Solar Sites and throughout the conservation lands once disking ceases and enhancement management has begun. Soil moisture could affect vegetation in a beneficial way (cessation of disking and additional water would support more vegetation), or in an adverse way

(additional water may encourage non-native "weedy" plants or a vegetation density greater than that preferred by Covered Species).

SAN JOAQUIN KIT FOX

During the pre-construction and construction phases of each solar facility development, the Solar Sites will be fenced with perimeter security fencing. Fencing the Solar Sites is identified as a direct effect to San Joaquin kit foxes because of the potential to harm the species by restricting access to dispersal and foraging habitat. Build-out of all Solar Sites will be phased over a 10-15 year period at which time all 3,798.3 acres of the Solar Sites will be fenced. All Solar Sites will be fenced with wildlife permeable fencing. Take of dispersal and foraging habitat could result in take by limiting the species ability to move through the habitat in search of food, shelter, or reproductive opportunities for 35 years.

In addition to fencing the Solar Sites, other Covered Activities have the potential to take San Joaquin kit fox. Mortality will be avoided and minimized to the extent possible. Some Covered Activities will involve ground disturbance using heavy equipment that will generate ground vibrations and noise, and some Covered Activities will also generate high vehicle traffic levels which may result in vehicle strikes. Hazardous and non-hazardous waste materials can be generated any time construction crews are present, introducing the potential for take of San Joaquin kit fox. Covered Activities with the potential to harm and harass San Joaquin kit fox include: clearing, grading, leveling, and compacting the Solar Development Footprint; geotechnical drilling and testing; establishing staging areas and access roads; delivery and distribution of building materials and equipment; drainage and erosion control; testing, plugging, and abandoning oil wells; construction of O&M buildings and solar arrays; use of helicopters; construction of transmission lines; paving of access roads and driveways; cleaning of the solar arrays during the O&M phase; removal of all solar arrays, O&M buildings, staging areas, and access roads during the decommissioning phase; mowing for vegetation/weed control; and carrying out the enhancement measures on the conservation lands.

Occupation of these lands is not predictable, though, and if the San Joaquin kit fox does become established on the Covered Lands after decommissioning, it would represent a benefit to the local population. Furthermore, implementation of the Proposed HCP Alternative will, upon decommissioning, enhance habitat and conserve land in perpetuity for the benefit of San Joaquin kit fox.

TIPTON KANGAROO RAT

During the pre-construction phase for each solar facility development, the Solar Development Footprints will be graded and compacted to prepare the land for construction. Land grading and compacting will eliminate 3,798.3 acres of potential habitat for Tipton kangaroo rats. Complete

build-out of the Maricopa Sun Solar Complex will be phased over 10-15 years and take of Tipton kangaroo rat potential habitat will be concurrent with the development of each solar facility. Take of potential foraging and burrowing habitat could lead to take of the Tipton kangaroo rat by limiting the species ability to feed, breed, and shelter..

In addition to grading and compacting, other Covered Activities are ground disturbing and include the use of heavy equipment that will generate ground vibrations and high noise levels. Ground disturbing activities could result in take of Tipton kangaroo rats in the form of harm and harassment. Covered Activities with the potential to harm and harass Tipton kangaroo rats include: geotechnical drilling and testing; establishing staging areas and access roads; delivery and distribution of building materials and equipment; drainage and erosion control; testing, plugging, and abandoning oil wells; construction of O&M buildings and solar arrays; use of helicopter; construction of transmission lines; paving of access roads and driveways; cleaning of the solar arrays during the O&M phase; removal of all solar arrays, O&M buildings, staging areas, and access roads during the decommissioning phase; mowing for vegetation/weed control; and carrying out the enhancement measures on conservation lands.

The potential for take as a result of high noise levels exist in areas where Tipton kangaroo rats are known to have burrows along the boundaries of Solar Sites 2-S and 3-S. Tipton kangaroo rats will also use artificial burrow-like structures such as culverts, pipes, pallets, and wire bales that will be staged throughout the Solar Development Footprints, and the species could be exposed to take in the event that materials are moved or buried while occupied. Delivery of materials and equipment will generate high vehicle traffic levels and hazardous and non-hazardous waste materials can be generated any time construction crews are present.

As part of the conservation strategy, Maricopa Sun LLC has developed a relocation program that will trap Tipton kangaroo rats that may be found on site as a result of survey efforts. The purpose of this relocation plan is two-fold: 1) to ensure that standard avoidance and minimization measures will be implemented to avoid and reduce the impact of the Project to the Tipton kangaroo rat and Nelson’s antelope squirrel; and 2) to establish standard guidelines for the trapping and relocation of the Tipton kangaroo rat and Nelson’s antelope squirrel, should it become necessary (Appendix F of Draft HCP, Appendix B).

Occupation of these lands is not predictable, though, and if Tipton kangaroo rat do become established it would represent a benefit to the local population. Furthermore, implementation of the Proposed HCP Alternative will, upon decommissioning after 35 years, enhance habitat and conserve land in perpetuity for the benefit of Tipton kangaroo rat.

NELSON'S ANTELOPE SQUIRREL

During the pre-construction phase for each solar facility development, the Solar Development Footprints will be graded and compacted to prepare the land for construction. Land grading and compacting will eliminate 3,798.3 acres of potential habitat for Nelson's antelope squirrel. Complete build-out of the Maricopa Sun Solar Complex will be phased over 10-15 years and take of Nelson's antelope squirrel potential habitat will be concurrent with the development of each solar facility. Take of potential foraging habitat could lead to harm of the Nelson's antelope squirrel by limiting the species ability to feed, breed, and shelter.

In addition to grading and compacting, other Covered Activities are ground disturbing and include the use of heavy equipment that will generate ground vibrations and high noise levels. Ground disturbing activities could result in take of Nelson's antelope squirrel in the form of harm and harassment. Covered Activities with the potential to harm and harass Nelson's antelope squirrel include: geotechnical drilling and testing; establishing staging areas and access roads; delivery and distribution of building materials and equipment; drainage and erosion control; testing, plugging, and abandoning oil wells; construction of O&M buildings and solar arrays; construction of transmission lines; paving of access roads and driveways; cleaning of the solar arrays during the O&M phase; removal of all solar arrays, O&M buildings, staging areas, and access roads during the decommissioning phase; mowing for vegetation/weed control; and carrying out the enhancement measures on conservation lands.

The potential for take as a result of high noise levels is not anticipated to occur due to the lack of presence of the species within 0.5 mile of any solar development. If the species become present closer to or within the Solar Sites over the life of the Project, adverse effects could occur in areas where Nelson's antelope squirrel has become present. The risk of take of Nelson's antelope squirrel due to noise will be commensurate with the species level of occurrence on or adjacent to the Solar Development Footprint. Nelson's antelope squirrel will use artificial burrow-like structures such as culverts, pipes, pallets, wire bales, and construction equipment that will be staged throughout the Solar Development Footprints and the species could be exposed to take in the event that materials and equipment are moved or buried while occupied. Delivery of materials and equipment will generate high vehicle traffic levels and hazardous and non-hazardous waste materials can be generated any time construction crews are present. Nelson's antelope squirrel are active during the day and consequently will be exposed to peak activity hours.

Occupation of these lands is not predictable, though, and if the Nelson's antelope squirrel does become established it would represent a benefit to the local population. Furthermore, implementation of the Proposed HCP Alternative will, upon decommissioning after 35 years, enhance habitat and conserve land in perpetuity for the benefit of Nelson's antelope squirrel.

WESTERN BURROWING OWL

During the pre-construction phase for each solar facility development, the Solar Development Footprints will be graded and compacted to prepare the land for construction. Land grading and compacting will eliminate 3,798.3 acres of potential foraging habitat for western burrowing owls. Complete build-out of the Maricopa Sun Solar Complex will be phased over 10-15 years and take of western burrowing owl potential foraging habitat will be concurrent with the development of each solar facility. Take of potential foraging habitat could lead to harm of the western burrowing owl by limiting the species ability to obtain food.

In addition to grading and compacting, other Covered Activities are ground disturbing and include the use of heavy equipment that will generate ground vibrations and high noise levels. Ground disturbing activities could result in take of western burrowing owl in the form of harm and harassment. Covered Activities with the potential to harm and harass western burrowing owls include: geotechnical drilling and testing; establishing staging areas and access roads; delivery and distribution of building materials and equipment; drainage and erosion control; testing, plugging, and abandoning oil wells; construction of O&M buildings and solar arrays; construction of transmission lines; paving of access roads and driveways; cleaning of the solar arrays during the O&M phase; removal of all solar arrays, O&M buildings, staging areas, and access roads during the decommissioning phase; mowing for vegetation/weed control; and carrying out enhancement measures on the conservation lands.

Western burrowing owls may seek shelter in artificial burrow-like structures such as culverts, pipes, pallets, wire bales, and construction equipment that will be staged throughout the Solar Development Footprints and the species could be exposed to take in the event that materials or equipment are moved or buried while occupied. Delivery of materials and equipment will generate high vehicle traffic levels and hazardous and non-hazardous waste materials can be generated any time construction crews are present. Western burrowing owls are active during the day and consequently will be exposed to peak activity hours.

Occupation of these lands is not predictable, though, and if western burrowing owls do become established it would represent a benefit to the local population. Furthermore, implementation of the Proposed HCP Alternative will, upon decommissioning after 35 years, enhance habitat and conserve land in perpetuity for the benefit of western burrowing owl.

BLUNT-NOSED LEOPARD LIZARD

During the pre-construction phase for each solar facility development, the Solar Development Footprints will be graded and compacted to prepare the land for construction. Land grading and compacting will eliminate 3,798.3 acres of potential foraging habitat for blunt-nosed leopard lizard. Complete build-out of the Maricopa Sun Solar Complex will be phased over 10-15 years

and take of blunt-nosed leopard lizard potential foraging habitat will be concurrent with the development of each solar facility. Site grading and compaction and barrier fencing could result in take of potential foraging habitat and could lead to harm of the blunt-nosed leopard lizard by limiting the species ability to obtain food.

In addition to grading and compacting, other Covered Activities are ground disturbing and include the use of heavy equipment that will generate ground vibrations and high noise levels. Ground-disturbing activities could result in take of blunt-nosed leopard lizard in the form of harm and harassment. Covered Activities with the potential to harm and harass blunt-nosed leopard lizard include: geotechnical drilling and testing; establishing staging areas and access roads; delivery and distribution of building materials and equipment; drainage and erosion control; testing, plugging, and abandoning oil wells; construction of O&M buildings and solar arrays; construction of transmission lines; paving of access roads and driveways; cleaning of the solar arrays during the O&M phase; removal of all solar arrays, O&M buildings, staging areas, and access roads during the decommissioning phase; mowing for vegetation/weed control; and carrying out the enhancement measures on conservation lands.

Blunt-nosed leopard lizard will use artificial burrow-like structures such as culverts, pipes, pallets, wire bales, and construction equipment that will be staged throughout the Solar Development Footprints and the species could be exposed to take in the event that materials and equipment are moved or buried while occupied. Delivery of materials and equipment will generate high vehicle traffic levels and hazardous and non-hazardous waste materials can be generated any time construction crews are present. Blunt-nosed leopard lizards are active during the day and consequently will be exposed to peak activity hours.

The blunt-nosed leopard lizard does not currently occur on the Solar Sites and no burrows or other sign were detected on the Solar Sites. However, the species was observed on lands between Solar Sites 2-S and 3-S. Barrier fencing and other protective measures are incorporated into the project to assure that that blunt-nosed leopard lizards occurring in these adjacent areas will not be subject to direct mortality. The temporary exclusion of the blunt-nosed leopard lizards from these areas will not substantially affect the local population of the blunt-nosed leopard lizard.

Occupation of these lands is not predictable, though, and if blunt-nosed leopard lizard do become established it would represent a benefit to the local population. Furthermore, implementation of the Proposed HCP Alternative will, upon decommissioning after 35 years, enhance habitat and conserve land in perpetuity for the benefit of blunt-nosed leopard lizard.

MIGRATORY BIRDS

Various species of migratory birds, which are protected by the Migratory Bird Treaty Act and various provisions of the California Fish and Game Code, may occur on the Solar Sites. Both passerines and raptors could potentially nest on the ground or within the riparian shrub or tree layers. Ground disturbance activities could potentially cause abandonment of active nests.

Limited anecdotal evidence suggests that large expanses of solar panels may contribute to migratory bird deaths. It is believed that reflections from panels may attract birds in flight that mistake the broad reflective surfaces for water bodies. No research data are available at this time, though, that specifically elucidate to what extent solar panels contribute to bird mortality via solar panel collisions. Because the incidence of bird strikes of photovoltaic panels is still being studied, no reliable methods or actions have been identified that would avoid or minimize these occurrences. Building collisions and feral cats are believed to be the greatest causes of migratory bird deaths, presently.

Conservation Site Activities

Under this alternative, the 1,894.4 acres identified as Conservation Sites would be permanently conserved and the proposed Conservation Management Plan would be implemented as mitigation. There would therefore be a conservation benefit to Covered Species and other sensitive species as a result of the Project. Nonetheless, implementing the conservation program and conducting research to determine the success of the conservation program have the potential to affect Covered Species and migratory birds. Effects to Covered Species and migratory birds are outlined below:

SAN JOAQUIN KIT FOX

The six Conservation Sites encompassing 1,894.4 acres will be placed into a permanent Conservation Easement and managed in perpetuity for the benefit of the San Joaquin kit fox. The San Joaquin kit fox is not likely to be adversely affected by management activities on these sites. This species is most active during the evening and night time hours, and will be protected from conservation program activities by restricting activities to day time hours. Minimal potential for take of the San Joaquin kit fox is associated with implementing some activities in the conservation program, though.

TIPTON KANGAROO RAT

The six Conservation Sites encompassing 1,894.4 acres will be placed into a permanent Conservation Easement and managed in perpetuity for the benefit of the Tipton kangaroo rat. The Tipton kangaroo rat is not likely to be adversely affected by management activities on these sites. This species is most active during the evening and night time hours, and will be protected

from conservation program activities by restricting activities to day time hours. Some potential for take of the Tipton kangaroo rat is associated with implementing certain activities in the conservation program, described above. The Tipton kangaroo rat could be exposed to take during agency approved relocation of individuals in cases where burrows cannot be avoided by Covered Activities.

NELSON'S ANTELOPE SQUIRREL

The six Conservation Sites encompassing 1,894.4 acres will be placed into a permanent Conservation Easement and managed in perpetuity for the benefit of the Nelson's antelope squirrel. The Nelson's antelope squirrel will generally not be adversely affected by management activities on these sites, but some take could occur. Potential for take of the Nelson's antelope squirrel is associated with implementing certain activities in the conservation program. The Nelson's antelope squirrel could be exposed to take during agency approved relocation of individuals in cases where burrows cannot be avoided by Covered Activities.

WESTERN BURROWING OWL

The six Conservation Sites encompassing 1,894.4 acres will be placed into a permanent Conservation Easement and managed in perpetuity for the benefit of the western burrowing owl. The western burrowing owl will generally not be adversely affected by management activities on these sites, but some take could occur. Some potential for the take of western burrowing owl is associated with implementing certain activities in the conservation program. The western burrowing owl could be exposed to take during agency approved relocation of individuals in cases where burrows cannot be avoided by Covered Activities.

BLUNT-NOSED LEOPARD LIZARD

The six Conservation Sites encompassing 1,894.4 acres will be placed into a permanent Conservation Easement and managed in perpetuity for the benefit of the blunt-nosed leopard lizard. The blunt-nosed leopard lizard is not likely to not be adversely affected (i.e., no "take") by management activities on these sites.

MIGRATORY BIRDS

Various species of migratory birds, which are protected by the Migratory Bird Treaty Act and various provisions of the California Fish and Game Code, may occur on the Conservation Sites. Both passerines and raptors could potentially nest on the ground or within the riparian shrub or tree layers. Installation of artificial burrows and T-post perches, as well as ground contouring for topographic relief, could potentially cause abandonment of active nests.

4.4.4.3 Mitigation Measures

The Avoidance and Minimization Measures listed in Section 2.3.3 of this EIS for the Proposed HCP Alternative are applicable to this Alternative. Additional mitigation measures, not included in Section 2.3.3, are listed below:

MM 4.4-1: Exclusion barrier fencing will be established between wetlands and Waters of the U.S. and the work area within Covered Lands to eliminate the potential for any adverse affects to these features.

MM 4.4-2: Prior to development within Covered Lands the project proponent shall be required to conduct and submit to the Kern County Planning and Community Development Department appropriate protocol level biological surveys for special-status plant and animal species.

MM 4.4-3: A qualified biologist shall be on site during vegetation removal and grading activities when those activities take place within 200 feet of sensitive habitats or species. Once those ground clearing activities have been accomplished, full-time monitoring shall no longer be required, but weekly inspections shall be conducted throughout the construction period to insure that mitigation measures for biological effects are being adequately implemented.

4.4.4.4 Cumulative Effects

As mentioned in Section 4.4.4.3, the analysis of cumulative effects to biological resources in the general vicinity of the Permit Area consists mainly of proposed Solar Project developments, agricultural, and livestock developments within six miles of the Permit Area. These projects, not including the Proposed HCP Alternative, totaled approximately 7,263.67 acres.

Cumulative effects may result from increased development in the region and changes in land use. Such effects may include habitat loss, ground disturbance, noise, and ecological traps (e.g. waterfowl flight path collisions with solar panels mistaken for water sources due to solar panel reflections). Although this analysis anticipates that other proposed, pending, and recently approved projects will have cumulative adverse effects to 7,263.67 acres (maximum effects), the Proposed HCP Alternative will have a beneficial effects to Covered Species by conserving 1,894.4 acres at the beginning of the project and decommissioning 3,798.3 acres after 35 years for a total of 5,784.3 acres (including existing public easements, setbacks, and Movement Corridors) of land and habitat in perpetuity. Instead of contributing to the loss of existing wildlife habitat in Kern County, the Proposed HCP Alternative will enhance and conserve wildlife habitat. Of the 13,048 acres that are proposed for development within 6 miles of the Permit Area, the Proposed HCP Alternative will benefit approximately 0.11% of the area of Kern County over a 35-year period. The remaining projects within 6 miles of the Permit Area, which may have cumulative adverse effects, will encompass approximately 0.14% of the area of Kern County.

Cumulative effects on vegetation, wetlands, and waters of the U.S. would not be adverse because the cessation of disking would give vegetation the opportunity to become established between and under solar panels and would contribute to the recovery of a wetland in the Permit Area that is currently disked. Potential adverse effects to the wetland, once it recovers through natural successionary processes, will be avoided because of minimization and avoidance measures implemented to protect the wetland and its hydrology (GM-3 of Draft HCP, Section 2.3.5). Furthermore, the cessation of disking could provide improved foraging and burrowing habitat, which would benefit small mammals and the predators that feed on them (Germano et al. 2012, ESRP 2006).

It is possible that some residual effects to wildlife, including Covered Species, would occur from implementation of the Proposed HCP Alternative. Avoidance and minimization measures included in the description of the Proposed HCP Alternative (see Section 2.3.5) would avoid or minimize project effects with the help of adaptive management strategies that result from biological surveys and analyses.

Whether or not the combined effects of the Proposed HCP Alternative, in conjunction with reasonably foreseeable actions associated with other projects, would result in cumulative effects is primarily dependent on project-specific conservation measures, BMPs, adaptive management strategies, and individual development project reviews and requirements imposed by other Federal, local, and state authorities. It is not feasible to study whether other projects will contribute to the recovery of wetlands and waters of the U.S. or benefit Covered Species. However, given that the Proposed HCP Alternative may contribute to the recovery of a wetland and may benefit Covered Species, no adverse cumulative effects are anticipated from this Alternative.

4.4.5 Reduced Permit Area Alternative

This section summarizes the potential effects to biological resources associated with the Reduced Permit Area HCP Alternative. Under this Alternative, an Incidental Take Permit would still be issued for take of the Covered Species and the Project would occur. Activities included in the Proposed HCP Alternative are identified as Covered Activities and allow for: 1) Construction and operation activities within Solar Sites; 2) Management and maintenance activities within Movement Corridors; 3) Management activities within the areas designated for conservation (Conservation Sites) including monitoring and reporting actions; and 4) Activities associated with implementation of a conservation program.

Under the Reduced Permit Area HCP Alternative, the Covered Lands would be reduced from 5,784.3 acres to 3,682 acres by removing the following sites from the Project: Sites 4-S/4-M (652.5 acres), 6-S/6-M (320.9 acres), 7-S/7-M (481.2 acres) and 17-C (647.7 acres) for a total reduction of approximately 2,102.3 acres. The lands excluded from the Covered Lands would

likely remain vacant and would continue to be disked on a regular basis for weed control. If water became available, these lands would likely be converted to active agricultural production.

Under the Reduced Permit Area HCP Alternative, photovoltaic power-generating facilities producing up to 700 MW of electricity would be constructed and operated on the Covered Lands. The Covered Lands would be comprised of Solar Sites and Movement Corridors encompassing 2329.7 acres. The Covered Lands would be comprised of Conservation Sites encompassing 1352.3 acres. The Conservation Sites would be permanently conserved, and an associated Conservation Management Plan would be implemented. This would result in conservation benefits to the Covered Species as well as to other sensitive species. The Reduced Permit Area HCP Alternative includes all actions that are necessary to construct, operate and maintain, and decommission the solar generating facilities, as well as those necessary to manage habitat and conserve biological species.

The Reduced Permit Area HCP Alternative would cover all activities within the Covered Lands for a period of 35 years that are related to the construction, operation and maintenance of the Solar Complex and its facilities, and to the implementation of the conservation program. Construction of solar facilities on all Solar Sites is anticipated to be completed over a 5 to 7-year period from the commencement of the initial development. However, unknown constraints could extend the development phase to a 10 to 12-year period.

4.4.5.1 Effects to Wetlands and Waters of the U.S.

Solar Site Activities

Wetlands that are present on the Solar Sites include one freshwater emergent wetland that has been disked (located within Site 2-S). One ponding basin occurs adjacent to the south side of Site 7-S, but this basin is outside of the Covered Lands. Non-wetland features that are present include a tributary, two unlined canals, and one “other water”.

Neither the fresh emergent wetland nor the ponding basin will be negatively affected by the Project. Exclusion barrier fencing will be established between these features and the work area to eliminate the potential for any adverse affects to them. The freshwater emergent wetland will be enhanced by cessation of disking.

Conservation Site Activities

Under this alternative, site 17-C, which includes drainages that are collectively considered Waters of the U.S. because they establish connectivity with a navigable water to the south, would be removed from the Conservation Sites. Not including site 17-C in the project would result in these drainage features not being conserved and managed in perpetuity.

4.4.5.2 Effects to Species

Solar Site Activities

Under this alternative, the Solar Sites encompassing 2,350.1 acres would be developed. These development activities may result in take of Covered Species and migratory birds. Direct and indirect effects could occur when Covered Activities substantially alter the ground surface or subsurface of the Covered Lands and disturb habitat. These adverse effects described previously in Section 4.4.4.2 are applicable to the Reduced Permit Area Alternative.

Additionally, adverse effects to Covered Species described in section 4.4.4.2 are applicable to the Reduced Permit Area Alternative.

Conservation Site Activities

Under this alternative, the 1352.3 acres identified as Conservation Sites would be permanently conserved and the proposed Conservation Management Plan would be implemented as mitigation. There would therefore be a conservation benefit to Covered Species and other sensitive species as a result of the Project. Nonetheless, implementing the conservation program and conducting research (See Section 6 of the Draft HCP) to determine the success of the conservation program have the potential to affect Covered Species. Adverse effects to Covered Species and migratory birds described in section 4.4.4.2 are applicable to the Reduced Permit Area Alternative.

4.4.5.3 Mitigation Measures

The Avoidance and Minimization Measures listed in Section 2.3.3 of this EIS for the Proposed HCP Alternative are applicable to this Alternative. Additionally, mitigation measures listed in Section 4.4.4.3 of this EIS for the Proposed HCP Alternative are applicable to this Alternative.

4.4.5.4 Cumulative Effects

The analysis of cumulative effects listed in Section 4.4.4.4 of this EIS for the Proposed HCP Alternative is applicable to this Alternative. With the reduced acreage under this Alternative, the benefit to species and conservation of land is also reduced. Of the 10,652.07 acres that are proposed for development, the Reduced Permit Area Alternative will benefit approximately 0.7% of the area of Kern County after 35 years. The remaining projects within 6 miles of the Permit Area, which may have cumulative adverse effects, will encompass approximately 0.14% of the area of Kern County.

4.4.6 Comparison of Alternatives

The NEPA effect determinations are identified by alternative at the project level. Regional cumulative effects are also considered.

A summary of results comparing the No Action Alternative to the Proposed HCP Alternative and Reduced Permit Area Alternative is shown in Table 4.4-1. Each of the potential effect areas, which includes solar site development activities, conservation site activities, cumulative effects, and benefits to Covered Species is measured with a less, more, or similar effect ranking as compared to the No Action Alternative.

Table 4.4-1
Comparison of Alternatives to the No Action Alternative

Potential Effect	No Action	Proposed HCP	Reduced Permit Area
Solar Site Development Activities	-	Less	Less
Conservation Site Activities	-	Less	Less
Cumulative Effects	-	Less	Less
Benefits to Covered Species	-	More	More

Source: Kern County, 2010

The Proposed HCP Alternative will result in 1894.4 acres of conservation lands, the Reduced Permit Alternative will result in 1,246.7 acres of conservation lands, and the No Action Alternative will result in no conservation land acreage.

Under the No Action Alternative, the 5,784.3 acres identified as the Covered Lands would likely remain vacant or be periodically cultivated for agricultural production. The undeveloped setting of the sites would continue for an indefinite period, and no physical changes within the sites would occur beyond existing or historical conditions. The No Action Alternative would adversely affect Covered Species. The Conservation Sites, Movement Corridors, and Solar Sites (upon decommissioning) would also not be conserved in perpetuity for the Covered Species.

The No Action Alternative would adversely affect Covered Species during the life of the project than either the Proposed HCP Alternative or the Reduced Permit Area HCP Alternative because of the No Action Alternative's lack of conservation and habitat enhancement, and continuation of agricultural activities such as disking. The Reduced Permit Area HCP Alternative would adversely affect Covered Species on Solar Sites only slightly more than the Proposed HCP Alternative due to a reduction in size of land conserved and habitat enhanced.

Regional cumulative effects to Covered Species would be greater under the No Action Alternative than under either the Proposed HCP Alternative or the Reduced Permit Area HCP Alternative because the No Action Alternative may not provide benefits to Covered Species, and may only adversely affect Covered Species. However, while the Proposed HCP Alternative and the Reduced Permit Area HCP Alternative also adversely affecting Covered Species, they, unlike the No Action Alternative, may provide a long-term benefit to Covered Species through conservation and habitat enhancement. Given the reduction in size of the Reduced Permit Area

HCP Alternative, it will have a slightly larger cumulative effect than the Proposed HCP Alternative because it will conserve and enhance less land than the Proposed HCP Alternative.

With Avoidance and Minimization Measures included in the description of the Proposed HCP Alternative (see Section 2.3.3), there may be a greater net conservation benefit to Covered Species under the Proposed HCP Alternative than under the Reduced Permit Area Alternative. The Proposed HCP Alternative will incorporate 5,784.3 acres into a conservation easement to be conserved and managed in perpetuity for the Covered Species. The Reduced Permit Area HCP Alternative would only incorporate 3,682 acres into a conservation easement. Thus, approximately 60% more habitat will ultimately be conserved for Covered Species under the Proposed HCP Alternative. The No Action Alternative would have little conservation benefit for the Covered Species because the disking would be allowed to continue on the Covered Lands. This would maintain the degraded habitat that is present, precluding Covered Species from occurring as is generally the case now. The Proposed HCP Alternative is the preferred alternative.

4.5 CULTURAL RESOURCES

4.5.1 Overview

The potential effects of the alternatives on cultural resources within the Covered Lands are described below. The potential effects associated with each alternative are assessed relative to existing conditions when the Notice of Intent was issued. The analysis of cultural resources focuses on the issues that arise within the Covered Lands. Because effects to cultural resources are specific to the location, the effects do not cumulate with effects on other projects to create more or greater cumulative effects.

Cultural resources surveys were conducted in 2010 throughout those areas of the original Covered Lands sites most likely to contain prehistoric or historic artifacts or sites. Due to the historic use of the parcels for agricultural activities, the surface had been substantially altered. It is unknown whether sub-surface artifacts could exist, and whether artifacts and other materials have been incorporated into the soils from disking and grading. Fourteen cultural resources were identified during those surveys. In addition to the historic artifacts and sites identified, seven prehistoric shell scatters and one isolated prehistoric artifact were identified during the field surveys. Based on surface observations, it was determined that the shell remains were widely dispersed by agricultural activities at each site. Because of this, they lack the potential to yield information important in history or prehistory. One fragment of a chert biface was located within the Covered Lands, which could not be dated, and does not qualify as a historical resource. A records search also identified 17 previously recorded cultural resources within 0.5 miles of the original Project site; however, none of these were within the Covered Lands.

4.5.2 Methodology

Existing records, files, and maps located at the Southern San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Information System were examined in 2010 to identify previously recorded cultural resources within 0.5 miles of the Covered Lands. Other sources reviewed at that time included the SSJVIC site and study base maps. In August 2012, the National Register of Historic Places, Office of Historic Preservation Computer Listing, California Historic Resources Inventory, California Historical Landmarks, and California Points of Historical Interest computer listings were reviewed.

Field surveys were conducted from March 2 through March 21, 2010 on selected areas within the original 6,046 acre-site in preparation for the Maricopa Sun Solar Complex Project EIR (Kern County 2010). Survey area locations were chosen based on locations that held the highest probability for archaeological sites based on elevation, water availability, proximity to prehistoric lacustrine and marshland environments, historic transportation, and industrial facilities. Follow-up field investigations were conducted in June 2010, and included additional

sites within the Covered Lands. The pedestrian surveys were conducted utilizing 15-and 20-meter-wide transects, with width varying depending on vegetative cover and density.

In accordance with Senate Bill 18 and the California Tribal Consultation guidelines, appropriate Native American groups were consulted in regard to the Project's potential effects on Native American features, objects and places of significance. In addition to contacting local Native American Tribes before beginning the 2010 Draft EIR (during the Notice of Preparation period which began in March 2010), tribes were notified of the completion of the Draft EIR with another opportunity to comment. No comments were received during the 90-day response period. (Kern County 2010)

4.5.3 No Action Alternative

This section summarizes the potential cultural resources effects associated with the No Action Alternative. Under the No Action Alternative, the Draft HCP would not be implemented, the proposed Incidental Take Permit (ITP) would not be issued, and the covered activities for the Maricopa Sun Solar complex would not occur. The 5,784.3 acres identified as the Solar Sites would likely remain vacant (unless another project were proposed), the 1894.4 acres identified as Conservation Sites would not be permanently conserved, and the proposed Conservation Management Plan would not be implemented. Under this alternative, agricultural activities including grazing or disking, would likely continue where they currently occur.

Under the No Action Alternative, vacant agricultural lands is unlikely to become productive because of the lack of water for irrigation or grazing, Inactive agricultural lands would remain under the classification of Farmland by the State. The land could be converted to another use, including commercial, industrial, mining, or energy production if another project were proposed.

Existing land uses, such as agricultural production, that include ground disturbance, and/or construction of roads, utilities, fences, or structures, could disturb or destroy cultural or resources. Cultural resources are known to exist both within and adjacent to the Covered Lands. The 14 cultural resources, including four historic era archaeological sites, two historic structures/ and one object, seven prehistoric sites, and one prehistoric artifact found within the Covered Lands had been disturbed by agricultural activities that occurred historically.

Ground disturbing activities, except those associated with agricultural productive lands, such as road construction, installation of below ground utilities, or construction of residential or other structures would trigger the need for a local grading or building permit. This would most likely require the permittee to demonstrate that effects on cultural resources would be avoided or minimized.

4.5.3.1 Solar Sites

To protect cultural resources, survey reports and records searches do not include specific locations of known cultural resources. However, because ground disturbing activities that could affect cultural resources and paleontologic resources are expected to occur almost exclusively on the Solar Sites, they are addressed separately from the Conservation Areas.

Construction Phase

No grading, vegetation grubbing, construction, conservation, or other activities will occur on the Solar Sites under the No Action Alternative. Vacant and other agricultural lands will most likely remain unproductive unless a reliable source of irrigation water is located, in which case, agricultural cultivation could resume. Land owners may continue to disc the fields annually or semi-annually. Effects to cultural resources would be minimal because they have already been impacted by more recent human activities primarily related to agricultural operations, and are unlikely to provide further information.

Operations Phase

No Project-related activities would occur on the Solar Sites under the No Action Alternative during the Operations Phase. Ground disturbing activities for ongoing projects in the area, except those associated with agricultural productive lands, such as road construction, installation of below ground utilities, or construction of residential or other structures would trigger the need for a local grading or building permit. When these activities occurred they would most likely require the permittee to demonstrate that effects on cultural resources would be avoided or minimized on a project-specific basis. A minimal effect would occur under the No Action Alternative.

4.5.3.2 Conservation Areas

Cultural resources reports do not include specific locations of known cultural resources in order to protect these resources and sites. However, because ground disturbing activities that could impact cultural resources and paleontologic resources are expected to occur on the Solar Sites, they are addressed separately from the Conservation Areas.

Construction Phase

No grading, vegetation grubbing, construction, conservation, or other activities would occur on the Construction Phase under the No Action Alternative. Vacant and other agricultural lands will remain untilled unless a reliable source of irrigation water is located, in which case, agricultural activities could resume. A minimal effect would occur.

Operations Phase

No Project-related activities would occur under the No Action Alternative during the Operations Phase. Ground disturbing activities for ongoing projects in the area, except those associated with agricultural productive lands, such as road construction, installation of below ground utilities, or construction of residential or other structures would trigger the need for a local grading or building permit. This would most likely require the permittee to demonstrate that effects on cultural resources would be avoided or minimized on a project specific basis. A minimal effect would occur.

4.5.3.3 Mitigation Measures

No mitigation measures would be proposed for this alternative.

4.5.3.4 Cumulative Effects

The geographic scope for cumulative effects on cultural resources includes a six-mile radius around the Covered Lands. An analysis of cumulative effects takes into consideration the entirety of effects of the projects, zone changes, and general plans discussed in Section 3.5, would have on cultural resources. This geographic scope of analysis is appropriate because the archaeological, historic, and paleontological resources within this radius are expected to be similar to those in the Covered Lands because of their proximity. Similar landforms, environments, and hydrology would result in similar land uses and therefore, site types. Similar geology within this vicinity would likely yield fossils of similar sensitivity and quantity.

No construction activities associated with the proposed Project would occur under the No Action Alternative. No historic and/or archaeological resources would be affected. Furthermore, while not anticipated, prehistoric human remains as well as paleontological sites in the Covered Lands would not be affected under this Alternative. If other projects were proposed within or around the Covered Lands, each would require an individual environmental review, including an evaluation of potential effects to cultural and paleontological resources. With the implementation of mitigation measures for those projects, it is anticipated that a minimal effect would occur to cultural and paleontological resources.

4.5.4 Proposed HCP Alternative

The Proposed HCP Alternative considers activities associated with both the areas where solar facilities will be installed and the areas where Movement Corridors and Conservation Areas will be established in the 5,784.3-acre Covered Lands.

4.5.4.1 Solar Sites

Construction Phase

Ground disturbance activities associated with preparation and construction and similar activities within the solar facilities sites have the potential to adversely affect cultural resources. Grubbing of vegetation, grading, paving, and installation of the solar facilities and associated infrastructure will require heavy equipment to grade the surface, or dig beneath the surface of the proposed Solar Sites. Ground-disturbing activities could be subject to project-specific approvals from federal, State, and local jurisdictions, which may require avoidance buffers and monitoring of activities. Implementation of the mitigation discussed in Section 4.5.4.3 (MM 4.5-1a and MM 4.5-1b) would address potential effects on cultural resources by requiring preconstruction surveys for ground disturbing activities in those areas not previously surveyed, as well as training for those working in these areas. Mitigation Measure MM 4.5-2 would require that if any cultural resources were discovered during construction activities, work would cease until the resource would be evaluated by an archaeologist. Effects on cultural resources that are eligible for the NRHP would be avoided by relocating the disturbance, minimized through protection of sensitive resources in place, or, if necessary mitigated through data retrieval, all in consultation with a qualified archaeologist and SHPO as necessary.

Kern County has many known paleontological resources, including McKitrick Brea Pit, located northwest of the Project site approximately 18 miles. However, no known paleontological resources are located in or adjacent to the Covered Lands.

Project construction activities would involve relatively shallow excavations and trenching, and therefore, effects would be considered minimal. No paleontological resources are known to occur on the Project site. A mitigation measure (MM-4.5-3) is included to address the preservation of paleontological resources when discovered on the site, where feasible. As with cultural resources, it is anticipated that the County will require a Conditional Use Permit and permits for grading before ground disturbing activities can occur. Neither background research nor surveys in the area have revealed evidence of human remains within the Covered Lands. However, mitigation measure MM 4.5-4 has been included in the event that human remains are found during ground-disturbing activities. With the implementation of these mitigation measures, effects on cultural and paleontological resources will be minimal.

Operations Phase

Operation of the solar facilities is not likely to result in effects on cultural resources. Under this Alternative ground disturbing activities are not anticipated to occur once the construction phase has been completed, and it is unlikely that cultural resources, paleontological resources, and or human remains will be affected during this phase of the Project. A minimal effect would occur.

4.5.4.2 Conservation Areas

Construction Phase

Ground disturbance activities associated with preparation and construction and similar activities within the Conservation Areas have little potential to adversely affect cultural or paleontological resources. Much of the Covered Lands have been impacted by agricultural tilling or disking in the past. On the Conservation Areas, disking and other ground disturbance will cease to encourage native vegetation and wildlife to become reestablished. Only in areas where reseeding is needed will the ground be disturbed. A minimal effect will occur.

Operations Phase

Operation of the Conservation Areas is not likely to result in adverse affects on cultural resources. Under this Alternative, ground disturbing activities are not anticipated to occur in these areas, and it is unlikely that cultural resources, paleontological resources, and or human remains will be affected during this phase of the Project. A minimal effect will occur.

4.5.4.3 Mitigation Measures

Mitigation measures to avoid effects to cultural and paleontological resources that may exist beneath the surface are determined based on Public Resources Code 5097.98-99, Health and Safety Code 7050.5, the Native American Heritage Commission, and recommendations of Pacific Legacy, Inc. The following mitigation measures have been included in the Draft EIR (Kern County 2010, pages 4.5-15 through 4.5-20) and shall apply to the Proposed Action analyzed in this EIS.

MM 4.5-1a: Subsequent to the submission of a specific project, and prior to issuance of grading permits and ground disturbance activities, the project operator shall hire a qualified archaeologist to conduct a Phase-1 cultural resources assessment in areas where none have yet been conducted for this project. A report of the study shall be submitted to the Kern County Planning and Community Development Department for review. Based on the results, further cultural resources analyses (Phase-2) and/or additional mitigation measures may be required.

MM 4.5-1b: Prior to conducting ground-disturbing activities, all contractor employees associated with earthmoving and excavation will attend a training session, informing them of the potential for inadvertently discovered cultural resources and/or human remains, and measures/protocols to be followed to prevent destruction of cultural or paleontological resources or human remains.

MM 4.5-2: If concentrations of historic-period and/or prehistoric cultural materials are encountered during construction activities, all work in the immediate vicinity of the find shall halt until a qualified archaeologist can evaluate the find and make recommendations. Cultural

resource materials may include, but are not limited to, historic resources such as household debris, ceramics, industrially related materials and fire-blown glass, metal, wood, brick or structural remnants. If the qualified archaeologist determines that he discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse effects from project implementation. These additional studies may include avoidance, testing, and evaluation, or data recovery excavation. Construction shall not resume until appropriate measures are recommended or the material are determined to be minimal.

MM 4.5-3: During grading and site preparation activities, if paleontological resources, such as fossils are encountered all work in the immediate vicinity of the fins shall halt until a qualified paleontologist can evaluate the find and make recommendations. If the qualified archaeologist determines that he discovery represents a potentially significant paleontological resource, additional investigations may be required to mitigate adverse effects from project implementation. These additional studies may include avoidance, testing, and evaluation, or data recovery excavation. Construction shall not resume until appropriate measures are recommended or the material are determined to be minimal.

MM 4.5-4: If human remains are discovered within the Project sites, the specific protocols, guidelines, and channels of communication outlined by the Native American Heritage Commission, and in accordance with Section 7050.5 of the Health and Safety Code, Section 5097.98 of the PRC (Chapter 1492, Statues of 1982, SB 297), and SB 447 (Chapter 44, Statues of 1987) will be followed. Section 7050.5 will guide the potential Native American involvement, in the event of discovery of human remains, at the direction of the County Coroner.

4.5.4.4 Cumulative Effect

The geographic scope for cumulative effects on cultural resources includes a six-mile radius around the Covered Lands. An analysis of cumulative effects takes into consideration the entirety that effects of the projects, zone changes, and general plans discussed in Section 3.5, would have on cultural resources. This geographic scope of analysis is appropriate because the archaeological, historic, and paleontological resources within this radius are expected to be similar to those in the Covered Lands. Similar landforms, environments, and hydrology would result in similar land uses and therefore, site types. Similar geology within this vicinity would likely yield fossils of similar sensitivity and quantity.

Construction activities associated with the proposed Project could contribute to the loss of historic and/or archaeological resources that would result in adverse cumulative effects. Furthermore, while not anticipated, undiscovered prehistoric human remains as well as paleontological sites in the Covered Lands, the likelihood of cumulative effects occurring on cultural or paleontological resources are unlikely. With the implementation of mitigation measures, effects to cultural and paleontological resources will be minimal.

4.5.5 Reduced Permit Area Alternative

4.5.5.1 Cultural and Paleontological Resources

Under the Reduced Permit Area Alternative, the Permit Area would be reduced from 5,784.3 acres to 3,682 acres by removing from the Covered Lands: Sites 4-S/4-M (652.5 acres), 6-S (320.9 acres), 7-S/7-M (481.2 acres) and 17-C (647.7 acres). The lands excluded from the Permit Area would likely remain vacant and would continue to be disked on a regular basis for weed control. If water became available, these lands would likely be converted to active agricultural production.

4.5.5.2 Solar Sites

Construction Phase

Ground disturbance activities associated with preparation and construction and similar activities within the solar facilities sites have the potential to adversely affect cultural resources. Grubbing of vegetation, grading, paving, and installation of the solar facilities and associated infrastructure will require heavy equipment to grade much of the surface area, and dig beneath the surface of the proposed Solar Sites. Under Mitigation Measures MM 4.5-1a and MM 4.5-1b, preconstruction surveys will be conducted, and training provided to construction crews and other workers on site. Any new discoveries of cultural or paleontological resources will be recorded. During construction activities, MM 4.5-2, MM 4.5-3 and MM 4.5-4 will be implemented to ensure that any newly discovered cultural or paleontological resources or human remains are properly treated before work resumes in the area of the discovery. With the implementation of these mitigation measures, effects to cultural and paleontological resources will be minimal.

Operations Phase

Operation of the solar facilities is not likely to result in effects on cultural resources. Under this Alternative ground disturbing activities are not anticipated to occur, and it is unlikely that cultural resources, paleontological resources, and or human remains will be affected during this phase of the Project. A minimal effect will occur.

4.5.5.3 Conservation Areas

Construction Phase

Ground disturbance activities associated with preparation and construction and similar activities within the Conservation Areas have little potential to adversely affect cultural resources. Much of the Covered Lands have been impacted by agricultural tilling or disking in the past. On the Conservation Areas, disking and other ground disturbance will cease to encourage native

vegetation and wildlife to become reestablished. Only in areas where reseeding is needed will the ground be disturbed. A minimal effect will occur.

Operations Phase

Operations within the Conservation Areas is not likely to result in effects on cultural resources. Under this Alternative, ground disturbing activities are not anticipated to occur in these areas, and it is unlikely that cultural resources, paleontological resources, and or human remains will be affected during this phase of the Project. A minimal effect will occur.

4.5.5.4 Mitigation Measures

The Reduced Permit Area Alternative will require implementation of the same mitigation measures as the Proposed HCP Alternative, including MM 4.5-1a, MM 4.5-1b, MM 4.5-2, MM4.5-3, and MM 4.5-4.

4.5.5.5 Cumulative Effect

The geographic scope for cumulative effects on cultural resources includes a six-mile radius around the Covered Lands. An analysis of cumulative effects takes into consideration the entirety that effects of the projects, zone changes, and general plans discussed in Section 3.5, would have on cultural resources. This geographic scope of analysis is appropriate because the archaeological, historic, and paleontological resources within this radius are expected to be similar to those in the Covered Lands. Similar landforms, environments, and hydrology would result in similar land uses and therefore, site types. Similar geology within this vicinity would likely yield fossils of similar sensitivity and quantity.

Construction activities associated with the proposed Project could contribute to the loss of historic and/or archaeological resources and would result in adverse cumulative effects. Furthermore, while not anticipated, undiscovered prehistoric human remains as well as paleontological sites in the Covered Lands, the likelihood of cumulative effects occurring on cultural or paleontological resources are unlikely. With the implementation of mitigation measures, effects to cultural and paleontological resources will be minimal.

4.5.6 Comparison of Alternatives

A summary of the relative effect resulting from the Proposed Action is provided in Table 4.5-1. Comparisons between the No Action Alternative, Proposed HCP Alternative, and the Reduced Permit Area Alternative are ranked having an overall effect that is more, less, or similar to the No Action Alternative. The effect determinations are identified by Alternative at the project level and at the cumulative level.

Table 4.5-1
Comparison of Alternatives to the No Action Alternative

Potential Effect	No Action	Proposed HCP	Reduced Permit Area
CULTURAL RESOURCES			
Solar Panel Areas			
Construction Phase	-	Similar	Similar
Operations Phase	-	Similar	Similar
Conservation Areas			
Construction Phase	-	Similar	Similar
Operations Phase	-	Similar	Similar
PALEONTOLOGICAL RESOURCES			
Solar Panel Areas			
Construction Phase	-	Similar	Similar
Operations Phase	-	Similar	Similar
Conservation Areas			
Construction Phase	-	Similar	Similar
Operations Phase	-	Similar	Similar
Cumulative Effect	-	Similar	Similar

Source: Kern County, 2010.

The analysis of the effects, as well as the magnitude of direct, indirect, and cumulative effects is determined for each alternative, in terms of whether actions would directly or indirectly result in destruction or disturbance of paleontological resources or cultural resources that are eligible for listing in the National Register of Historic Places. The analysis of effects also considers whether each alternative would directly or indirectly result in the alteration or destruction of the existing historic context within the Covered Lands. Ground disturbing activities, such as those conducted during the construction phase on the solar facility areas, and during establishment and maintenance of movement corridors and conservation areas, are most likely to affect cultural and paleontological resources.

The No Action Alternative would have no direct effects to cultural or paleontological resources, except those that might result from continued agricultural activities. As much of the agricultural land is vacant, and is presumed to remain vacant, it is unlikely that effects to cultural or paleontological resources would be likely under this Alternative.

Ground disturbing activities on the 5,784.3 acres planned for the solar facility sites would not affect cultural resources when proposed mitigation measures were implemented under the Proposed HCP Alternative or Reduced Permit Area Alternative. Affects are unlikely to occur to cultural resources in the 1,894.4 acres planned as conservation areas under the Proposed HCP Alternative when proposed mitigation measures are implemented. As it is unlikely that paleontological resources exist within the Covered Lands, and mitigation measures have been

included in the event any are discovered, activities planned under the Proposed HCP Alternative would not affect paleontological resources.

The Reduced Permit Area Alternative considers the same lands for the Project as does the Proposed HCP Alternative. However, this alternative includes 3,682 acres instead of 5,784.3 in the permitted lands for the solar facilities and fewer acres in the conservation areas. As a project of a smaller footprint, it is likely that fewer cultural or paleontological resources would be discovered under the Proposed HCP Alternative. The acreage not included in this alternative would most likely remain as vacant agricultural lands and would not be affected by covered activities.

As described earlier, it is most likely that any cultural and paleontological resources in the Covered Lands will be discovered only during ground disturbing activities. These activities will be limited to the construction period, with the majority of activity within the Solar Sites. With the implementation of the proposed mitigation measures, it is likely that cultural resources would not be affected by the Proposed Action. Under the No Action Alternative the lands would not receive the same protections as afforded by the mitigation measures, although ground disturbing activities, including agricultural disking or grading, would continue. Therefore effects to cultural and paleontological resources are likely to be less under either of the Action Alternatives than under the No Action Alternative, *unless* agricultural activities occur, whereas more effects could occur under the No Action Alternative.

When mitigation measures are implemented, cumulative effects to cultural resources from solar projects could result in fewer effects than under the No Action Alternative in those cases where the land is being actively farmed. Proposed solar projects would be required, under County, State, and federal regulations, to implement measures to protect discovered cultural resources; however, private landowners engaged in ground disturbing activities, such as farming, are not required to implement these protections. In cases where the land is fallow or vacant, effects to cultural resources are likely to be similar to the No Action Alternative.

This page intentionally left blank.

4.6 GEOLOGY AND SOILS

4.6.1 Overview

The potential effects of the alternatives on the geology and soils within the Covered Lands are discussed below. Potential effects associated with each alternative are assessed relative to existing conditions when the Notice of Intent was issued. The analysis of geology and soils focuses on the issues that arise within the Covered Lands. Cumulative effects to geology and soils are normally localized and site-specific.

4.6.2 Methodology

Methodology for determining potential effects associated with Covered Activities on geology and soils includes an examination of how each alternative would expose people or structures to substantial seismic risks as well as other risks related to soils and geology (erosion, liquefaction, etc.). Determination of potential significance effects is based on existing literature, as well as a site reconnaissance, testing, and subsequent laboratory analysis conducted by BSK Associates (Maricopa Sun Solar Complex EIR, p. 4.6-1). The geotechnical report presents findings, conclusions, and recommendations for development of the project site based on the engineering analysis of geotechnical properties of the subsurface conditions. In the sections that follow, a discussion of three alternatives and mitigation to reduce environmental effects is provided.

4.6.3 No Action Alternative

This section summarizes the potential geology and soils effects associated with the No Action Alternative. As discussed in Chapter 2, Section 2.3.2 of this EIS, the No Action Alternative assumes that the HCP would not be implemented, the proposed Incidental ITP would not be issued, and the Covered Activities for the Maricopa Sun Solar complex would not occur. The 5,784.3 acres identified as the Permit Area would likely remain vacant, the 1,894.4 acres identified as Conservation Sites would not be permanently conserved, and the proposed Conservation Management Plan would not be implemented. As a result, there would be no conservation benefit to Covered Species or other listed or sensitive species as a result of the Proposed Action.

Agricultural activities, including grazing or disking, would likely continue resulting in reduced habitat quality as a result of vegetation removal and soil compaction.

4.6.3.1 Exposure to Seismic Risks

California is known for its seismic activity, and Kern County is within the State's seismically active area. As a result, the State has developed many rules and regulations that developers must comply with during development (Alquist-Priolo Earthquake Fault Zoning Act, Seismic Hazards Mapping Act, and California Building Code). Kern County's regulations and codes are based on

the State's rules and regulations. Any previous development occurring on the Covered Lands would have had to comply with the County's regulations in the Kern County Municipal Code before a building permit was issued.

The Proposed Action site currently consists of undeveloped and vacant agricultural land with relatively flat topography. Existing land uses include uncultivated and cultivated farmland. Under the No-Action Alternative it is likely that the undeveloped setting of the sites would continue for an indefinite period with no physical changes occurring or only periodic cultivation for agricultural production. However, there is no guarantee that the current general plan land use designations of the parcels would be maintained. As such, future development could result in exposing people or structures to adverse effects resulting from geologic or seismic hazards under this Alternative.

4.6.3.2 Exposure to Other Soils and Geology Risks

As discussed in Section 3.6, various soil conditions occur in the Covered Lands. A few sites have groundwater depths as low as 10.7 feet below ground surface. In combination with loose soils, there could be a possibly of potential seismic related ground failure, including liquefaction. In addition, any future disturbance of the land due to agricultural activities could result in erosion. However, it is assumed that past, present, and future agricultural activities on Covered Lands have and will continue to occur under the No Action Alternative in a manner that is consistent with the Kern County General Plan (Chapter 4, Safety Element, page 151 et seq,). A minimal effect would occur.

4.6.3.3 Mitigation Measures

There are no mitigation measures imposed under the No Action Alternative.

4.6.3.4 Cumulative Effect

Seismic related cumulative effects on geology and soils are usually limited and site specific. Site specific conditions include the location of faults and structures which are often affected by areas of potential liquefaction, subsidence, and unstable slopes. It is likely that agricultural activities would continue on the parcels indefinitely. However, in the unlikely event future development did occur, there would be cumulative effects under the No Action Alternative. For example cumulative effects could occur in a seismic event if a potential hazard, such as a power plant for example, were located near a populated area

4.6.4 Proposed HCP Alternative

This section summarizes the potential geology and soils effects associated with the Proposed HCP Alternative. As discussed in Chapter 2.0, Section 2.3.2 of this EIS, the Proposed HCP Alternative assumes that the HCP would be implemented, the proposed Incidental Take Permit

(ITP) would be issued, and the Covered Activities for the Maricopa Sun Solar complex would occur. Activities included in the HCP would include the following: (1) pre-construction, construction, operations and maintenance, and decommissioning activities within Solar Sites; (2) management and maintenance activities associated with Movement Corridors and Conservation Sites, including monitoring and reporting activities; and (3) activities associated with implementation of the conservation program specified in this HCP.

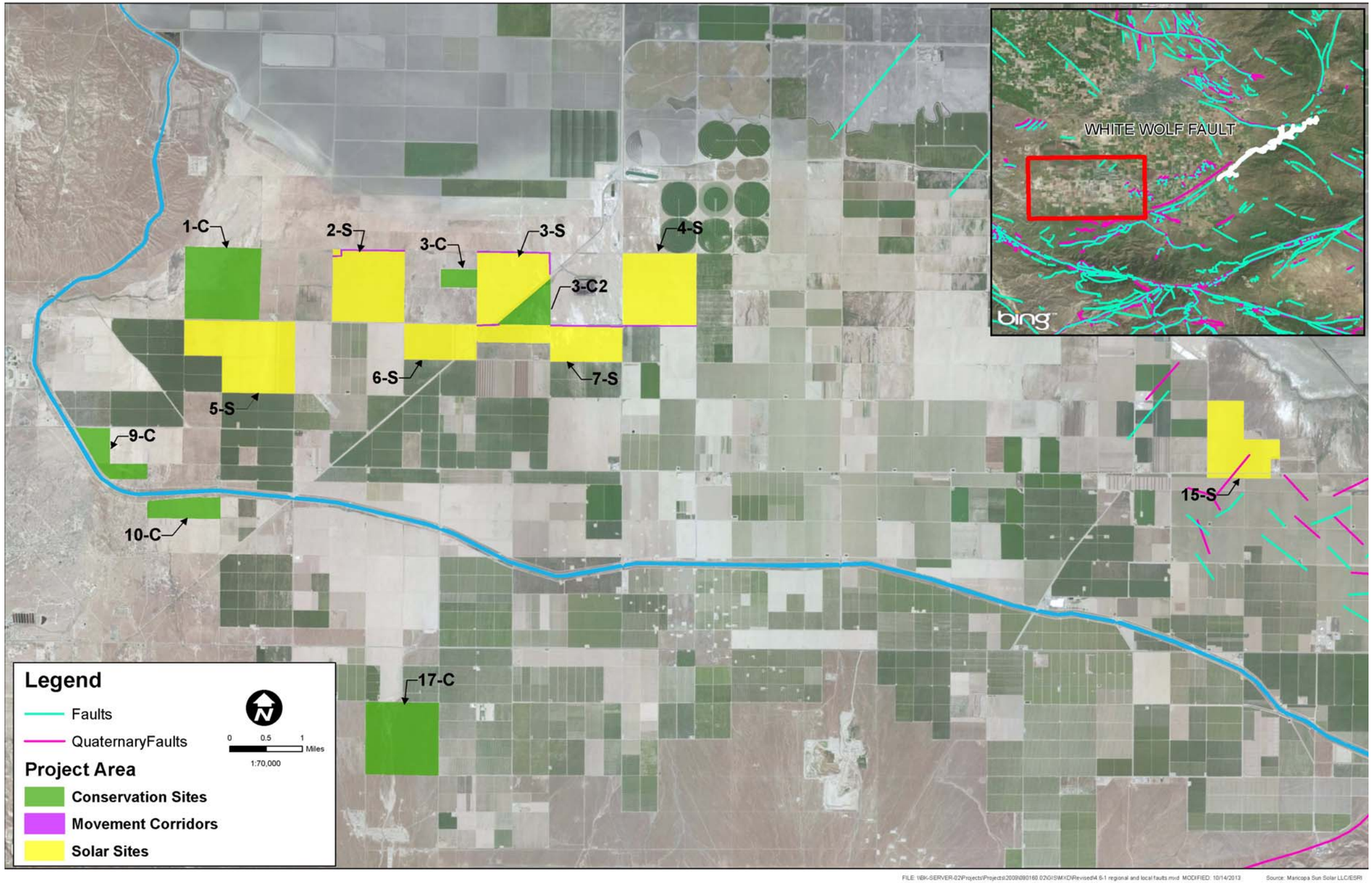
4.6.4.1 Exposure to Seismic Risks

California is known for its seismic activity, and as a result the State has developed many rules and regulations that developers must comply with during development. Kern County's regulations and codes for addressing seismic risks are based on the State's rules and regulations.

The western and the southern end of the San Joaquin Valley are bordered by major active fault systems, making Kern County a historically active seismic area. The nearest active fault to Covered Lands is the White Wolf Fault, which is located approximately 9 miles east (Figure 4.6-1). Any future development occurring on the Covered Lands would have had to comply with the County's regulations before a building permit was issued. Structures used for human occupancy would not be allowed in the surface rupture of known active fault areas. Secondary damage to structures from fault rupture and fault zones could occur. The California Building Code and other regulations, which are utilized by the County, would ensure structural strength to help reduce serious injury and loss of life. Effects would therefore be reduced. All future development will be required to comply with the following State and local laws which are listed in the Regulatory Section of Section 3.6 of this EIS.

Examination of the Proposed HCP Alternative development shows that people within a portion of the Covered Lands could be exposed to seismic hazards. None of the sites are intersected by any active or inactive faults and there are no Alquist-Priolo Special Studies Zones applied to any of the parcels within the Covered Lands. However, some sites within the Covered Lands lie within 1 mile of two short unnamed active faults, and within 2 miles of two additional short, unnamed active faults. Although none of the proposed sites are designated "2.1 Seismic Hazard" by the Kern County General Plan (Chapter 4, Safety Element, page 151 et seq,)., active faults do exist close to the sites and could subject the facilities to fault rupture and seismic shaking with strong ground motion resulting from seismic activity along local and more distant active faults. Although the shaking would be less severe from an earthquake of a given magnitude that originates farther from the project site, the effects could potentially be damaging to solar energy infrastructure and present geologic hazards to onsite employees; however, the proposed PV array systems would be supported on drilled pier or drive pile foundations not intended for human occupancy. Implementation of Mitigation Measure MM 4.6-1a, which is listed in Section 4.6.4.2, would reduce effects to minimal levels.

This page intentionally left blank.



Quad Knopf

REGIONAL AND LOCAL FAULTS
MARICOPA SUN SOLAR LLC

Figure
4.6 - 1

This page intentionally left blank.

4.6.4.2 Exposure to Other Soils and Geology Risks

Although a geologic study has not been prepared, soils within the Permit Area have been analyzed in a Phase 1 geotechnical study conducted by BSK (Kern County 2010). Figure 4.4-2 in Section 3.4 includes a soils map of the Permit Area. Based on water well data, the depth of groundwater varies from 94 feet to depths of as little as 10 feet. Therefore, groundwater levels under at least some of the Permit Area parcels may also be shallow enough to present a potential effect from seismic-related ground failure, including liquefaction. Based on the potential for possible shallow groundwater and seismic shaking at the Permit Area sites, there is a potential for liquefaction. Mitigation Measure MM 4.6-2 would reduce this potential effect to a level below significance as set for seismic requirements listed in the California Building Code, Uniform Building Codes, Kern County Building Code, Chapter 17, and as recommended by a California registered professional engineer (Section 4.6.4.2).

Construction in the Permit Area would include site preparation and grading activities that could result in the loosening of soils and removal of vegetation that acts as a stabilizer. Related potential effects often include erosion and sedimentation. The Permit Area is within a relatively flat area between the Sierra Nevada Mountains and Coast Ranges. Infrastructure associated with the Permit Area sites would not be situated on steep slopes and is not expected to cause or be subject to substantial erosion related to stormwater runoff or seismic events. Furthermore, as noted in the geotechnical study prepared for the EIR, the proposed Permit area parcels are not within a zone prone to soil erosion (Kern County 2010). In addition, as noted in Section 4.8, Hydrology and Water Quality, compliance with the federal CWA as well as regulations of the State Water Resources Control Board (SWRCB) would require that Covered Activities implement a construction Stormwater Pollution Prevention Plan SWPPP, including site-specific Best Management Practices (BMPs) for erosion and sediment control.

Given the relatively flat nature of the Covered Lands, it is unlikely that soil erosion from water runoff would occur; however, during construction, construction vehicles could contribute to soil erosion due to wind, and effects are considered to be substantial without mitigation. Incorporation of Mitigation Measures MM 4.6-3 and MM 4.6-4, below, would reduce effects to minimal levels.

4.6.4.3 Mitigation Measures

The following mitigation measures apply to the Proposed Action:

MM 4.6-1a: Prior to the approval of grading permits on all Permit Area sites, the project operator shall retain a qualified geotechnical engineer to design the project facilities to withstand probable seismic-induced ground shaking on the site. All grading and construction on site shall adhere to all specifications and procedures and site conditions presented in the final design plans, which shall be fully compliant with the seismic requirements of the California Building Code,

Uniform Building Codes, Kern County Building Code, Chapter 17, and as recommended by a California registered professional engineer. The procedures and site conditions include, but are not limited to, proper site preparation, foundation specifications, and buried metal protection measures. The final structural design shall be subject to approval and follow-up inspection by the Kern County Building Inspection Department. Final compliance requirements shall be provided to the onsite construction supervisor and Kern County building inspector to ensure compliance.

MM 4.6-1b: A detailed Phase II geotechnical evaluation by a qualified soils/geotechnical engineer or geologist, consisting of field exploration (drilling and soil sampling), laboratory testing of soils samples and engineering analysis, shall be prepared to determine soils properties as related to, but not limited to the following: ground motion acceleration parameters, amplification properties of the subsurface units at the specific site(s), the potential for the hydrocompaction of soils to affect the proposed facilities, septic sanitary system feasibility, as well as the expansive soils' potential to affect the proposed facilities. These studies shall be used to determine the appropriate solar panel foundation and support structure engineering to be utilized, as well as building requirements and septic system requirements to be incorporated in the proposed development as appropriate. Copies of all analyses shall be submitted for review and approval by the Kern County Engineering Surveying and Permit Services Department and the Planning and Community Development Department.

MM 4.6-2: The project operator shall limit grading to the minimum area necessary for construction and operation of the project, and shall retain a California registered professional engineer to review the final grading earthwork and foundation plans prior to construction. Final plans shall include BMPs to limit on- and offsite erosion, and a water plan to treat disturbed areas during construction to reduce dust suppression.

MM 4.6-3: The project operator shall use existing roads to the greatest extent feasible to minimize increased erosion. Prior to approval of the grading permit, the final plans shall be reviewed by the County to confirm that existing roads were used to the greatest extent feasible. If the county determines that new roads would be created that are not necessary to the project construction or are redundant to existing roads, the project operator will remove the offending roads from the final plans prior to approval.

MM 4.6-4: The project operator shall design the septic systems and leach fields in accordance with the Kern County Environmental Health Services Department and shall obtain the required permits and\or approvals related to septic systems and leach fields and implement all required conditions.

4.6.4.4 Cumulative Effect

As mentioned above, the geographic scope for considering cumulative effects on geology and soils is limited because effects are usually site specific. Site specific conditions include the location of faults and structures which are often affected by areas of potential liquefaction, subsidence, and unstable slopes. Cumulative effects could occur in a seismic event if a potential hazard, such as a power plant for example, were located near a populated area. However, no such facilities exist or are planned within the development area where the Proposed Action would be located. The Covered Lands are within a seismically active area however, which is bordered by major fault systems including the San Andreas Fault. The fault is approximately 16.5 miles southwest of the project site. Although the Covered Lands are not located within any Alquist-Priolo Earthquake Fault Zones, seismic activity is probable in and around project area. The seismic conditions that occur within the project area exist to varying degrees throughout Kern County. No areas of Kern County are considered seismically inactive.

In addition to the proposed project, other planned projects (present and reasonably foreseeable) within Kern County which are listed on the County's website (http://pcd.kerndsa.com/planning/environmental-documents) are subject to review in separate environmental documents that would require conformance to the Kern County General Plan and Municipal Code and require mitigation of seismic hazards and engineering to ensure soil stability. Thus, the cumulative effect from past, present, and reasonably foreseeable future projects would be less than significant, because as stated previously, they would be subject to review in separate environmental documents. As currently designed and with the identified mitigation measures, the Proposed Action would not contribute to a cumulative effect related to geology and soils, including seismic hazards. A minimal effect would occur with the incorporation of the mitigation measures listed in Section 4.6.4.3.

4.6.5 Reduced Permit Area Alternative

This section summarizes the potential geology and soils effects associated with the Reduced Permit Area Alternative. Under this Alternative the Permit Area would be reduced from 5,784.3 acres to 3,682 acres by removing from the Project: Sites 4-S/4-M (652.5 acres), 6-S (320.9 acres), 7-S/7-M (481.2 acres) and 17-C (647.7 acres). The lands excluded from the Permit Area would likely remain vacant and would continue to be disked on a regular basis for weed control. If water became available, these lands would likely be converted to active agricultural production.

Under this alternative, there would be fewer disturbances of the Covered Species than under the No Action Alternative because construction, operations, maintenance and decommissioning activities would occur over a smaller area.

4.6.5.1 Exposure to Seismic Risks

With the Reduced Permit Area Alternative, the same exposure from seismic risks would occur as discussed in Section 4.6.4, but on fewer Covered Lands as a result of the 2,102-acre reduction. The nearest active fault to Covered Lands is the White Wolf Fault, which is located approximately 9 miles east of site 15. Site 15 would not be removed from the project. Therefore, there would be substantial effects without the incorporation of mitigation measure MM 4.6-1a.

4.6.5.2 Exposure to Other Soils and Geology Risks

As with seismic risks, other effects related to soils and geology risks would also occur as discussed in Section 4.6.4. Areas near sites 1, 15, and 16 have recorded groundwater depths as low as 15 feet (Kern County 2010). The presence of low groundwater near several of the proposed Covered Land parcels, combined with loose soils, poses a potential effect from seismic related ground failure, including liquefaction. Sites 1, 15, and 16 would remain as part of the Covered Lands. Therefore, effects related to liquefaction would remain substantial without mitigation measures applied. Implementation of Mitigation Measure MM 4.6-2 would reduce this potential effect to a minimal level.

Infrastructure associated with the sites would not be situated on steep slopes and is not expected to cause or be subject to substantial erosion related to stormwater runoff or seismic events. Furthermore, as noted in the geotechnical study, the proposed parcels are not within a zone prone to soil erosion.

As noted in Section 4.8, Hydrology and Water Quality of the EIS, compliance with the federal CWA as well as regulations of the State Water Resources Control Board (SWRCB) would require that Covered Activities implement a construction Stormwater Pollution Prevention Plan SWPPP, including site-specific Best Management Practices (BMPs) for erosion and sediment control.

Given the relatively flat nature of the Covered Lands, it is unlikely that soil erosion from water runoff would occur; however, during construction of the Proposed Action, construction vehicles could contribute to soil erosion due to wind, and effects are considered to be potentially substantial without mitigation. Incorporation of Mitigation Measures MM 4.6-3 and MM 4.6-4 would reduce effects to a minimal level as listed in Section 4.6.4.2.

4.6.5.3 Mitigation Measures

Mitigation Measures MM 4.6-1a through MM 4.6-4 listed in Section 4.6.4.2 would be incorporated into the Reduced Permit Area Alternative.

4.6.5.4 Cumulative Effect

Similar to the Proposed HCP Alternative, under the Reduced Permit Area Alternative cumulative effects related to geology and soils would be site specific. The effects of these projects are not of a nature to cause cumulative effects on geologic or soils resources. Cumulative effects could occur in a seismic event if a potential hazard, such as a power plant, were located near a populated area. However, no such facilities exist or are planned within the development area where the Proposed Action would be located.

All planned projects in the vicinity of Covered Lands are subject to review in separate environmental documents that would require conformance to the Kern County General Plan and Municipal Code, and require mitigation of seismic hazards and engineering to ensure soil stability. Thus, the cumulative effect from past, present, and reasonably foreseeable future projects would be less than cumulatively considerable. As currently designed and with the identified mitigation measures, the Proposed Action would not contribute to a cumulative effect related to geology and soils, including seismic hazards. A minimal effect would occur with the incorporation of the mitigation measures listed in Section 4.6.4.2.

4.6.6 Comparison of Alternatives

A summary of results comparing the No Action Alternative to the Proposed HCP Alternative and Reduced Permit Area Alternative are shown in Table 4.6-1. Each of the potential effect areas which include exposure to seismic risks, exposure to other soils and geology risks, and cumulative effect is measured with a less, more, or similar effect ranking as compared to the No Action Alternative.

Table 4.6-1
Comparison of Alternatives to the No Action Alternative

Potential Effect	No Action	Proposed HCP	Reduced Permit Area
Exposure to Seismic Risks	-	More	More
Exposure to Other Soils and Geology Risks	-	More	More
Cumulative Effect	-	Less	Less

Source: Kern County, 2010.

As shown in Table 4.6-1, the Proposed HCP Alternative and the Reduced Permit Area Alternative would have more effects resulting from exposure to seismic risks than the No Action Alternative. This is because under the No Action Alternative Covered Lands would remain vacant and undeveloped for an indefinite period of time with no physical changes occurring beyond the existing or historical conditions. The current Kern County General Plan land use designations of the parcels would be maintained, so employees and solar infrastructure would not be exposed to seismic risks. Although the Reduced Permit Area would not result in as much

exposure to these same risks as the Proposed HCP, it would still create a greater disturbance than the No Action Alternative.

The same conclusion can be applied to the exposure to other soils and geology risks. Compared to the No Action Alternative, which would have less of an effect on exposure to other soils and geology risks, because there would be no project, the Proposed HCP would result in more effects.

Under the Proposed HCP Alternative and Reduced Permit Area Alternative effects related to geology and soils would be site specific. Cumulative effects could occur in a seismic event if a potential hazard, such as a power plant, were located near a populated area. As proposed under each Alternative there would be no development of a power plant or any similar structure. Under the No Action Alternative however, there could be a change in the general plan designation and zoning which might allow for a structure such as a natural gas or coal fired power plant. This in addition to other past, present, or reasonably foreseeable projects could result in cumulative impacts. Therefore, compared to the No Action Alternative, the Proposed HCP Alternative and Reduced Permit Area Alternative would have fewer (less) effects at listed in Table 4.6-1.

4.7 HAZARDS AND HAZARDOUS MATERIALS

4.7.1 Overview

The potential effects of the alternatives as related to possible hazards and hazardous materials within the Covered Lands are discussed in this section. Potential effects associated with each alternative are assessed relative to existing conditions when the Notice of Intent was issued. The analysis of hazardous materials focuses on the issues that arise within the Covered Lands.

4.7.2 Methodology

Methodology for determining substantial effects associated with Covered Activities and hazardous materials includes an examination of how each alternative would contribute to exceeding potential hazardous effects thresholds associated with the following hazards and hazardous materials: solar panels materials, releases from oil extraction and agricultural activities, generation of waste heat, exposure to electric and magnetic fields, risks associated wildfires, and noise exposure. A list of projects related to hazardous wastes was reviewed on the U.S. Environmental Protection Agency's Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Public Access Database, and the area encompassed by the Covered Lands was not on the list.

4.7.3 No Action Alternative

This section summarizes the potential hazards-related effects associated with the No Action Alternative. As discussed in Section 2.3.2, the No Action Alternative assumes that the HCP would not be implemented, the proposed Incidental Take Permit (ITP) would not be issued, and the Covered Activities for the Maricopa Sun Solar complex would not occur. The 5,784.3 acres identified as the Permit Area would likely remain vacant, the 1,894.4 acres identified as Conservation Sites would not be permanently conserved, and the proposed Conservation Management Plan would not be implemented.

4.7.3.1 Hazardous Materials (Hazardous Substances/Solar Panels/Wells/Agricultural Activities)

Under the No-Project Alternative, there would be no potential effects resulting from construction and operation of the Proposed Action, including: site grading, pile-driving, and the use and transportation of petroleum-based lubricants, solvents, fuels, herbicides, and pesticides to and from the site. Therefore, there would be no accidental release of stored materials, transportation of materials containing hazardous substance, or removal of vegetation. Also, no solar panels that may be made of hazardous materials would be installed. Workers would not be exposed to the release of hydrocarbons or other toxic or dangerous chemicals associated with oil into the air, and the dangers associated with operating a facility near an oil well (as discussed in Section 4.7-4, there are areas throughout the project site that are designated as having oil mineral rights).

The soils would not be disturbed beyond what is currently allowed under the No Action Alternative. Therefore, no worker would be exposed to chemicals that may be in the soil from past agricultural activities. No effect would occur under this alternative.

4.7.3.2 Hazards (Ambient Temperature/Electromagnetic Fields/Airports/Fire)

The No Action Alternative would not have an effect on the current hazards that may exist on Covered Lands. There would be no installation of solar panels, so the ambient temperature of the site would remain unchanged. The creation of EMFs would not occur as no energy-related infrastructure would be installed. The site would remain in its current state, with lands being maintained to reduce fire risks.

4.7.3.3 Mitigation Measures

There are no mitigation measures imposed under the No Action Alternative.

4.7.3.4 Cumulative Effect

Under the No Action Alternative there would be no hazardous materials release that could result from activities during site grading, pile-driving, and the use and transportation of petroleum-based lubricants, solvents, fuels, herbicides, and pesticides to and from the site. Therefore, this Alternative does not have the potential to contribute to hazards and hazardous materials associated with cumulative projects because these types of effects would not occur..

4.7.4 Proposed HCP Alternative

This section summarizes the potential hazards and hazardous materials effects associated with the Proposed HCP Alternative. As discussed in Chapter 2.0, Section 2.3.2 of this EIS, the Proposed HCP Alternative assumes that the HCP would be implemented, the proposed Incidental Take Permit (ITP) would be issued, and the Covered Activities for the Maricopa Sun Solar complex would occur. Activities included in the HCP would include the following: (1) pre-construction, construction, operations and maintenance, and decommissioning activities within Solar Sites; (2) management and maintenance activities associated with Movement Corridors and Conservation Sites, including monitoring and reporting activities; and (3) activities associated with implementation of the conservation program specified in this HCP. The following discussion provides a brief overview of each potential hazard that may result from the proposed project.

Hazardous Substances

Potential effects resulting from construction and operation of the Proposed Action may include the accidental release of stored materials, such as cleaning fluids and petroleum products including lubricants, fuels, and solvents. Some solid hazardous waste, such as welding materials

and dried paint, may also be generated during construction. These materials would be transported to the site during construction, and any hazardous materials that are produced as a result of the construction of the project would be collected and transported away from the site. The Proposed Action would be subject to all local, State, and federal laws pertaining to the use of hazardous materials on site and would be subject to review by the Kern County Environmental Health Services Department. Through the review process, the project applicant would be required to submit a hazardous materials business plan, which would include a complete list of all materials used on site, how the materials would be transported, and in what form they would be used to the Kern County Environmental Health Services Department/Hazardous Materials Section. This information would be recorded to maintain safety and prevent possible environmental contamination or worker exposure. During construction of the project, material safety data sheets for all applicable materials present at the sites would be made readily available to onsite personnel. During construction of the facilities, non-hazardous construction debris would be generated and disposed of in local landfills; sanitary waste would be managed using portable toilets located at reasonably accessible onsite locations.

Mineral oil would be found in each enclosed transformer, but secondary containment may be required as a condition of approval if required by applicable regulations. Although the mineral oil contained in each transformer would not typically require replacement, any such disposal would be in accordance with all applicable regulations.

Removal and/or maintenance of vegetation areas may require pesticide and herbicide use during both construction and operation. However, mitigation would reduce the potential effects from the proposed application to minimal levels. Potential effects would be considered minimal with the incorporation of the mitigation measures below.

The closest designated route for the transport of hazardous materials located adjacent to the project site is SR-166, approximately 0.25 mile south of the Permit Area. According to Section 2.5.4 of the Kern County General Plan Circulation Element, State Route 166 is designated as an adopted commercial hazardous materials shipping route (Kern County 2009). Adherence to regulations and standard protocols during the storage, transportation, and usage of any hazardous materials would minimize or avoid the potential upset and accident conditions involving the release of hazardous materials into the environment; effects would be minimal.

Solar Panels

The specific type of photovoltaic (PV) technology to be used has not been determined. However, it is anticipated that one of two types of photovoltaic solar panels: (a) microcrystalline; or (b) cadmium telluride (CdTe) would be used. Microcrystalline panels may include small amounts of solid materials that are considered to be hazardous. Because such materials are in a solid and nonleachable state, broken microcrystalline PV panels would not be a source of

pollution to surface, storm or ground water. Microcrystalline panels removed from the site would be recycled or otherwise disposed at an appropriate waste disposal facility. In CdTe panels, the cadmium is in the environmentally stable form of a compound rather than the leachable form of a metal. The CdTe compound is encapsulated in the PV module with the PV module containing very little cadmium, less than 0.1 percent cadmium by weight. For example, it has been noted that an 8-square-foot area of a CdTe panel contains less cadmium than one size-C nickel-cadmium flashlight battery. Several peer-reviewed studies have evaluated the environmental, health, and safety aspects of CdTe PV panels. These studies have consistently concluded that during normal operations, CdTe PV panels do not present an environmental risk. Specifically, it has been demonstrated that there are no cadmium emissions to air, water, or soil during standard operation of CdTe PV systems and CdTe releases are unlikely to occur during accidental breakage. Furthermore, studies have been conducted of the panels when the stability of the encapsulation is jeopardized, such as if a broken panel was exposed to fire. These studies indicate that even these events result in negligible cadmium emissions, most likely because CdTe has a very high melting temperature of 1,041 degrees Celsius. Disposal risks of cadmium are minimized because of the encapsulation within the panel and because the cadmium can be effectively recycled at the end of the panel's 30- to 35-year life. CdTe panels removed from the site would be returned to the manufacturer for recycling. The PV module manufacturer for this type of PV panel has a prefunded module collection and recycling program that is designed to maximize the recovery of valuable materials for use in new modules or other new products and minimize the environmental effects associated with PV system production. Approximately 90 percent of each collected PV module would be recycled. Current CdTe PV modules pass federal leaching criteria for nonhazardous waste, which means they would not pose a risk for cadmium leaching if placed in a landfill. Peer reviewed articles and studies are available at http://www.hindawi.com/journals/jse/.

Oil Extraction Areas

According to the California Department of Conservation, Division of Oil, Gas & Geothermal Resources (DOGGR), some of the Permit Area is located within the administrative boundaries of the Midway Sunset and San Emidio Nose oil fields. The DOGGR map identifies 9 plugged and abandoned wells on-site. A well is plugged by placing cement in the well-bore or casing at certain intervals as specified in California laws or regulations (Department of Conservation 2013). In addition to the plugged and abandoned wells, the applicant has also identified potential drilling sites for 30 different assessor parcel numbers. The proposed project allows for mineral right interests to be served by reserving a maximum of 5 separate 10-acre drill site areas per 640 acres, and allowing for routes of ingress and egress thereto. The locations of the drilling islands have not yet been identified. Activities associated with the exploration and/or development of potential future drill sites for the purposes of oil and gas exploration and production by mineral rights owners will be subject to separate environmental review.

As a result, construction and development of the Permit Area could lead to employee and construction worker exposure of potential hazardous substances. Potential hazards could include oil spills, the release of hydrocarbons or other toxic or dangerous chemicals associated with oil into the air, and the dangers associated with operating a facility near an oil well. Wells may need to be exposed for inspection and leakage testing prior to construction as determined through the consultation process with DOGGR. The location of all wells would be clearly identified on all site plans, and standard conditions of approval would require that the applicant contact DOGGR to obtain information on the requirements of, and approval to perform, remedial operations in the event that an abandoned or unrecorded oil well be damaged or uncovered during construction activities. Mitigation measures will be required to ensure appropriate handling of the closed wells, and therefore would reduce the effects of existing wells to minimal levels.

Agricultural Activities

The Permit Area was used for agricultural purposes in the past, and therefore pesticides and herbicides were probably applied to the crops and soils at the sites. Consequently, pesticides, herbicides, and associated metals may be present in near surface soils at residual concentrations. Agricultural chemicals in use today are applied in diluted concentrations and, when used properly, degrade relatively quickly; however, older pesticides can linger in the soil for many years. It is not known if environmentally persistent pesticides and herbicides were ever applied within the Permit Area. Therefore, residual traces of pesticides and herbicides may be present on the site, and construction and operation activities may result in the release of dust, thereby potentially exposing these chemicals. Mitigation to control dust would reduce this effect to a minimal level.

Ambient Temperature

Surfaces such as houses, cars, and rocks absorb heat produced by the sun. The arrays consist of PV panels mounted on aluminum and steel support structures, and the support structures have little to no exposure to sunlight. Additionally, the project site will not be covered in its entirety with solar panels. The rows of panels will be placed at 12 to 22-foot intervals from center to center to allow for inspections, cleaning, and any maintenance that might be required. The amount of the sun’s heat absorbed by a solar panel is similar to the amount of the sun’s heat absorbed by open land. However, solar panels store less heat than the earth because they consist of a thin (approximately three millimeters or 0.12 inches) lightweight, glass that is surrounded by airflow. Therefore, heat dissipates quickly from a solar panel compared to solid earth that dissipates heat slowly. The Proposed Action would have energy-using activities (e.g., inverters), so the project will generate marginal waste heat. Based on this information it is unlikely that the Proposed Action would increase ambient air temperatures at or around the site.

Electromagnetic Fields

Electromagnetic fields (EMFs) are associated with electromagnetic radiation, which is energy in the form of photons. Radiation energy spreads as it travels and has many natural and human-made sources. The electromagnetic spectrum, the scientific name given to radiation energy, includes light, radio waves, and X-rays, among other energy forms. Concern over EMF exposure generally pertains to human-made sources of electromagnetism and the degree to which they may have adverse biological effects or interfere with other electromagnetic systems. Commonly known human-made sources of EMF are electrical transmission systems and telecommunications systems, as well as electric motors and other electrically powered devices. Radiation from these sources is invisible, non-ionizing, and of low frequency. Generally, in most environments, the levels of such radiation added to natural background sources are low. Electric voltage (electric field) and electric current (magnetic field) from transmission lines create EMFs. Power frequency EMF is a natural consequence of electrical circuits and can be either directly measured using the appropriate measuring instruments or calculated using appropriate information. On January 15, 1991, the California Public Utilities Commission (CPUC) initiated an investigation to consider its role in mitigating the health effects, if any, of electric and magnetic fields from utility facilities and power lines. A working group of interested parties, the California EMF Consensus Group, was created by the CPUC to advise it on this issue. The Consensus Group's fact-finding process was open to the public, and its report incorporated public concerns. Its recommendations were filed with the CPUC in March 1992. Based on the work of the Consensus Group, written testimony, and evidentiary hearings, the CPUC issued its decision (93-11-013) on November 2, 1993, to address public concern about possible EMF health effects from electric utility facilities. The conclusions and findings included the following:

> We find that the body of scientific evidence continues to evolve. However, it is recognized that public concern and scientific uncertainty remain regarding the potential health effects of EMF exposure. We do not find it appropriate to adopt any specific numerical standard in association with EMF until we have a firm scientific basis for adopting any particular value.

As a result, the State has not adopted any specific limits or regulation on EMF levels related to electric power facilities.

Airports

A privately owned and operated airport that provides glider and skydiving opportunities for the community and surrounding region is located adjacent to a Permit Area along Corpus Road. There is no specific airport sphere of influence, as determined by the Kern County Airport Land Use Compatibility Plan, and the private skydiving facility does not contain an air-traffic control

tower. Airstrip use is restricted to a private commercial skydiving company and the private owner.

Section 4.1 of this EIS concluded that the panels would not be expected to cause significant glare that would affect motorists, residents, or other potentially sensitive visual receptors including aircraft and skydiving operations. However, there is a possibility that skydivers could accidently collide into the panels. Skydiving activities are regulated through the Federal Aviation Administration's (FAAs) Federal Aviation Regulations (FARs) that govern aviation activities (Part 105-2D). The FARs outlines the FAA's requirements for skydivers, pilots and parachute riggers. The FAA recommends that parachute landing areas remain unobstructed, with sufficient minimum radial distances to the nearest hazard. Areas used for skydiving should be unobstructed, with the following minimum radial distances to the nearest hazard:

1. solo students and A-license holders—100 meters
2. B- and C-license holders and all tandem skydives—50 meters
3. D-license holders—12 meters

Hazards are defined as telephone and power lines, towers, buildings, open bodies of water, highways, automobiles, and clusters of trees covering more than 3,000 square meters (United States Parachute Association 2008)

Fire Hazard Areas

The California Department of Forestry and Fire Prevention require counties within California to develop fire protection management plans that address potential threats of wildland fires. The Kern County Wildland Fire Management Plan identifies federal, State, and local responsibility areas for the entire County to facilitate coordination efforts for fire protection related services. Portions of the Permit Area are designated by the Kern County Fire Department within the Local Responsibility Area (LRA) for unincorporated portions of Kern County. The Permit Area is designated as LRA "unzoned," although portions of a few parcels are designated as LRA "moderate" fire severity. However, the Permit Area is not within a Federal Responsibility Area (FRA) or State Responsibility Area (SRA). Figure 4.7-1 illustrates Fire Hazard Severity Zones.

The Permit Area is currently vacant and void of vegetation and the risk of exposing people or structures to fire hazards within the immediate surrounding areas are low. Because the Permit Area is not within a designated SRA or FRA, potential effects associated with the construction and operation of the Proposed Action are considered to be minimal, and no mitigation is required.

Noise

Construction and deconstruction would create noise. Pile driving noise could be carried some distance in this area. The nearest resident is located on the southeastern corner of Gardner Field Road and Basic School Road, approximately 0.5 miles south of APN 220-170-07.

According to a Pile Driver Noise Analysis that was completed by AECOM for the Blythe Solar Power Project, a maximum instantaneous sound level of 84 dBA was based on information provided in the Operator's Manual for a Vermeer PD10 pile driver. Table 4.7-1 lists the standard noise attenuation rate of -6 dBA per doubling of distance for point sources, maximum off-site instantaneous noise levels from the pile driver operating at full power (AECOM 2013).

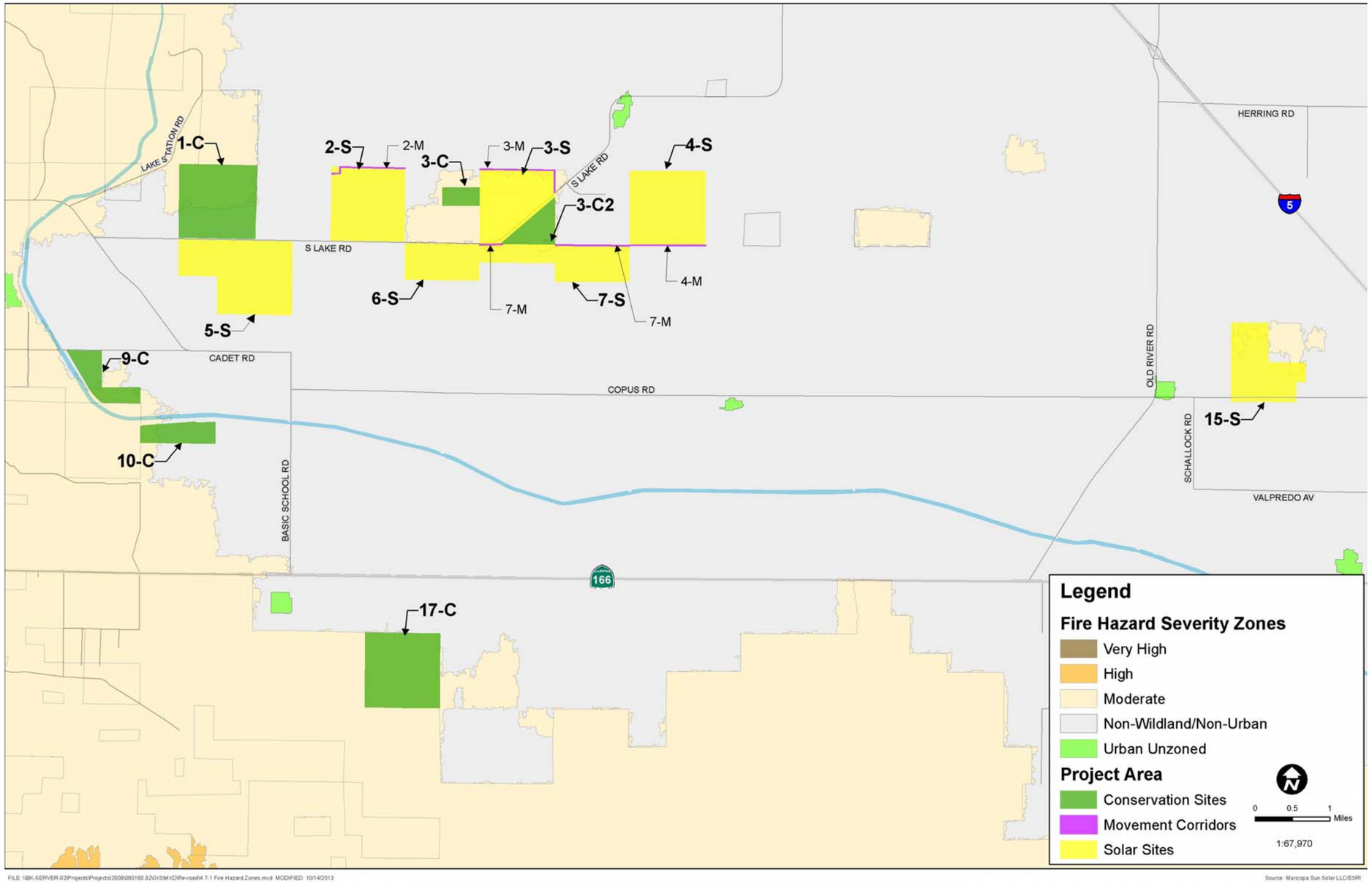
Table 4.7-1
Noise Levels from a Pile Driver

Noise Attenuation	
Distance from Source (feet)	**Point Source (–6 dB)**
50	84 dBA
100	78 dBA
200	72 dBA
439	65 dBA
800	60 dBA

Source: AECOM, 2013.

Pursuant to the Kern County General Plan's Chapter 3. Noise Element, the acceptable level for outdoor activity is 65 DM Ldn. The results in Table 4.7-1 indicate that at 800 feet (the proposed project site would be over 2,600 feet from the nearest resident) from the source, the noise level would be 60 dBA. This falls well below the County's threshold. However, in order to meet the criteria listed in Table 4.7-1, either the Vermeer PD10 pile driver or similar piece of equipment would have to be utilized for the proposed project. Therefore, Mitigation Measure MM 4.7.2 will be applied to the proposed project.

The Permit Area of solar development is subject to periodic levels of high wind. There is no evidence in the record to suggest that substantial levels of noise would result from wind blowing through the facility during operation of the project. A minimal effect would occur. Section 4.4 addresses noise effects on biological resources.



Quad Knopf

FIRE HAZARD SEVERITY ZONES
MARICOPA SUN SOLAR LLC

Figure
4.7 - 1

This page intentionally left blank.

4.7.4.1 Hazardous Materials (Hazardous Substances/Solar Panels/ Wells/Agricultural Activities)

Hazardous materials would include hazardous substances from construction and operation of the Proposed Action which may result in the accidental release of stored materials such as cleaning fluids and petroleum products including lubricants, fuels, and solvents. Some solid hazardous waste such as welding materials and dried paint may also be generated during construction. These materials would be transported to the site during construction, and any hazardous materials that are produced as a result of the construction of the project would be collected and transported away from the site. Mitigation Measures MM 4.7-3 and MM 4.7-4 would reduce effects to minimal levels.

Solar panels would include either (a) microcrystalline; or (b) cadmium telluride (CdTe). Microcrystalline that has small amounts of solid materials that are considered to be hazardous. Because such materials are in a solid and nonleachable state however, broken microcrystalline PV panels would not be a source of pollution to surface, storm or ground water. Microcrystalline panels removed from the site would be recycled or otherwise disposed at an appropriate waste disposal facility. In CdTe panels, the cadmium is in the environmentally stable form of a compound rather than the leachable form of a metal. A minimal effect would occur from the solar panels.

As mentioned previously, there are a total of 9 plugged wells in all. Construction and development of the Permit Area could lead to employee and construction workers being exposed to oil spills, the release of hydrocarbons or other toxic or dangerous chemicals associated with oil into the air, and the dangers associated with operating a facility near an oil well. Mitigation Measure MM 4.7-3 will be required to ensure appropriate handling of the closed wells, and therefore would reduce the effects of existing wells to minimal levels.

Lastly, it has been determined that residual traces of pesticides and herbicides may be present on the site from past agricultural activities, and construction and operation activities may result in the release of dust, thereby potentially exposing these chemicals. Mitigation Measures MM 4.7-3 and MM 4.7-4 will reduce this effect to a minimal level.

4.7.4.2 Hazards (Ambient Temperature/Electromagnetic Fields/Airports/Fire)

Hazards related to ambient temperature changes originating from solar panels would result in a minimal impact, due to the design of the solar panel. Heat dissipates quickly from a solar panel compared to solid earth that dissipates heat slowly. Although the Proposed Action would generate some energy heat with equipment such as inverters, the waste would be marginal. To date, there is nothing in the record to indicate that the Proposed Action would increase ambient air temperatures at or around the site. Therefore a minimal effect would occur.

Currently, the State has not adopted any specific limits or regulation on EMF levels related to electric power facilities. Therefore a minimal effect would occur.

As concluded in the Aesthetics section of this EIS, the panels would not be expected to cause significant glare for motorists, residents, or other potentially sensitive visual receptors including aircraft and skydiving operations

Currently, the Permit Area is vacant and void of vegetation and the risk of exposing people or structures to fire hazards within the immediate surrounding areas are low. Because this area is not within a designated SRA or FRA, potential effects associated with the construction and operation of the Proposed Action are considered to be minimal, and no mitigation is required.

Although construction and deconstruction would create noise, these activities would have to comply with federal, State, and local regulations and guidelines. A minimal effect would occur.

4.7.4.3 Mitigation Measures

MM 4.7-1: During construction, should installation of trackers and panels require a pile driver to drive in steel support piles, the applicant shall use the Vermeer PD10 pile driver, or a similar piece of equipment that would not exceed the County of Kern's 65 DM Ldn limit at the nearest resident.

MM 4.7-2: The plugged and/or abandoned wells located within the project boundaries shall be inspected and tested for leakage prior to construction activities. Remedial operations will be performed if necessary. The well locations shall be recorded on all future maps of the project. A copy of the map shall be submitted to the California Department of Oil, Gas, & Geothermal Resources (DOGGR). In the event that other abandoned or unrecorded wells are uncovered or damaged during excavation or grading activities, remedial plugging operations may be required. DOGGR shall be contacted for requirements and approval, and copies of said approvals shall be submitted to the Kern County Planning and Community Development Department.

MM 4.7-3: In accordance with the California Health and Safety Code and Kern County regulations, the project operator shall prepare a hazardous materials business plan and submit it to the Kern County Environmental Health Services Department/Hazardous Materials Section for review and approval. The hazardous materials business plan will delineate hazardous material and hazardous waste storage areas; describe proper handling, storage, transport, and disposal techniques; describe methods to be used to avoid spills and minimize effects in the event of a spill; describe procedures for handling and disposing of unanticipated hazardous materials encountered during construction; and establish public and agency notification procedures for spills and other emergencies, including fires.

The hazardous materials business plan will also include procedures to avoid or minimize dust from existing residual pesticide and herbicide use that may be present on the site. The project operator will provide the hazardous materials business plan to all contractors working on the project and will ensure that one copy is available at the project site at all times.

MM 4.7-4: The contractor or personnel shall use herbicides that are approved for use by the California Department of Fish and Wildlife. Workers applying herbicides shall have all appropriate State and local herbicide applicator licenses and comply with all State and local regulations regarding herbicide use. Herbicides shall be mixed and applied in conformance with the product manufacturer's directions. The herbicide applicator shall be equipped with splash protection clothing and gear, chemical resistant gloves, chemical spill/splash wash supplies, and material safety data sheets for all hazardous materials to be used. To minimize harm to wildlife, vegetation, and water bodies, herbicides shall not be applied directly to wildlife; products identified as non-toxic to birds and small mammals will be used if nests or dens are observed; and herbicides shall not be applied within 50 feet of any surface water body when water is present. Herbicides shall not be applied if it is raining at the site, rain is imminent, or the target area has puddles or standing water. Herbicides shall not be applied when wind velocity exceeds 10 miles per hour. If spray is observed to be drifting to a non-target location, spraying shall be discontinued until conditions causing the drift have abated.

4.7.4.4 Cumulative Effect

The Proposed Action would result in activities during project construction and operation, including site grading, pile-driving, and the use and transportation of petroleum based lubricants, solvents, fuels, herbicides, and pesticides to and from the site. However, conformance with existing federal, State and County regulations and implementation of Mitigation Measures MM 4.7-1 through MM 4.7-4 as listed above would reduce this effect to a minimal level. In regards to the geographic scope, this effect does not have the potential to contribute to hazards associated with cumulative projects because these types of effects would be localized to the immediate vicinity of the project site. Additionally, the implementation of appropriate safety measures during construction of the Proposed Action would reduce the effect to a level that would not contribute to cumulative effects. Therefore, effects associated with past, present, and reasonably foreseeable future projects would not be cumulatively considerable.

4.7.5 Reduced Permit Area Alternative

This section summarizes the potential hazards and hazardous materials effects associated with the Reduced Permit Area Alternative. Under this Alternative the Permit Area would be reduced from 5,784.3 acres to 3,682 acres by removing the following sites: Sites 4-S/4-M (652.5 acres), 6-S (320.9 acres), 7-S/7-M (481.2 acres) and 17-C (647.7 acres). The lands excluded from the Permit Area would likely remain vacant and continue to be disked on a regular basis for weed

control. If water became available, these lands may be converted to active agricultural production.

4.7.5.1 Hazardous Materials (Hazardous Substances/Solar Panels/Wells/Agricultural Activities)

With the Reduced Permit Area Alternative, the same exposures to hazardous materials including hazardous substances, solar panel hazardous materials, abandoned and plugged wells, hazardous materials, and agriculture pesticides and herbicide would occur as discussed in Section 4.7.4, but on fewer Covered Lands as a result of the 2,102-acre reduction. There would still be substantial effects without the incorporation of Mitigation Measures MM 4.7-1 through MM 4.7-4, but on a smaller scale.

4.7.5.2 Hazards (Ambient Temperature/Electromagnetic Fields/Airports/Fire)

Again, with the Reduced Permit Area Alternative, the same exposures to hazards including a generation of waste heat, addition of EMF levels related to electric power facilities, and ground related glare from solar panels would occur as discussed in Section 4.7.4, but on fewer Covered Lands as a result of the 2,102-acre reduction. There would be a minimal effect.

4.7.5.3 Mitigation Measures

Mitigation Measures MM 4.7-1 through MM 4.7-4 listed in Section 4.7.4.3 would be incorporated into the Reduced Permit Area Alternative.

4.7.5.4 Cumulative Effect

The same cumulative effect that is discussed in Section 4.7.4.4, would also apply to the Reduced Permit Area Alternative, but the effects would be reduced from 5,784.3 acres to 3,682 acres. Therefore, the Mitigation Measures MM 4.7-1 through MM 4.7-4 would apply, and effects associated with past, present, and reasonably foreseeable future projects would not be cumulatively considerable.

4.7.6 Comparison of Alternatives

A summary of results comparing the No Action Alternative to the Proposed HCP Alternative and Reduced Permit Area Alternative is shown in Table 4.7-2. Each of the potential effect areas, which includes hazardous materials (hazardous substances/solar panels/wells/agricultural activities), hazards (ambient temperature/EMFs/airports/fire), and cumulative effect, is measured with a less, more, or similar effect ranking as compared to the No Action Alternative. The results are discussed below.

Table 4.7-2
Comparison of Alternatives to the No Action Alternative

Potential Effect	No Action	Proposed HCP	Reduced Permit Area
Hazardous Materials (Hazardous Substances/ Solar Panels/Wells/ Agricultural Activities)	-	More	More
Hazards (Ambient Temperature/EMFs/Airports/Fire)	-	More	More
Cumulative Effect	-	Similar	Similar

Source: Kern County, 2010.

As shown in Table 4.7-2, the Proposed HCP Alternative and the Reduced Permit Area Alternative would have more effects resulting from exposure to hazardous materials than the No Action Alternative. This is because under the No Action Alternative, Covered Lands would remain vacant and undeveloped for an indefinite period of time with no physical changes occurring beyond the existing or historical conditions. There would be no construction activities or operation of solar generating facilities; therefore, hazardous materials would not be associated with this Alternative. The Reduced Permit Area would result in less effects than the Proposed HCP Alternative, but would still be more than the No Action Alternative.

The same conclusion can be applied to hazards. Under the Proposed HCP Alternative, the effects from hazardous substances, solar panels, abandoned and plugged wells, and agriculture would occur, and Mitigation Measures MM 4.7-3 through MM 4.7-4 would have to be incorporated. Effects would also occur from solar generated heat, EMFs, glare generated from solar panels, noise, and possible wildfires, but at a minimal level. This Alternative would also result in the greatest amount of disturbance to the Covered Lands. As compared to the No Action Alternative, which would result in no project and therefore no potential for the occurrence of hazardous materials or hazards, this Alternative would result in more effects on the environment. The Reduced Permit Area Alternative would have the same effects as the Proposed HCP Alternative, but at a reduced scale. Mitigation Measures MM 4.7-3 through MM 4.7-4 would have to be incorporated to reduce effects. However, this impact would still result in more effects than the No Action Alternative.

Cumulative effects would be less under the No Action Alternative because there would be no solar project.

This page intentionally left blank.

4.8 HYDROLOGY AND WATER QUALITY

4.8.1 Overview

The potential effects of the alternatives are described in this section compared to existing conditions when the Notice of Intent was issued. The analysis in this section is principally based upon project-related studies including a 2011 Water Supply Assessment prepared for the Maricopa Sun Solar project and the 2010 Maricopa Sun Solar EIR (Kern County 2010) (Section 4.9).

4.8.2 Methodology

The water resource environmental issues that will be utilized for environmental effect evaluation for each EIS-identified Alternative are 1) Runoff and Drainage and 2) Groundwater Effects.

4.8.3 No Action Alternative

This section summarizes the potential water resources issues and environmental consequences associated with the No Action Alternative. It assumes, as defined in Section 2.0, that: the HCP would not be implemented, the proposed Incidental Take Permit (ITP) would not be issued, and the covered activities for the Maricopa Sun Solar complex would not occur. The 5,784.3 acres identified in this EIS as the Permit Area would essentially remain vacant, the 1,894.4 acres identified as Conservation Sites would not be permanently conserved, and the proposed Conservation Management Plan would not be implemented. There is no foreseeable non-agricultural development in the Covered Lands, with the exception of oil well drilling.

4.8.3.1 Runoff and Drainage

There would be no change in the existing drainage patterns from the disked and fallowed land and sparse native vegetation in the Permit Area, no modification of existing runoff volumes or constituency, and no structures erected in the Permit Area. Water for agricultural development is not available on the westerly 50% of the Solar Site areas. Groundwater quality in the easterly 50% is so marginal as to discourage agricultural development and surface water is unavailable There are, therefore, no runoff or drainage effects from this alternative.

4.8.3.2 Groundwater Effects

There will be no groundwater effects from this alternative because groundwater of adequate quality for agriculture is severely limited and surface water is unavailable to over 95% of the Solar Sites.

The Water Supply Assessment has determined that the existing pattern of agricultural production and water usage in the Wheeler Ridge – Maricopa Water Storage District in which the proposed Project is located has, because of District-provided surface water supply availability, State Water

Project water distributed through canals and pipelines, resulted in an increase in groundwater levels. There is therefore no depletion of groundwater supplies, net deficit in aquifer volume, or lowering of the groundwater table in the District involved with this alternative.

4.8.3.3 Cumulative Effect

Since the alternative creates no direct or indirect environmental effects, it has no cumulative water resources impact.

4.8.4 Proposed HCP Alternative

The Proposed Action is to develop and maintain a PV solar complex and an HCP for which Incidental Take Permit (ITP) coverage under the FESA is necessary. Covered activities allow for: (1) pre-construction, construction, operation and maintenance, and decommissioning activities within Solar Sites; (2) management and maintenance activities associated with Movement Corridors and Conservation Sites, including monitoring and reporting activities; and (3) activities associated with implementation of the conservation program specified in this HCP.

The establishment of conservation easements on conservation lands and the initiation of management actions on those lands will be phased to coincide with the development of Solar Sites.

4.8.4.1 Runoff and Drainage

Construction

The Permit Area is essentially flat, with only a modest potential for runoff. Construction associated with the project would include grading for access roads, foundations for solar panels, installation of panels, inverters, transformers, circuit breakers, an O&M building, transmission lines, off-site electrical substations, and material laydown and equipment staging areas. Excavation would be required for vertical tracker units and fixed-tilt panel foundations, building foundations, communication trenches, and septic systems. Grading and excavation could affect drainage throughout and from the Permit Area. Santiago Creek, Bitter Creek, Bitterwater Creek, and Cienaga Creek are within the proximity of the Permit Area; all are located south of the Area. Sheet flow across the Solar Sites may be affected by alterations associated with construction of the project. During rainfall events, and particularly during construction activities, there is also the possibility of significant surface erosion and offsite sediment transportation. Nearby dirt roads and staging areas may also be graded in order to accommodate construction activities and access routes at the project. Nonetheless, a grading and drainage plan would be designed to maintain existing contours in order to minimize impacts to the greatest extent feasible. Careful design of access road gradients and other features such as O&M buildings, parking areas, and

solar panel installation areas, would prevent substantial alterations to drainage patterns and/or erosion.

Potential effects on water quality arising from erosion and sedimentation would be localized and temporary during construction. The construction contractors will be required to implement measures to minimize and contain erosion and sedimentation in accordance with the Kern County Grading Code, and will be required to submit a grading plan to the County for approval prior to commencement of any construction activities. In addition, because the project will disturb more than one acre, the applicant will be required to obtain and comply with an NPDES general construction permit. As required by this permit, the project operator will develop a SWPPP and comply with any regional requirements to meet State water quality objectives. Pending revisions, the NPDES permitting process may require development of a rain event action plan prior to permit approval. Construction-related erosion and sedimentation as a result of soil disturbance will be minimal after implementation of mitigation measures and of best management plans (BMPs) required by the Kern County Grading Code and Floodplain Management Ordinance. Construction of the project will not permanently alter the course of any drainages. Therefore, any potential effect on drainage patterns across the Solar Sites and their access facilities that could result in substantial erosion or siltation on or off site will be minimal.

Although grading will occur at the Solar Sites, substation sites, the O&M building site, and along access roads, the resultant ground disturbance will be spread over a large geographic area that is relatively flat and thus will not alter the overall topography of the program area. Parking areas around the O&M building and onsite access roads will be either decomposed granite or gravel to minimize fugitive dust; however, a small area of concrete asphalt will be required at the entrances to the Solar Sites. In addition, the amount of imported water used for construction (such as water used for dust suppression) will infiltrate into the groundwater basin, and construction BMPs required by the SWPPP will be implemented to minimize surface runoff on and off the Sites. Therefore, the rate or amount of surface runoff resulting from construction activities will not substantially change relative to existing conditions. Water usage during construction will be minimal as no extensive grading is proposed, access roads will be constructed at existing grades, and panel installation does not require water usage.

Although the amount of surface runoff will not substantially change and will be minimized through implementation of BMPs in the SWPPP, runoff patterns and concentrations could be minimally altered by grading activities. Improper design of access roads and Solar Sites could result in an alteration of drainage patterns that would cause flooding. The potential for development of the project to alter existing drainage patterns will be minimized through compliance with the mitigation measures described herein and compliance with design specifications and BMPs required by the Kern County Grading Code and Floodplain

Management Ordinance. Impacts related to surface runoff during construction will be minimal as the required mitigation measures are implemented.

Encroachment of a solar panels or other Project-related permanent infrastructure into a floodplain, including FEMA-designated Flood Hazard Areas could result in damage to the encroaching structure from flooding or increased flooding on adjacent property. Any placement of structures in areas with special flood hazards within the jurisdiction of unincorporated Kern County will be required to comply with the requirements and construction design specifications of the Kern County Floodplain Management Ordinance (Chapter 17.48. including Article III and the Kern County Grading Code, including Sections 17.28.130, 17.28.140 and 17.28.150).

The project will create a small amount of additional impervious surfaces. These changes would not substantially increase the amount of stormwater runoff. The Permit Area is drained by sheet flow and does not rely on constructed stormwater drainage systems. Drainage plans must be approved by the Kern County Engineering, Surveying and Permit Services Department. Other permit requirements required by the Kern County Grading Code and Floodplain Management Ordinance will minimize stormwater runoff during construction and operations. Effects related to polluted runoff from construction and operation will be mitigated to minimal levels by implementation of the mitigation measures described herein and the BMPs required by the Kern County Grading Code and Floodplain Management Ordinance.

Operation and Decommissioning

There will be minimal development of paved areas. Impervious surfaces throughout the Permit Area will be limited to main access driveways, parking lots, and foundations primarily for substations, O&M buildings, and inverters. New impervious surfaces will occupy a negligible portion of the overall land surface. Solar panels will be above ground, supported on vertical posts driven into the soil.

Solar Site engineering and design plans will be required to comply with the most recent requirements of the Kern County Code of Building Regulations. Prior to the commencement of construction activities, the Applicant will be required to prepare and submit a drainage plan to the Kern County Engineering and Survey Services Department, which will include post-construction structural and nonstructural BMPs. Routine structural BMPs will be required to address water quality effects related to drainage that are inherent in development. Therefore, long-term effects on drainage patterns that could result in substantial erosion and siltation on or off site will be minimal after implementation of the mitigation measures described herein and BMPs required by the Kern County Grading Code and Floodplain Management Ordinance.

Decommissioning activities, as previously described in this EIS – solar panel and hardscape removal and haulaway – will be short-term replicas of construction activities in terms of ground

disturbance and potential erosion, and will be subject to the same grading permit controls by the County of Kern, including a SWPPP and BMPs.

A portion of the Permit Area is currently mapped by FEMA as being in Flood Zone A, a 100-year flood zone (annual flood risk of 1%) as well as Flood Zone X, an area of moderate flood hazard, usually between the 100-year and 500-year floods. Based on the Solar Development Footprint, solar panels and a substation will be sited within a FEMA-designated Flood Hazard Area. Any construction that takes place in areas with special flood hazards or areas with flood-related erosion hazards within the jurisdiction of unincorporated Kern County must comply with the requirements and construction design specifications of the Kern County Grading Code and Floodplain Management Ordinance. Compliance with these codes and ordinances will ensure that construction and operation will not impede or redirect flood flows. Therefore, the Development will not result in substantial effects related to the 100-year flood zone.

The Permit Area is located outside the area of potential flooding from any dam collapse (Isabella Dam).

Because drainage will be minimally altered and new impermeable surfaces will be added, the rate and volume of runoff could change, resulting in flooding offsite. Implementation of the BMPs required by the Kern County Grading Code and Floodplain Management Ordinance will minimize the flow of stormwater during operations. Therefore, long-term effects on drainage patterns across the Permit Area which could result in flooding on or off site will be minimal.

4.8.4.2 Groundwater Effects

Development construction activities (such as grading of access roads) could degrade groundwater quality through erosion and subsequent sedimentation in streams. In addition, an accidental release of potentially harmful materials, such as engine oil, diesel fuel, turbine lubricant, or cement slurry, could degrade water quality in such streams. These potential water quality effects will be minimized through implementation of an approved Stormwater Pollution Prevention Plan, design specifications, BMPs, the Section 402 NPDES General Permit for Stormwater Discharges, and the Kern County Grading Ordinance.

Once the development is fully operational, of water will be required for panel washing or maintenance. Water spray on the solar panels is expected to occur twice a year to remove dust and contaminants, thereby maintaining the panels for the efficient conversion of sunlight to electrical power. The cleaning interval will be determined by the rate at which electrical output degrades between cleanings. Currently, it is expected that approximately one gallon of water will be required for washing each panel. Thus, approximately 8,823,804 gallons per year (27 acre feet per year), for the 4,411,902 solar panels will be required. This is significantly less than that which would result from agriculture on the Solar Sites, approximately 11,300 acre-feet per year.

Verifying this estimate, a widely used "industry standard" for project planning purposes is 10,000 gallons per year per megawatt. Usage of that standard for this 700 megawatt facility would result in annual usage for this project of 7,000,000 gallons. (Solar Energy Industries Association, 2011, Issues and Policies, Water Use Management)

As noted in Section 2.0, water for washing of PV panels is expected to be trucked from one or more unspecified existing wells within the Wheeler Ridge Maricopa Water District. In the event water is not available from wells within the District, an alternative source will be located and transported to the site to accomplish solar panel cleaning. Effects related to construction and operation of the program are discussed separately below.

Impervious surfaces that would result from operation of the proposed Development will be limited to the parking areas, portions of the area around an O&M building, and – depending on the design of the solar facility – the support foundations for the solar equipment. Improved (earthen or gravel) roads would be located throughout the Solar Development Footprint to provide access to the solar equipment. A majority of the Permit Area will remain permeable. Thus, operations will not substantially alter groundwater infiltration rates, and surface runoff will remain similar to existing conditions.

4.8.4.3 Mitigation Measures

The following mitigation measures will be applied to the Proposed Action:

MM 4.8-1: Prior to issuance of grading permits, the project operator shall submit a Stormwater Pollution Prevention Plan (SWPPP) to the Kern County Planning and Community Development Department that specifies BMPs to prevent all construction pollutants from contacting stormwater, with the intent of keeping all products of erosion from moving off site and into receiving waters. The requirements of the SWPPP shall be incorporated into design specifications and construction contracts. Recommended BMPs for the construction phase may include the following:

- Stockpiling and disposing of demolition debris, concrete, and soil properly;
- Protecting existing storm drain inlets and stabilizing disturbed areas;
- Implementing erosion controls;
- Properly managing construction materials; and
- Managing waste, aggressively controlling litter, and implementing sediment controls.

MM 4.8-2: Prior to issuance of grading permits, the project operator shall prepare a drainage plan that is designed to mitigate runoff and surface water pollution and shall include engineering recommendations to minimize the potential for impeding or redirecting 100-year flood flows. The final design of the solar arrays shall include a 0.5-foot clearance above 1.0 foot of freeboard between the calculated maximum flood depths for Base Elevation and the bottom support rail of

the solar arrays or the finished floor of any permanent structure. Solar sites shall be graded to direct potential flood waters into channels adjacent to the existing and proposed right of ways, without increasing the water surface elevations more than one-foot or as required by Kern County's Floodplain Ordinance. The drainage plan shall be prepared in accordance with the Kern County Grading Code and approved by the Kern County Engineering, Surveying and Permitting Services, Floodplain Management Section prior to the issuance of grading permits.

With implementation of these measures the Proposed Action will have minimal environmental effects.

Conservation Areas and Movement Corridors

The 1,928.2 acres of Conservation Site land that will be protected in its native, or enhanced, state as mitigation until project decommissioning (when the entire Permit Area will be dedicated in perpetuity to this purpose) create no conceivable adverse environmental effects. In actuality, they reduce the potential groundwater usage from any possible future agricultural activities by approximately 670 acre feet per year.

4.8.4.4 Cumulative Effect

The area considered for evaluation of cumulative hydrology and water quality effects is that within the boundaries of the Wheeler-Maricopa Water Storage District.

Runoff and Drainage

The development of irrigated agriculture in areas abutting the Permit Area has created no readily available, documented, mitigated or unmitigated, runoff or drainage effects. There is no reasonably predictive, significant, development in the area which would create such effects. The EIS-analysis discloses no direct or indirect runoff or drainage effects. It is, therefore, concluded that the Project will not create a cumulative runoff and drainage effect.

Groundwater Effects

Effects on groundwater levels occasioned by well-irrigated agriculture in the Wheeler-Maricopa Water Storage District, have by the importation and usage of surface water been mitigated.

The water usage of the HCP Alternative, and its elimination of potential irrigation usage in the Permit Area during the life of the Permit, contributes to a beneficial, not adverse, cumulative groundwater effect.

4.8.5 Reduced Permit Area Alternative

This alternative would provide for a reduction of Permit Area from 5,784.3 acres to 3,682 acres by removing from the Project: Sites 4-S/4-M (652.5 acres), 6-S (320.9 acres), 7-S/7-M (481.2

acres) and 17-C (647.7 acres), 1,696 acres, 45% of the HCP Solar Sites area (see Chapter 2). The land excluded from the Permit Area would likely remain vacant. Only if water became available, could these lands be converted to active agricultural production.

The database and analysis methodology for this Alternative are the same as those for the HCP Alternative. They will not, therefore, be repeated herein. The section will, rather, textually analyze those subject areas which differ in environmental effect because of changes from the HCP Alternative.

4.8.5.1 Runoff and Drainage

The reductions in the Permit Area will result in proportionate reductions of existing drainage patterns, in contributions of runoff water, in placement of structures within the 100-year flood hazard areas, and in the potential to create incremental runoff water in or from the Permit Area. The regulations with which construction, operation and decommissioning the Alternative are governed are unchanged from those governing the HCP Alternative. The runoff and drainage environmental consequences are thus proportionately less. For neither alternative, with compliance with County regulations and implementation of the County-required mitigation measures (see Section 4.8.4.3), runoff effects and drainage effects are minimal.

4.8.5.2 Groundwater Effects

The groundwater usage for construction, operations (access dust control and panel cleaning) and decommissioning of the Solar Sites, their associated equipment and access facilities and the movement corridors will be 55%, less than that of the Proposed HCP Alternative (13 acre-feet per year).

4.8.5.3 Mitigation Measures

The mitigation measures described in Section 4.8.4.3, and their implementation's effectiveness in reducing and environmental effects of this alternative to a minimal level, remain applicable.

Conservation Area

The analysis of water resources effects of Conservation Area implementation under this Alternative remains the same as that of the Proposed HCP Alternative.

4.8.5.4 Cumulative Effect

The same analyses as for the Proposed HCP Alternative proportionally apply to this alternative. For the reasons described in 4.8.6.2, there are no cumulative environmental effects from the implementation of this alternative.

4.8.6 Comparison of Alternatives

A summary of results comparing the No Action Alternative to the Proposed HCP Alternative and Reduced Permit Area Alternative is shown Table 4.10-2. Each of the potential effect areas which includes runoff and drainage, groundwater, and cumulative effect is measured with a less, more, or similar effect ranking as compared to the No Action Alternative.

Table 4.8-1
Comparison of Alternatives to the No Action Alternative

Potential Effect	No Action	HCP	Reduced Permit Area
Runoff and Drainage	-	More	More
Groundwater Effect	-	Less	Less
Cumulative Effect	-	Similar	Similar

Under the No Action Alternative, Covered Lands would remain vacant and undeveloped for an indefinite period of time with no significant physical changes occurring beyond the existing or historical conditions. There would be no construction activities or operation of solar generating facilities; therefore, hydrology and water quality effects would not be associated with this Alternative. Under this Alternative there would be no foreseeable disturbance of the land. Under the Proposed HCP Alternative, there would be increased ground disturbance associated with installation of the solar panels.

The Reduced Permit Area Alternative would have the same effects as the Proposed HCP Alternative, but at a reduced scale.

This page intentionally left blank.

4.9 LAND USE AND PLANNING

4.9.1 Overview

This section describes the potential effects of the alternatives on land use in the Covered Lands compared to existing conditions when the Notice of Intent was issued. As described in Section 3.9, Land Use, the proposed Project consists of approximately 5,784 acres of primarily, vacant agricultural land. The Solar Sites include a number of noncontiguous parcels in the Westside Subarea of the San Joaquin Valley within Kern County's Valley Region. Approximately 3,798 acres would be utilized for the solar arrays and supporting infrastructure, as well as movement corridors and required setbacks, with the remaining approximate 1,894 acres set aside as conservation areas.

4.9.2 No Action Alternative

This section summarizes the potential effects on land use associated with the No Action Alternative. As discussed in Section 2.3.2, the No Action Alternative assumes that the HCP would not be implemented, the proposed Incidental Take Permit (ITP) would not be issued, and the Covered Activities for the Maricopa Sun Solar complex would not occur. The 5,784.3 acres identified as the Permit Area would likely remain vacant, the 1,894.4 acres identified as Conservation Sites would not be permanently conserved, and the proposed Conservation Management Plan would not be implemented.

The Covered Lands have the following land use designations in the Kern County General Plan: 8.1 (Intensive Agriculture); 8.1/2.5 (Intensive Agriculture/Flood Hazard); 8.3/2.5 (Extensive Agriculture/Flood Hazard); 8.5/2.5 (Resource Management/Flood Hazard); and 8.1/2.3 (Intensive Agriculture/Shallow Groundwater). The Covered Lands are zoned A (Exclusive Agriculture) by the Kern County Zoning Ordinance.

Under the Proposed HCP Alternative, the Project would be largely consistent with applicable land use plans, policies, implementation programs and regulations. The Project would be consistent of the County's goals and policies to "assert Kern County's position as California's leading energy producer, to encourage safe and orderly energy development in the County, including research and demonstration projects, and to become actively involved in the decisions and actions of other agencies as they effect energy development in Kern County" (Energy Element, 5.4.5 Solar Energy Development).

The Covered Lands are zoned Exclusive Agriculture. The purpose of the Exclusive Agriculture district is to designate areas that are suitable for agricultural uses and prevent the encroachment of incompatible uses onto agricultural lands, and the premature conversion of such lands to nonagricultural uses. Permitted land uses in this district include agriculture; as well as

commercial uses such as, utility lines, substations and communication facilities; resource extraction; energy development; and miscellaneous accessory structures.

According to Kern County Zoning Ordinances 19.12.030.g, solar energy electrical generators that exceed one acre of land for offsite uses are permitted within area zoned Exclusive and Limited Agriculture with approval of a CUP. The Proposed Action would require approval of conditional use permits (CUP 5, Map 158 and CUP 7, Map 159) to allow for the construction and operation of a solar electrical generating facility in the A (Agriculture) zone. To maximize use of the Covered Lands, the applicant has requested an amendment to the Kern County General Plan Circulation Element (GPA 5, map 158 and GPA, Map 159) to eliminate the future road reservations. The General Plan's Circulation Element (2.3 Highways, 2.3.3. Highway Plan, Goals 1, 2 and 3) require the protection of corridors for future transportation facilities. Within the Covered Lands, the midsection lines are not part of any development plan and do not connect to any existing or future roadways. Elimination of the midsection lines as roadways would not negatively affect transportation or circulation in the area, or result in any increase in the traffic load and capacity of the existing street system. With approval of the proposed CUPs, the Covered Lands would be compatible with the current General Plan designations.

4.9.2.1 Solar Sites

Under the No Action Alternative, no changes in land use or zoning would occur. Vacant agricultural lands would remain designated as Agricultural, which is consistent with the General Plan and zoning of Kern County. Roadways, access areas, solar panels, associated infrastructure and buildings would not be constructed. A CUP would not be necessary to comply with Kern County zoning and General Plan policies, and other regulations. The Farmland Mapping and Monitoring Program (FMMP) designations for the Covered Lands would remain in place until reevaluated.

4.9.2.2 Conservation Areas

Under the No Action Alternative, no changes in land use or zoning would occur. Vacant agricultural lands would remain designated as Agricultural, which is consistent with the General Plan (page 53, Map Provisions: Resource) and zoning of Kern County. The FMMP designations for the Covered Lands would remain in place until reevaluated.

4.9.2.3 Mitigation Measures

There are no mitigation measures imposed under the No Action Alternative.

4.9.2.4 Cumulative Effect

The geographic scope for cumulative effects related to land use includes closely related past, present, and reasonably foreseeable future projects located in the surrounding area. Under the

No Action Alternative, the Covered Lands would comply with applicable FESA, Section 10 requirements, the State Farmland Mapping and Monitoring Program (FMMP), and Kern County land use plans, policies and requirements, if converted to a non-agricultural use.

Land use effects are generally localized and individual effects would be addressed on a project-by-project basis. However, the cumulative projects include other proposed solar projects in Kern County and within the SJVAB, expansion of an almond processing facility, and a transportation project. Under the No Action Alternative, the Proposed Action would have no environmental effects on land use.

4.9.3 Proposed HCP Alternative

This section summarizes the potential effects on land use associated with the Proposed HCP Alternative. Under this Alternative, the approximately 5,784-acres of Covered Lands would be developed, with 3,798.3 acres to include the Solar Sites and 1,894.4 acres to be established as the Conservation Areas.

The Covered Lands have the following land use designations in the Kern County General Plan: 8.1 (Intensive Agriculture); 8.1/2.5 (Intensive Agriculture/Flood Hazard); 8.3/2.5 (Extensive Agriculture/Flood Hazard); 8.5/2.5 (Resource Management/Flood Hazard); and 8.1/2.3 (Intensive Agriculture/Shallow Groundwater). The Covered Lands are zoned A (Exclusive Agriculture) by the Kern County Zoning Ordinance.

Under the Proposed HCP Alternative, the Project would be largely consistent with applicable land use plans, policies, implementation programs and regulations. The Project would be consistent of the County's goals and policies to "assert Kern County's position as California's leading energy producer, to encourage safe and orderly energy development in the County, including research and demonstration projects, and to become actively involved in the decisions and actions of other agencies as they effect energy development in Kern County" (Energy Element, 5.4.5 Solar Energy Development).

The Covered Lands are zoned Exclusive Agriculture. The purpose of the Exclusive Agriculture district is to designate areas that are suitable for agricultural uses and prevent the encroachment of incompatible uses onto agricultural lands, and the premature conversion of such lands to nonagricultural uses. Permitted land uses in this district include agriculture; as well as commercial uses such as, utility lines, substations and communication facilities; resource extraction; energy development; and miscellaneous accessory structures. As discussed in Section 4.2 Agriculture, the continued use of agricultural uses on lands within the Covered Lands is not feasible because of a lack of reliable irrigation water. Therefore, the Proposed Action would not interfere with agricultural uses because such uses on the Covered Lands cannot be maintained.

According to Kern County Zoning Ordinances 19.12.030.g, solar energy electrical generators that exceed one acre of land are for offsite uses are permitted within area zoned Exclusive and Limited Agriculture with approval of a CUP. The project would require approval of conditional use permits (CUP 5, Map 158 and CUP 7, Map 159) to allow for the construction and operation of a solar electrical generating facility in the A (Agriculture) zone.

To maximize use of the Covered Lands, the applicant has requested an amendment to the Kern County General Plan Circulation Element (GPA 5, map 158 and GPA, Map 159) to eliminate the future road reservations. In many cases, these include setbacks, rights-of-way, and roadways along topographic section or mid-section lines. Roadways were charted along these lines because, as explained in Policy 1 of the Circulation Element, "the road centerline can be determined by an existing survey." The General Plan's Circulation Element (2.3 Highways, 2.3.3. Highway Plan, Goals 1, 2 and 3) require the protection of corridors for future transportation facilities. Within the Covered Lands, the midsection lines are not part of any development plan and do not connect to any existing or future roadways. Elimination of the midsection lines as roadways would not negatively affect transportation or circulation in the area, or result in any increase in the traffic load and capacity of the existing street system. With approval of the proposed CUPs, the Covered Lands would be compatible with the current General Plan designations.

Kern County land use regulations, goals, and policies, will apply to the entirety of the Covered Lands for the duration of the project. In addition to the goals, policies, and regulations described above, the Proposed HCP Alternative would comply with General Plan requirements to maintain, "a safe and healthful environment and a prosperous economy by preserving valuable natural resources," (1.10.1 Public Services and Facilities, Goal 1) by implementing the Conservation Areas under the Proposed HCP Alternative. This Alternative would also be consistent with the General Plan's Energy Element (Policy 9) to, "develop and implement measures which result in long term compensation for wildlife habitat, which is unavoidably damaged by energy exploration and development activities." Under this Alternative, approximately 1,894.4 acres would be included in the Conservation Areas, intended to re-establish native vegetation and encourage wildlife, including sensitive species, within the Covered Lands. Movement Corridors would be installed on the perimeter of four Solar Sites as well.

The Kern County General Plan includes policies to ensure that land use does not conflict with the two military aviation installations, China Lake Naval Air Weapons Station and Edwards Air Force Base, both located considerably east of the Covered Lands. Each installation has unique flying operations. With the implementation of renewable energy projects, the military has identified potential conflicts of users of the radio frequency spectrum located both on and off military installations as an area to be reviewed for compatibility issues.

4.9.3.1 Solar Sites

The General Plan and zoning designations and the CUPs to allow the solar facility and eliminate the midsection lines as roadways apply to the entire Covered Lands for the entire duration of the Project (20 to 30 years). The CUPs, to be approved by the Kern County Board of Supervisors, must be in place for the Covered Lands before the construction phase can begin, and will remain in effect for the life of the Project. Once approved, the Project will be consistent with the General Plan.

As described above, this Alternative would include the implementation of the HCP, which would require that Movement Corridors be established within the acreage intended for the solar facility, in compliance with General Plan Policy 9 of the Energy Element. Additionally, lands within the Solar Sites will be placed into permanent conservation easement and managed for the benefit of Covered Species in perpetuity as mitigation for the project's effects on species.

4.9.3.2 Conservation Areas

As noted under 4.9.2.1 Solar Sites, Kern County land use regulations, goals, and policies, will apply to the entirety of the Covered Lands for the duration of the project. Under this Alternative, approximately 1,894.4 acres would be included in the Conservation Areas, intended to re-establish native vegetation and encourage wildlife, including sensitive species, within the Covered Lands. The CUPs, to be approved by the Kern County Board of Supervisors, must be in place for the Covered Lands, including both the solar sites and the Conservation Areas before the construction phase can begin, and will remain in effect for the life of the Project. Once approved, the Project will be consistent with the General Plan.

4.9.3.3 Mitigation Measures

The following mitigation measures would be applied to the Proposed Action to reduce potential impacts:

MM 4.9-1: Prior to operation of the solar facility, the project operator shall consult with the Department of Defense to identify the appropriate Frequency Management Office officials to coordinate the use of telemetry to avoid potential frequency conflicts with military operations.

MM 4.9-2: Prior to issuance of any building permit, the project operator will provide a decommission plan for review and approval by the Kern County Engineering, Surveying, and Permit Services Department or a County-contracted consulting firm at a cost to be borne by the project operator. The decommission plan will factor in the cost to remove the solar panels and support structures, replace disturbed soils from removal of support structures, and control fugitive dust on the remaining vacant land. Salvage value for the solar panels and support structures will be included in the financial assurance calculations. This mitigation measure will be in effect only when/if the project operator is incapable of performing the work or when Kern

County would be required to hire an independent contractor to perform the decommission work. In addition to submitting a decommission plan, the project operator will post or establish and maintain with Kern County financial assurances related to the deconstruction of the site as identified on the approved decommission plan in the event that at any point in time the project manager determines that he/she cannot undertake the decommissioning process as outlined.

The financial assurance required to issuance of any building permit will be established using one of the following:

- An irrevocable letter of credit;
- A surety bond;
- A trust in accordance with the approved financial assurances to guarantee the deconstruction will be completed in accordance with the approved decommission plan; or
- Other financial assurances as reviewed and approved by the County Administrative Office in consultation with the Kern County Planning and Community Development Department.

The financial institution or surety company will give Kern County at least 120 days' notice of intent to terminate the letter of credit or bond. Financial assurances will be reviewed annually by the Kern County Engineering, Surveying, and Permit Services Department or a County-contracted consulting firm at a cost to be borne by the project operator to substantiate that adequate funds exist to ensure deconstruction of all solar panels and support structures identified on the approved decommission plan. Should the project operator deconstruct the site on its own, the County will not pursue forfeiture of the financial assurance. Once deconstruction has occurred, financial assurance for that portion of the site will no longer be required and any financial assurance posted will be adjusted or returned accordingly. Any funds not used through decommission of the site by the County will be returned to the project operator.

4.9.3.4 Cumulative Effect

The geographic scope for cumulative effects related to land use includes closely related past, present, and reasonably foreseeable future projects located in the surrounding area. Under the Proposed HCP Alternative, the Covered Lands would comply with the federal ESA, Section 10 requirements, and Kern County land use plans, policies and requirements.

As described in Section 4.2 Agriculture, the Covered Lands do not meet the criteria for their current designation as Prime Farmlands and Farmlands of Statewide Importance, as utilized under the FMMP. Although the lands have not been actively farmed in over 10 years and the designations as Farmland due to the lack of irrigation are therefore incorrect, the "conversion of

farmland to another use" will be reflected in the revised FMMP maps as a loss of farmland. This change is designation is not directly attributable to the proposed Project, as the proposed Project did not "cause" the land owner ceased agricultural production.

Land use effects are generally localized and individual effects would be addressed on a project-by-project basis. However, the cumulative projects include other proposed solar projects in Kern County and within the SJVAB, expansion of an almond processing facility, and a transportation project. Under the Proposed HCP Alternative, the Project would have no effect on land use.

With regard to cumulative effects of utility-sized solar power generation facilities, there is a potential that outside factors, such as the development of new technology, change in State or national policy that encourages the construction of such facilities, or other economic factors, could result in the abandonment of such facilities by the project owner. The Kern County Zoning Ordinance has provisions regarding the maintenance and abandonment of wind turbines in the WE Combining District (19.64.150). Solar power generation facilities are of similar use and operation and are typically located in rural, agricultural areas of the County where they are subject to rural vandalism and, if abandoned, could result in a dangerous public nuisance and increased public service effects as a result. Unlike other facilities that, once constructed, can be retrofitted and utilized for another specific use, solar power generation facilities have little opportunity for other uses should the site not be in operation. The potential for cumulative effects caused by the abandonment of multiple solar facilities in Kern County could result in effects on surrounding land uses should it be determined that these facilities are no longer viable commercial operations. The HCP includes detailed measures regarding the physical and aspects and timing of decommissioning the Project, such as removal of infrastructure, solar systems; the responsibilities of the project owner. However, a mitigation measure related to the financial issues surrounding decommissioning of solar facilities has been included to establish safeguards to ensure the maintenance of the health, safety, and welfare of the citizens of the County. With the implementation of Mitigation Measure MM 4.10-2, these cumulative land use effects would be considered minimal.

4.9.4 Reduced Permit Area Alternative

Under the Reduced Permit Area Alternative, the Permit Area would be reduced from 5,784.3 acres to 3,682 acres by removing from the Project: Sites 4-S/4-M (652.5 acres), 6-S (320.9 acres), 7-S/7-M (481.2 acres) and 17-C (647.7 acres). The lands excluded from the Permit Area would likely remain vacant and would continue to be disked on a regular basis for weed control. The entirety of the Covered Lands is considered agricultural by the State and County.

The Covered Lands have the following land use designations in the Kern County General Plan: 8.1 (Intensive Agriculture); 8.1/2.5 (Intensive Agriculture/Flood Hazard); 8.3/2.5 (Extensive Agriculture/Flood Hazard); 8.5/2.5 (Resource Management/Flood Hazard); and 8.1/2.3

(Intensive Agriculture/Shallow Groundwater). The Covered Lands are zoned A (Exclusive Agriculture) by the Kern County Zoning Ordinance.

Under the Reduced Permit Area Alternative, the Proposed Action would be largely consistent with applicable land use plans, policies, implementation programs and regulations. The Proposed Action would be consistent of the County's goals and policies to "assert Kern County's position as California's leading energy producer, to encourage safe and orderly energy development in the County, including research and demonstration projects, and to become actively involved in the decisions and actions of other agencies as they effect energy development in Kern County" (Energy Element, 5.4.5 Solar Energy Development).

The Covered Lands are zoned Exclusive Agriculture. The purpose of the Exclusive Agriculture district is to designate areas that are suitable for agricultural uses and prevent the encroachment of incompatible uses onto agricultural lands, and the premature conversion of such lands to nonagricultural uses. Permitted land uses in this district include agriculture; as well as commercial uses such as, utility lines, substations and communication facilities; resource extraction; energy development; and miscellaneous accessory structures. As discussed in Section 4.2 Agriculture, the continued use of agricultural uses on lands within the Covered Lands is not feasible because of a lack of reliable irrigation water. Therefore, the project would not interfere with agricultural uses because such uses on the Covered Lands cannot be maintained.

According to Kern County Zoning Ordinances 19.12.030.g, solar energy electrical generators that exceed 1 acre of land are for offsite uses are permitted within area zoned Exclusive and Limited Agriculture with approval of a CUP. The project would require approval of conditional use permits (CUP 5, Map 158 and CUP 7, Map 159) to allow for the construction and operation of a solar electrical generating facility in the A (Agriculture) zone.

To maximize use of the Covered Lands, the applicant has requested an amendment to the Kern County General Plan Circulation Element (GPA 5, map 158 and GPA, Map 159) to eliminate the future road reservations. The General Plan's Circulation Element (2.3 Highways, 2.3.3. Highway Plan, Goals 1, 2 and 3) require the protection of corridors for future transportation facilities. Within the Covered Lands, the midsection lines are not part of any development plan and do not connect to any existing or future roadways. Elimination of the midsection lines as roadways would not negatively affect transportation or circulation in the area, or result in any increase in the traffic load and capacity of the existing street system. With approval of the proposed CUPs, the Covered Lands would be compatible with the current General Plan designations.

Kern County land use regulations, goals, and policies, will apply to the entirety of the Covered Lands for the duration of the project. In addition to the goals, policies, and regulations described above, the Proposed HCP Alternative would comply with General Plan requirements to maintain,

"a safe and healthful environment and a prosperous economy by preserving valuable natural resources," (1.10.1 Public Services and Facilities, Goal 1) by implementing the Conservation Areas under the Proposed HCP Alternative. This alternative would also be consistent with the General Plan's Energy Element (Policy 9) to, "develop and implement measures which result in long term compensation for wildlife habitat, which is unavoidably damaged by energy exploration and development activities." Under this alternative, approximately 1,894.4 acres would be included in the Conservation Areas, intended to re-establish native vegetation and encourage wildlife, including sensitive species, within the Covered Lands. Movement Corridors would in installed on the perimeter of four Solar Sites as well.

The Kern County General Plan includes policies to ensure that land use does not conflict with the two military aviation installations, China Lake Naval Air Weapons Station and Edwards Air Force Base, both located considerably east of the Covered Lands. Each installation has unique flying operations. With the implementation of renewable energy projects, the military has identified potential conflicts of users of the radio frequency spectrum located both on and off military installations as an area to be reviewed for compatibility issues.

4.9.4.1 Solar Sites

Under the Reduced Permit Area Alternative, the Solar Sites will be constructed with the approximate 2,343.7 acre parcels. The General Plan and zoning designations and the CUPs to allow the solar facility and eliminate the midsections as roadways apply to the entire Covered Lands for the entire duration of the Project (20 to 30 years). The CUPs, to be approved by the Kern County Board of Supervisor's must be in place for the Covered Lands before the construction phase can begin, and will remain in effect for the life of the Project. Once approved, the Proposed Action will be consistent with the General Plan.

As described above, this alternative would include the implementation of the HCP, which would require that Movement Corridors be established within the acreage intended for the solar facility, in compliance with General Plan Policy 9 of the Energy Element. Additionally, lands within the Solar Sites will be placed into permanent conservation easement and managed for the benefit of Covered Species in perpetuity as mitigation for the project's effects on species.

4.9.4.2 Conservation Areas

As noted under 4.9.2.1 Solar Sites, Kern County land use regulations, goals, and policies, will apply to the entirety of the Covered Lands for the duration of the project. Under this alternative, approximately 647.4 acres would be included in the Conservation Areas, intended to re-establish native vegetation and encourage wildlife, including sensitive species, within the Covered Lands. The CUPs, to be approved by the Kern County Board of Supervisor's must be in place for the Covered Lands before the construction phase can begin, and will remain in effect for the life of

the Proposed Action. Once approved, the Proposed Action will be consistent with the General Plan.

4.9.4.3 Mitigation Measures

Mitigation Measures 4.9-1 and 4.9-2, as described under Section 4.9.2.3, apply.

4.9.4.4 Cumulative Effect

The geographic scope for cumulative effects related to land use includes closely related past, present, and reasonably foreseeable future projects located in the surrounding area. Under the Proposed HCP Alternative, the Covered Lands would comply with applicable federal Endangered Species Act (ESA), Section 10 requirements, and Kern County land use plans, policies and requirements.

As described in Section 4.2 Agriculture, the Covered Lands do not meet the criteria for their current designation as Prime Farmlands and Farmlands of Statewide Importance, as utilized under the FMMP. Although the lands have not been actively farmed in over 12 years and the designations as Farmland are therefore incorrect, the "conversion of farmland to another use" will be reflected in the revised FMMP maps as a loss of farmland. However, the review of the designations, to be made by the NRCS, will be made independently of the Project, as the proposed Project did not "cause" the land owner ceased agricultural production.

Land use effects are generally localized and individual effects would be addressed on a project-by-project basis. However, the cumulative projects include other proposed solar projects in Kern County and within the San Joaquin Valley Air Basin, expansion of an almond processing facility, and a transportation project. Under the Proposed HCP Alternative, the Project would have no effect on land use.

With regard to cumulative effects of utility-sized solar power generation facilities, there is a potential that outside factors, such as the development of new technology, change in State or national policy that encourages the construction of such facilities, or other economic factors, could result in the abandonment of such facilities by the project owner. The Kern County Zoning Ordinance has provisions regarding the maintenance and abandonment of wind turbines in the WE Combining District (19.64.150). Solar power generation facilities are of similar use and operation and are typically located in rural, agricultural areas of the County where they are subject to rural vandalism and, if abandoned, could result in a dangerous public nuisance and increased public service effects as a result. Unlike other facilities that, once constructed, can be retrofitted and utilized for another specific use, solar power generation facilities have little opportunity for other uses should the site not be in operation. The potential for cumulative effects caused by the abandonment of multiple solar facilities in Kern County could result in effects on surrounding land uses should it be determined that these facilities are no longer viable

commercial operations. The HCP includes detailed measures regarding the physical and aspects and timing of decommissioning the Project, such as removal of infrastructure, solar systems; the responsibilities of the project owner. However, a mitigation measure related to the financial issues surrounding decommissioning of solar facilities has been included to establish safeguards to ensure the maintenance of the health, safety, and welfare of the citizens of the County. With the implementation of Mitigation Measure MM 4.10-2, these cumulative land use effects would be considered minimal.

4.9.5 Comparison of Alternatives

A summary of results comparing the No Action Alternative to the Proposed HCP Alternative and Reduced Permit Area Alternative is shown Table 4.9-1. Each of the potential effect areas which includes construction and operations phases, and cumulative effect is measured with a less, more, or similar effect ranking as compared to the No Action Alternative.

Table 4.9-1
Comparison of Alternatives to the No Action Alternative

Potential Effect	No Action	Proposed HCP	Reduced Permit Area
Solar Panel Areas			
Construction Phase	-	Similar	Similar
Operations Phase	-	Similar	Similar
Conservation Areas			
Construction Phase	-	Similar	Similar
Operations Phase	-	Similar	Similar
Cumulative Effect	-	Similar	Similar

Source: Kern County, 2010.

Under the No Action Alternative no changes in land use, or General Plan or zoning designation would occur. Under both the Proposed HCP and Reduced Permit Area Alternatives, the Project would be in compliance with Kern County General Plan and zoning requirements with the approval of requested CUPs. These CUPs would allow the project owner to construct and operate a solar facility on lands designated as Agricultural, and would eliminate the midsection lines on which roadways would otherwise be required.

The Proposed HCP Alternative would occur on 5,784.3 acres, with the solar facilities on approximately 3,798.3 acres and the Conservation Areas throughout approximately 1,894.4 acres. The Reduced Permit Area Alternative would be limited to a total of 3,682 acres, with 2,343.7 utilized for the solar facilities and the Conservation Areas located on 647.7 acres.

Under the No Action Alternative agricultural lands would remain as they are, with the possibility of returning to agricultural production if reliable irrigation water became available. Under the Proposed HCP Alternative or the Reduced Permit Area Alternative, upon completion of

decommissioning, the Covered Lands would be placed into permanent conservation easement and managed for the benefit of Covered Species in perpetuity as mitigation for the project's effects on species. The use of the land for the solar facilities, the Conservation Areas, and the conservation easement are permitted under the Kern County General Plan.

No mitigation measures are required under the No Action Alternative. The Proposed HCP Alternative or the Reduced Permit Area Alternative would require, in addition to compliance with the Kern County General Plan, and federal, State and local requirements, the project owner to implement mitigation measures to ensure that there would be no incompatibility with users of the radio frequency spectrum located both on and off military installations. Mitigation would also be required to assure that policies were in place regarding the financial obligations of the project owners for decommissioning of the project.

Multiple solar facilities are unlikely to create cumulative effects to land use within the County, as these projects are permitted under the Kern County General Plan and its zoning ordinances, with the approval of a CUP. This Proposed Action is expected to result in the permanent conversion of vacant agricultural land to another use, although the use for solar facilities is permitted under the General Plan. Cumulative effects from changes in land use in areas zoned for Agriculture are discussed in more depth in Section 4.2 – Agriculture.

4.10 MINERAL RESOURCES

4.10.1 Overview

This section describes the potential effects of the alternatives on mineral resources use in the Covered Lands compared to existing conditions when the Notice of Intent was issued. Adjacent to the Covered Lands, the J.W. Brown Rock Plant, an aggregate, sand and gravel operation, is located on Gardener Field Road, approximately one mile east of the California Aqueduct. Although the Covered Lands are not within the administrative boundaries of an oil field, there are three plugged oil wells within the Covered Lands, on Site 5-S. DOGGR-recognized oil fields, including Midway Sunset, Buena Vista, San Emidio Nose, Rio Viejo, and Yowlumne are in the close proximity to the Covered Lands. Sand and gravel operations occur primarily on the eastern side of the San Joaquin Valley and foothills of the Sierra Nevada Mountains, usually along stream beds in alluvial fans. There are no active mining operations within five miles of the Covered Lands.

4.10.2 No Action Alternative

This section summarizes the potential effects to land use associated with the No Action Alternative. As discussed in Section 2.3.2, the No Action Alternative assumes that the HCP would not be implemented, the proposed Incidental Take Permit (ITP) would not be issued, and the Covered Activities for the Maricopa Sun Solar complex would not occur. The 5,784.3 acres identified as the Permit Area would likely remain as unproductive agricultural land, the 1,894.4 acres identified as Conservation Sites would not be permanently conserved, and the proposed Conservation Management Plan would not be implemented. However, the land could be converted to another use, including commercial, industrial, mining or energy production (solar or wind turbines) if another project were proposed. Roadways, access areas, solar panels, and any associated infrastructure and buildings would not be constructed for the Proposed Action.

4.10.2.1 Solar Areas

Construction Phase

Within the 3,798.3-acre Solar Area, no development would occur under the No Action Alternative. Existing, inactive and active mining operations could remain unchanged, although additional mining operations could be proposed. Should other mining or mineral extraction projects be proposed in the Covered Lands, they would require separate resource analyses through Kern County, as well as State agencies. No effects to mineral resources would occur as a result of the Proposed Action.

Operations Phase

Within the 3,798.3-acre Solar Area, no development would occur under the No Action Alternative. Existing, inactive and active mining operations could remain unchanged, although additional mining operations or other project could be proposed in the 20-to-30-year period in which operations are anticipated. Should other mining or mineral extraction projects be proposed in the Covered Lands, they would require separate resource analyses through Kern County, as well as State agencies. No effects to mineral resources would occur as a result of the Proposed Action. .

4.10.2.2 Conservation Areas

Construction Phase

Within the approximate 1,894.3-acre Conservation Area, no development would occur under the No Action Alternative, although mineral extraction could occur if another project were proposed. Mining or mineral extraction could also be affected by another, unrelated project (such as an industrial site) were proposed. Existing, inactive and active mining operations would remain unchanged and mineral resources would be unaffected by this Project in the Covered lands under the No Action Alternative. No effects to mineral resources would occur as a result of the proposed Project.

Operations Phase

Within the 3,798.3-acre Solar Area, no development would occur as a result of the Project under the No Action Alternative. Existing, inactive and active mining operations would remain unchanged and mineral resources would be unaffected in the Covered lands under the No Action Alternative unless another project is proposed in the Covered Lands. A minimal effect would occur.

4.10.2.3 Mitigation Measures

There are no mitigation measures imposed under the No Action Alternative.

4.10.2.4 Cumulative Effect

The geographic scope for considering cumulative effects on mineral resources includes the extent of Kern County because mineral resources, especially petroleum, are a major economic component of the County as a whole. As such, effects on mineral resources anywhere in the County combined with the proposed project could result in a cumulative effect on countywide mineral resources.

The Proposed Action would avoid effects on existing wells in the Covered Lands by maintaining a 10-foot buffer from the existing (closed) wells on site. The effects of the Proposed Action

could combine with other solar projects in the area in the future. Although the lifespan of the Proposed Action and other projects is expected to be 20-30 years, a project design feature includes an area for use as a potential drill site to allow for surface right-of-way to mineral rights holders. Combined effects on mineral resources would not result in the loss of availability of a known mineral resource. Mitigation Measures for the proposed Project include a provision for the Project Operator or its successor-in-interest to locate of a maximum of five separate, 10-acre drill site areas per section on specific parcels in the Covered Lands, and to allow routes of ingress and egress to each of these drill sites. The drilling areas will be located in such a manner as to allow complete and efficient access to, and the exploration and/or extraction of, underlying oil reserves or other minerals, with the total acreage of drilling areas limited to 50 acres per 640-acre section. The agreement to provide continued ingress and egress to and from the sites is specific to the Proposed Action. Other agreements would be required if the Proposed Action did not occur but other, similar projects were proposed in the future.

Cumulative effects to mineral resources would occur if the cumulative projects would result in the loss of oil or aggregate mineral resources. Some of the cumulative projects may occur within or near existing oil fields, as well as sand and gravel operations. However, where these resources have substantial remnant supplies, none of the cumulative projects would preclude continued extraction or production of these resources. Additionally, the nature of the solar development would not preclude access to a Resource Management area as delineated on the Kern County General Plan map. Effects on mineral resources would not be cumulatively considerable.

Under the No Action Alternative, the project would not be built. It is likely that the area would remain as unproductive agricultural land unless a reliable source of water became available. Other projects proposed in the six-mile radius surrounding the project include 695 acres of solar projects, 5,830 acres of agricultural land, approximately 48 acres of cellular towers, as well as approximately 77 acres of lands being rezoned (primarily residential lands under consideration for other residential density or similar changes), and another approximately 614 acres of miscellaneous and other uses. Cumulatively, coordination with agencies, including Kern County, for each these projects will result in few affects to mineral extraction. Individual projects will require environmental review, and would potentially include permitting procedures and mitigation measures intended to allow continued access to minerals for extraction within the project areas.

4.10.3 Proposed HCP Alternative

This section summarizes the potential effects to mineral resources under Proposed HCP Alternative. Under this Alternative, the approximate 5,784-acre Covered Lands would be developed, with 3,798.3 acres to include the Solar Sites, and 1,894.4 acres to be established as the Conservation Areas.

4.10.3.1 Solar Areas

Construction Phase

One Site, 5-S, includes three plugged wells. Plugged and/or abandoned wells located within the Covered Lands would be inspected and tested for leakage prior to construction activities, and remedial operations would be performed if necessary under Mitigation Measure MM 4.7-1. Additionally, the Proposed Action would provide surface access areas in facility design that would allow for surface rights of entry to and use of the designated oil area. A minimal effect would occur.

Operations Phase

Surface access to oil and other minerals would continue throughout the operations phase on the Solar Sites. In accordance with a mitigation measure (MM 4.9-2) intended to protect subsurface mineral resources, during maintenance and decommissioning activities, resources that may lie beneath the surface will not be disturbed or depleted). A minimal effect would occur.

4.10.3.2 Conservation Areas

Construction Phase

Within the approximate 1,894.3-acre Conservation Area, there are no plugged or abandoned wells. Additionally, the Proposed Action would provide surface access areas in facility design that would allow for surface rights of entry to and use of any designated oil areas within the Conservation Areas. A minimal effect would occur to lands within the Conservation Areas as a result of the Project.

Operations Phase

Surface access to oil and other minerals would continue throughout the operations phase on the Solar Sites. During maintenance and decommissioning activities, resources that may lie beneath the surface will not be disturbed or depleted in accordance with Mitigation Measure MM 4.9-2, except as outlined in MM 4.10-1a through 4.10-3d, as agreed to in the 2010 Maricopa Sun Solar Complex EIR (Kern County 2010). A minimal effect would occur to lands within the Conservation Areas as a result of the Proposed Action. However, should mining occur within the Conservation Sites 1-C, 9-C, and/or 10-C in the future, lands could be affected by ingress and egress, and by mining operations on the site.

4.10.3.3 Mitigation Measures

The following mitigation measures will be required, except that MM 4.7-1 is required by DOGGR.

MM 4.7-1: found in Section 4.7, Hazardous Materials requires inspection and testing of capped or abandoned wells within the Covered Lands. The plugged and/or abandoned wells located within the project boundaries shall be inspected and tested for leakage prior to construction activities. Remedial operations will be performed if necessary. The well locations shall be recorded on all future maps of the project. A copy of the map shall be submitted to DOGGR. In the event that other abandoned or unrecorded wells are uncovered or damaged during excavation or grading activities, remedial plugging operations may be required. DOGGR shall be contacted for requirements and approval, and copies of said approvals shall be submitted to the Kern County Planning and Community Development Department.

MM 4.9-2: found in Section 4.9 Land Use, requires a decommissioning plan. Prior to issuance of any building permit, the project operator will provide a decommission plan for review and approval by the Kern County Engineering, Surveying, and Permit Services Department or a County-contracted consulting firm at a cost to be borne by the project operator. The decommission plan will factor in the cost to remove the solar panels and support structures, replace disturbed soils from removal of support structures, and control fugitive dust on the remaining vacant land. Salvage value for the solar panels and support structures will be included in the financial assurance calculations. This mitigation measure will be in effect only when/if the project operator is incapable of performing the work or when Kern County would be required to hire an independent contractor to perform the decommission work. In addition to submitting a decommission plan, the project operator will post or establish and maintain with Kern County financial assurances related to the deconstruction of the site as identified on the approved decommission plan in the event that at any point in time the project manager determines that he/she cannot undertake the decommissioning process as outlined.

MM 4.10-1a: For Solar Site 2-S,Solar Site 3-S, Solar Site 4-S, Site 6, Site 7-S, and Solar Site 15-6, (see Figure 2-2 for Site Locations): The Project Operator or its successor-in-interest ("Project Operator") shall reach a written agreement with Vintage Production California LLC or its successor-in-interest ("Vintage") as to the location of a maximum of five separate 10-acre drill site areas per section (hereinafter "Drilling Areas") on these parcels and routes of ingress and egress thereto. The Drilling Areas shall be located in such a manner as to allow complete and efficient access to, and the exploration and/or extraction of, underlying oil reserves or other minerals. The total acreage of Drilling Areas shall not exceed 50 acres per 640-acre section.

MM 4.10-1b: The Project Operator shall record or cause to be recorded easements or other documents confirming Vintage's interest in the Drilling Areas and its right of ingress and egress to each drill site.

MM 4.10-1c: Evidence of Vintage's written agreement with the Project Operator as to the location of the Drilling Areas and the easements or other documents confirming Vintage's interest in the Drilling Areas and right of access to each drill site shall be submitted by Project

Operator to the Planning and Community Development Department for verification prior to final site plan approval and the issuance of any grading or building permits for the development of solar facilities on project sites.

MM 4.10-1d: Should an alternative agreement to part a) and/or b) above, be reached between Vintage and the Project Operator, written documentation shall be submitted by Project Operator to the Planning and Community Development Department for verification prior to final site plan approval and the issuance of any grading or building permits for the development of solar facilities on project sites.

MM 4.10-2a: For Conservation Site 1-C, Solar Site 5-S, Conservation Site 9-C, Conservation Site 10-C, (see Figure 2-2 for Site Locations): The Project Operator shall consult with Vintage regarding the number, location, and size of the Drilling Areas for these specified parcels and access to each of the Drilling Areas. The Project Operator shall reach a written agreement with Vintage as to the number, location, and size of the Drilling Areas on these specified parcels and routes of ingress and egress thereto. The Drilling Areas shall be located in such a manner as to allow complete and efficient access to, and the exploration and/or extraction of, underlying oil reserves or other minerals.

MM 4.10-2b: The Project Operator shall record or cause to be recorded easements or other documents confirming Vintage's interest in the Drilling Areas and its right of ingress and egress to each drill site.

MM 4.10-2c: Evidence of Vintage's written agreement with the Project Operator as to the location of the Drilling Areas and the easements or other documents confirming Vintage's interest in the Drilling Areas and right of access to each drill site shall be submitted by Project Operator to the Planning and Community Development Department for verification prior to final site plan approval and the issuance of any grading or building permits for the development of solar facilities on project sites.

MM 4.10-2d: Should an alternative agreement to part a) and/or b) above, be reached between Vintage and the Project Operator, written documentation shall be submitted by Project Operator to the Planning and Community Development Department for verification prior to final site plan approval and the issuance of any grading or building permits for the development of solar facilities on project sites.

MM 4.10-3a: For sites upon which Aera Energy LLC ("Aera") owns an interest in the minerals, The Project Operator or its successor-in-interest ("Project Operator"), shall reach a written agreement with Aera or its successor-in-interest as to the location or a maximum of five separate 10-acres drill site areas per section (hereinafter, "Drilling Areas") on these parcels and routes of ingress and egress thereto. The Drilling Areas shall be located in such a manner as to allow

complete and efficient access to, and the exploration and/or extraction of, underlying oil reserves or other minerals. The total acreage of Drilling Areas shall not exceed 50 acres per 640-acre section.

MM 4.10-3b: The Project Operator shall record or cause to be recorded easements or other documents confirming Area's interest in the Drilling Areas and its right of ingress and egress to each drill site.

MM 4.10-3c: Evidence of Vintage's written agreement with the Project Operator that the solar panel configuration and associated equipment will allow for sufficient placement of seismic geophones and access for vibrator buggies, along with Aera's written agreement as to the location of the Drilling Areas and the easements or other documents confirming Aera's interest in the Drilling Areas as well as, sufficient pipeline and power line corridors from the drill sites to a point exiting the property and right of access to each drill site, shall be submitted by Project Operator to the Planning and Community Development Department for verification prior to final site plan approval and the issuance of any grading or building permits for the development of solar facilities on project sites.

MM 4.10-3d: Should an alternative agreement to part a) and/or b) above, be reached between Aera and the Project Operator, written documentation shall be submitted by Project Operator to the Planning and Community Development Department for verification prior to final site plan approval and the issuance of any grading or building permits for the development of solar facilities on project sites.

4.10.3.4 Cumulative Effect

The geographic scope for considering cumulative effects on mineral resources includes the extent of Kern County because mineral resources, especially petroleum, are a major economic component of the County as a whole. As such, effects on mineral resources anywhere in the County combined with the proposed project could result in a cumulative effect on countywide mineral resources.

The Proposed Action would avoid effects on existing wells in the Covered Lands by maintaining a 10-foot buffer from the existing (closed) wells on site. The effects of the Proposed Action could combine with other solar projects in the area in the future. Although the lifespan of the Proposed Action and other projects are expected to be 20-30 years, a project design feature includes an area for use as a potential drill site to allow for surface right-of-way to mineral rights holders. Combined effects on mineral resources would not result in the loss of availability of a known mineral resource. Mitigation Measures for the Proposed Action include a provision for the Project Operator or its successor-in-interest to locate of a maximum of five separate, 10-acre drill site areas per section on specific parcels, and to allow routes of ingress and egress to each of these drill sites. The drilling areas will be located in such a manner as to allow complete and

efficient access to, and the exploration and/or extraction of, underlying oil reserves or other minerals, with the total acreage of drilling areas limited to 50 acres per 640-acre section.

Cumulative effects to mineral resources would occur if the cumulative projects would result in the loss of oil or aggregate mineral resources. Some of the cumulative projects may occur within or near existing oil fields, as well as sand and gravel operations. However, where these resources have substantial remnant supplies, none of the cumulative projects would preclude continued extraction or production of these resources. Additionally, the nature of the solar development would not preclude access to a Resource Management area as delineated on the Kern County General Plan map. Effects on mineral resources would not be cumulatively considerable.

4.10.4 Reduced Permit Area Alternative

This section summarizes the potential effects to mineral resources under Proposed HCP Alternative. Under this Alternative, the approximate 3,682 acres of the Reduced Permit Area of Covered Lands would be developed, with 2,343.7 acres to include the Solar Sites, and 647.7 acres to be established as the Conservation Areas.

4.10.4.1 Solar Areas

Construction Phase

One Site, 5-S, includes three plugged wells. Plugged and/or abandoned wells located within the Covered Lands would be inspected and tested for leakage prior to construction activities, and remedial operations would be performed if necessary under Mitigation Measure MM 4.7-1. Additionally, the Proposed Action would provide surface access areas in facility design that would allow for surface rights of entry to and use of the designated oil area. A minimal effect would occur.

Operations Phase

Surface access to oil and other minerals would continue throughout the operations phase on the Solar Sites. In accordance with a mitigation measure (MM 4.9-2) intended to protect subsurface mineral resources, during maintenance and decommissioning activities, resources that may lie beneath the surface will not be disturbed or depleted. A minimal effect would occur.

4.10.4.2 Conservation Areas

Construction Phase

Within the approximate 1,894.3-acre Conservation Area, there are no plugged or abandoned wells. Additionally, the Proposed Action would provide surface access areas in facility design

that would allow for surface rights of entry to and use of the designated oil area. A minimal effect would occur.

Operations Phase

Surface access to oil and other minerals would continue throughout the operations phase on the Solar Sites. During maintenance and decommissioning activities, resources that may lie beneath the surface will not be disturbed or depleted in accordance with Mitigation Measure MM 4.9-2. A minimal effect would occur.

4.10.4.3 Mitigation Measures

MM 4.7-1: found in Section 4.7, Hazardous Materials requires inspection and testing of capped or abandoned wells within the Covered Lands.

MM 4.9-2: found in Section 4.9 Land Use, requires a decommissioning plan.

MM 4.10-1a through 4.10-3d, which restrict activities that, during maintenance and decommissioning activities, might otherwise disturb or deplete resources that may lie beneath the surface.

4.10.4.4 Cumulative Effect

The geographic scope for considering cumulative effects on mineral resources includes the extent of Kern County because mineral resources, especially petroleum, are a major economic component of the County as a whole. As such, effects on mineral resources anywhere in the County combined with the proposed project could result in a cumulative effect on Countywide mineral resources.

The Proposed Action would avoid effects on existing wells in the Covered Lands by maintaining a 10-foot buffer from the existing wells on site. The effects of the Proposed Action could combine with other solar projects in the area in the future. Although the lifespan of the proposed Project and other projects are expected to be 20-30 years, a project design feature includes an area for use as a potential drill site to allow for surface right-of-way to mineral rights holders. Combined effects on mineral resources would not result in the loss of availability of a known mineral resource. Mitigation Measures for the Proposed Action include a provision for the Project Operator or its successor-in-interest to locate of a maximum of five separate, 10-acre drill site areas per section on specific parcels, and to allow routes of ingress and egress to each of these drill sites. The drilling areas will be located in such a manner as to allow complete and efficient access to, and the exploration and/or extraction of, underlying oil reserves or other minerals, with the total acreage of drilling areas limited to 50 acres per 640-acre section. These protections would not necessarily be included if the Proposed Action did not occur but other, similar projects were proposed in the future.

Cumulative effects to mineral resources would occur if the cumulative projects would result in the loss of oil or aggregate mineral resources. Some of the cumulative projects may occur within or near existing oil fields, as well as sand and gravel operations. However, where these resources have substantial remnant supplies, none of the cumulative projects would preclude continued extraction or production of these resources. Additionally, the nature of the solar development would not preclude access to a Resource Management area as delineated on the Kern County General Plan map. Effects on mineral resources would not be cumulatively considerable.

4.10.5 Comparison of Alternatives

A summary of results comparing the No Action Alternative to the Proposed HCP Alternative and Reduced Permit Area Alternative is shown Table 4.10-1. Each of the potential effect areas which includes construction and operations phases, and cumulative effect is measured with a less, more, or similar effect ranking as compared to the No Action Alternative.

Table 4.10-1
Comparison of Alternatives to the No Action Alternative

Potential Effect	No Action/No HCP	Proposed HCP	Reduced Permit Area
Solar Panel Areas			
Construction Phase	-	Similar	Similar
Operations Phase	-	Similar	Similar
Conservation Areas			
Construction Phase	-	Similar	Similar
Operations Phase	-	Similar	Similar
Cumulative Effect	-	Similar	Similar

Source: Kern County, 2010.

There are no active mining sites within the Covered Lands, and there would be no changes in the mining or surface or subsurface minerals under the No Action Alternative unless mining exploration and/or activities were proposed in the future. No mitigation measures associated with the Project would need implementation, and these resources would not be affected.

Under the Proposed HCP Alternative and Reduced Permit Area Alternative, three capped mines are located within the Covered Lands. A project design feature includes an area for use as a potential drill site to allow for surface right-of-way to mineral rights holders. Combined effects on mineral resources would not result in the loss of availability of a known mineral resource. With the implementation of mitigation measures, mineral resources would not be affected under any of the Alternatives during the construction, operations, or decommissioning phases of the project. With the implementation of mitigation measures, a minimal effect would occur.

Combined effects from the Proposed Action would not result in the loss of availability of a known mineral resource. Cumulative effects to mineral resources would occur if the cumulative projects would result in the loss of oil or aggregate mineral resources. Some of the cumulative projects may occur within or near existing oil fields, as well as sand and gravel operations. However, where these resources have substantial remnant supplies, none of the cumulative projects would preclude continued extraction or production of these resources. The nature of the solar development would not preclude access to a Resource Management area as delineated on the Kern County General Plan map. Effects on mineral resources would not be cumulatively considerable.

This page intentionally left blank.

4.11 PUBLIC SERVICES

4.11.1 Overview

The potential environmental consequences of the alternatives on public services are described in this section compared to existing conditions when the Notice of Intent was issued.

4.11.2 Methodology

This independent public services analysis references the Notice of Preparation for the EIR (Kern County 2010) prepared for solar development of an area included in the Draft HCP. Schools, parks, and "other public facilities" have been eliminated from the analysis of public services effects (it found that because the project included no temporary or permanent residents it would have no substantial effects on these public services). It retained the following Threshold of Significance from the County of Kern Environmental checklist:

(Would the project):

- Result in substantial adverse physical effects associated with the provision of new or physically altered governmental facilities; and/or result in the need for new or physically altered governmental facilities, the construction of which could cause significant environmental effects in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services which include:

It is assumed herein that decommissioning materials – solar panels and wiring, asphaltic pavement and concrete rubble -are of sufficient value that they will be recycled for beneficial use, thus requiring no County solid waste disposal services.

For this environmental analysis the environmental consequences of each alternative will be combined for the construction, operation and decommissioning periods of the HCP and its alternatives. This section will, in the absence of any need for other required public services, consider essential fire and sheriff services. The scope of this analysis includes effects upon the need for fire suppression, emergency medical aid, and law enforcement services, not just their related facilities.

4.11.3 No Action Alternative

Under this alternative there would be no construction in the Permit Area, no change in the agricultural land uses in the Permit Area, and no HCP conservation activities in the Area; however, it is conceivable that oil wells might be drilled. There would be, therefore, no need for fire suppression, medical aid or law enforcement services incremental to those now provided for the Area and no environmental consequences of the alternative.

4.11.3.1 Cumulative Effect

Since this alternative creates no direct or indirect environmental effects; it has no cumulative public services consequences.

4.11.4 Proposed HCP Alternative

4.11.4.1 Fire and Medical Aid Services

According to the Kern County Fire Department's (KCFD's) Wildland Fire Management Plan, Air & Wildland Division, the program is within the Western Kern and Mt. Pinos Communities Fire Plan Management Areas. The program area consists of uncultivated agricultural land, without any significant native or ruderal vegetation. The surrounding land is primarily uncultivated agricultural land.

Fire protection facilities requirements are based on the number of residents and workers in the KCFD primary service area. Service demand is primarily tied to population, not building size, because emergency medical calls typically make up the majority of responses provided by the County fire department. As the number of residents and workers increases, so does the number of emergency medical calls involving personnel, equipment and transport.

Since the HCP will include the development of a Solar Site containing solar panels and an O&M building, but no residential structures, no residents will occupy the Covered Lands.

The onsite assembly and construction workforce is expected to reach a peak of approximately 200 workers per square mile. Development may occur over an eight to 10 year period. It is unlikely that all Solar Sites within the program will be built simultaneously, although it is feasible that several might be developed at the same time. The presence of construction workers will be temporary, lasting about 12 to 18 months per square mile. During operation, the project will require approximately a minimum of seven onsite employees. The HCP and its construction and operational personnel will result in a demand for fire protection services to accommodate fire suppression and emergency medical calls. The Movement Corridors and Conservation Sites will not create an incremental fire hazard.

The Kern County Fire Station 21 provides primary service. It is located at 303 North 10th Street in the City of Taft, approximately 7 and 32 miles to the west of the respective nearest and farthest Solar Sites.

The design will include emergency access and other safety features and plans for fire protection. Construction and operation of the project will be subject to the provisions of the Uniform Fire Code and County amendments; Titles 19, 22 and 27 of the California Safety Code Regulations; the Kern County Ordinance Code; and the National Fire Prevention Association Standards. The construction and operation will not result in increased risk of wildfires because the Permit Area

and the surrounding area largely consist of uncultivated agricultural land, without significant native or ruderal vegetation. Regardless, the Proposed Action must comply with all applicable wildland fire management plans and policies established by CAL FIRE and the KCFD.

4.11.4.2 Sheriff Services

The Kern County Sheriff's Office provides basic law enforcement services in the unincorporated areas of the county. It provides primary police protection for the Permit Area and Covered Lands. The Sheriff's Taft Substation is located approximately 8 to 24 miles northwest of the respective nearest and farthest Solar Sites.

Both residents and workers in unincorporated portions of the county benefit from patrol and investigation services provided by the Kern County Sheriff's Office. Therefore, the demand for Sheriff patrol and investigation is based on the county's combined unincorporated residential and worker populations. The proposed number of employees required by the HCP is not anticipated to result in substantial increased demand for Sheriff services.

Although service demands per employee are less than service demands per resident, construction and implementation of the project could increase service needs for the Kern County Sheriff's Office. The project may attract vandals or present other security risks, and potentially increase traffic. Onsite security will be provided, and access will be limited to the areas surrounding the Solar Sites and Conservation Sites during construction and operation, thereby minimizing the need for Sheriff surveillance additional to the response service now available. Project personnel commuting to the construction sites via roads and highways will be required to adhere to all federal and state traffic laws. The additional volume of traffic associated with workers commuting to the Solar Sites during construction will be temporary and is not expected to adversely affect law enforcement's ability to patrol the roads and highways.

4.11.4.3 Mitigation Measures

The following mitigation measures will reduce potential effects to a minimal level:

MM 4.11-1: The applicant shall develop and implement a fire safety plan for use during construction and operation. The applicant shall submit the plan, along with maps of the project site and access roads, to the KCFD for review and approval prior to the issuance of any building permit or grading permits. The fire safety plan shall contain notification procedures and emergency fire precautions including, but not limited to, the following:

a. All internal combustion engines, stationary and mobile, shall be equipped with spark arresters. Spark arresters shall be in good working order;

b. Trucks and cars with factory-installed (type) mufflers shall be used only on roads where the roadway is cleared of vegetation. These vehicle types shall maintain their factory-installed (type) muffler in good condition;

c. Fire rules shall be posted on the project bulletin board at the contractor's field office and areas visible to employees;

d. Equipment parking areas and small stationary engine sites shall be cleared of all extraneous flammable materials;

e. Personnel shall be trained in the practices of the fire safety plan relevant to their duties. Construction and maintenance personnel shall be trained and equipped to extinguish small fires in order to prevent them from growing into more serious threats; and

f. The applicant shall make an effort to restrict use of chainsaws, chippers, vegetation masticators, grinders, drill rigs, tractors, torches, and explosives to outside the official fire season. When the above tools are used, water tanks equipped with hoses, fire rakes, and axes shall be easily accessible to personnel.

MM 4.11-2: The applicant shall pay the County for impacts to countywide public protection, sheriff patrol and investigation, and fire services at a rate of $29.59 per 1,000 square feet of covered ground for the facility and related onsite structures for the entire covered area of the project. The total amount shall be divided by the number of years of operation and paid on a yearly basis. The annual amount shall be based on the square footage of solar site ground covered by April 30 of each year, if completed in phases. The amount shall be paid for each and all years of operation. The fee shall be paid to the Kern County auditor/controller by April 30 of each calendar year.

MM 4.11-3: Written verification of ownership of the project shall be submitted to the Kern County Planning and Community Department by April 15 of each calendar year. If the project is sold to a city, county, or utility company that pays assessed taxes that equal less than $1,000 per MW per year, than they shall pay those taxes plus an amount necessary to equal the equivalent of $1,000 per MW. The amount shall be paid for all years of operation. The fee shall be paid to the Kern County Auditor/Controller by April 30 of each calendar year.

4.11.4.4 Cumulative Effect

The cumulative effect area considered for public services is southwest Kern County. The sporadic agricultural and resource development of the Covered Lands, and the agricultural and resource development of the balance of southwest Kern County's resources have created no substantial public service effects in excess of existing public services (fire, sheriff) capabilities.

There is no readily available, documented, mitigated or unmitigated, predictive development in southwest Kern County which would create public services environmental consequences. The HCP Alternative, as mitigated, was determined to create no substantial public services-related environmental consequences. The HCP Alternative therefore creates no significant cumulative public services-related effects.

4.11.5 Reduced Permit Area Alternative

This alternative would provide for a reduction of the Permit Area from 5,784.3 acres to 3,682 acres by removing from the Project: Sites 4-S/4-M (652.5 acres), 6-S (320.9 acres), 7-S/7-M (481.2 acres), and 17-C (647.7 acres), 1,696 acres, 45% of the HCP Solar Sites area. The lands excluded from the Permit Area would likely remain vacant and would continue to be disked on a regular basis for weed control. If water became economically available, these lands would likely be converted to active agricultural production.

The methodology and database for analysis of this alternative are the same as those for the HCP Alternative. They will not, however, be repeated herein but will, rather, textually analyze any public services effects which would differ because of changes from the HCP Alternative.

4.11.5.1 Fire and Medical Aid Services; Sheriff Services

The total Solar Development Footprint of this Alternative is reduced from 3,798 acres to 1,696 acres, a reduction of 55%.

Since the primary need for fire/medical aid/sheriff services is directly related to the numbers of employees involved in their travel to and from the project area and the materials transport to the Area, construction of the Solar Site facilities, the environmental consequences will be proportionately reduced to 45% of those of the HCP Alternative.

The same compliance with County regulations, and implementation of the same mitigation measures, would be required for this alternative. As with the HCP Alternative, such compliance and mitigation results in the conclusion that the alternative creates no environmental consequences.

4.11.5.2 Cumulative Effect

The same analyses for the No Action Alternative and Proposed HCP Alternative apply to this alternative but with somewhat lesser strength: the reduction of the Permit Area creates less cumulative public services-related effects than the HCP Alternative.

4.11.6 Comparison of Alternatives

There would be no changes in public services required under the No Action Alternative. No mitigation measures would need implementation, and these resources were would not be affected.

Under the Proposed HCP Alternative and Reduced Permit Area Alternative, there would be an increase in demand for Fire/Medical and Sheriff services; however, with the implementation of mitigation measures, a minimal effect would occur.

Under the Reduced Permit Area Alternative, the potential effects on Fire/Medical and Sheriff services would be similar to the Proposed HCP alternative, but less. Potential effects would be mitigated to a minimal level.

A summary of the relative effects resulting from the proposed HCP Alternative and the Reduced Permit Alternative compared to the No Action Alternative is provided in Table 4.11-1. Comparisons are ranked at the project level and at the cumulative level having an overall effect that is more, less, or similar.

Table 4.11-1
Comparison of Alternatives to the No Action Alternative

Potential Effect	No Action	Proposed HCP	Reduced Permit Area
Fire and Medical Services	—	More	More
Sheriff Services	—	More	More
Cumulative Effect	—	More	More

4.12 TRAFFIC AND TRANSPORTATION

4.12.1 Overview

The potential traffic and transportation effects of the alternatives are described in this section and compared to existing conditions when the Notice of Intent was issued.

4.12.2 Methodology

The independent analysis in this section is based in part upon data from a Notice of Preparation and a certified EIR for the Maricopa Sun Solar Complex EIR (Kern County 2010) and upon data in Appendix H to that EIR which contained a Trip Generation memorandum. (See Chapter 8 References of this EIS for document identification and availability.)

The referenced Notice of Preparation for the EIR determined that, because of its project location and project-pertinent/project adjacent traffic and transportation facilities, the only applicable effect (environmental consequence) threshold of significance was:

(Will the project:)

- Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity on the street system (i.e., result in a substantial increase in either the number of vehicle trips, or the volume-to-capacity ratio on roads, or congestion at intersections)?

The reduced number of Solar Sites, and solar panels, in the Proposed Action analyzed in this EIS compared to the EIR-evaluated solar project make this Notice of Preparation threshold selection appropriate for independent HCP traffic and transportation evaluation.

4.12.3 No Action Alternative

This section summarizes the potential traffic/transportation issues and environmental consequences associated with the No Action Alternative. It assumes, as defined in Section 2.0 that the HCP would not be implemented, the proposed Incidental Take Permit (ITP) would not be issued, and the covered activities for the Maricopa Sun Solar complex would not occur. The 5,784.3 acres identified as the Permit Area would likely remain vacant, the 1,894.4 acres identified as Conservation Sites would not be permanently conserved, and the proposed Conservation Management Plan would not be implemented. Agricultural activities and oil well drilling might occur in some parts of the permit area.

There would be no change in existing land uses and related traffic loadings on the road (street or highway) facilities serving the Covered Lands and, therefore, no environmental consequences of this alternative.

4.12.3.1 Cumulative Effect

Since the alternative creates no direct or indirect environmental effects it has no cumulative traffic/transportation consequence.

4.12.4 Proposed HCP Alternative

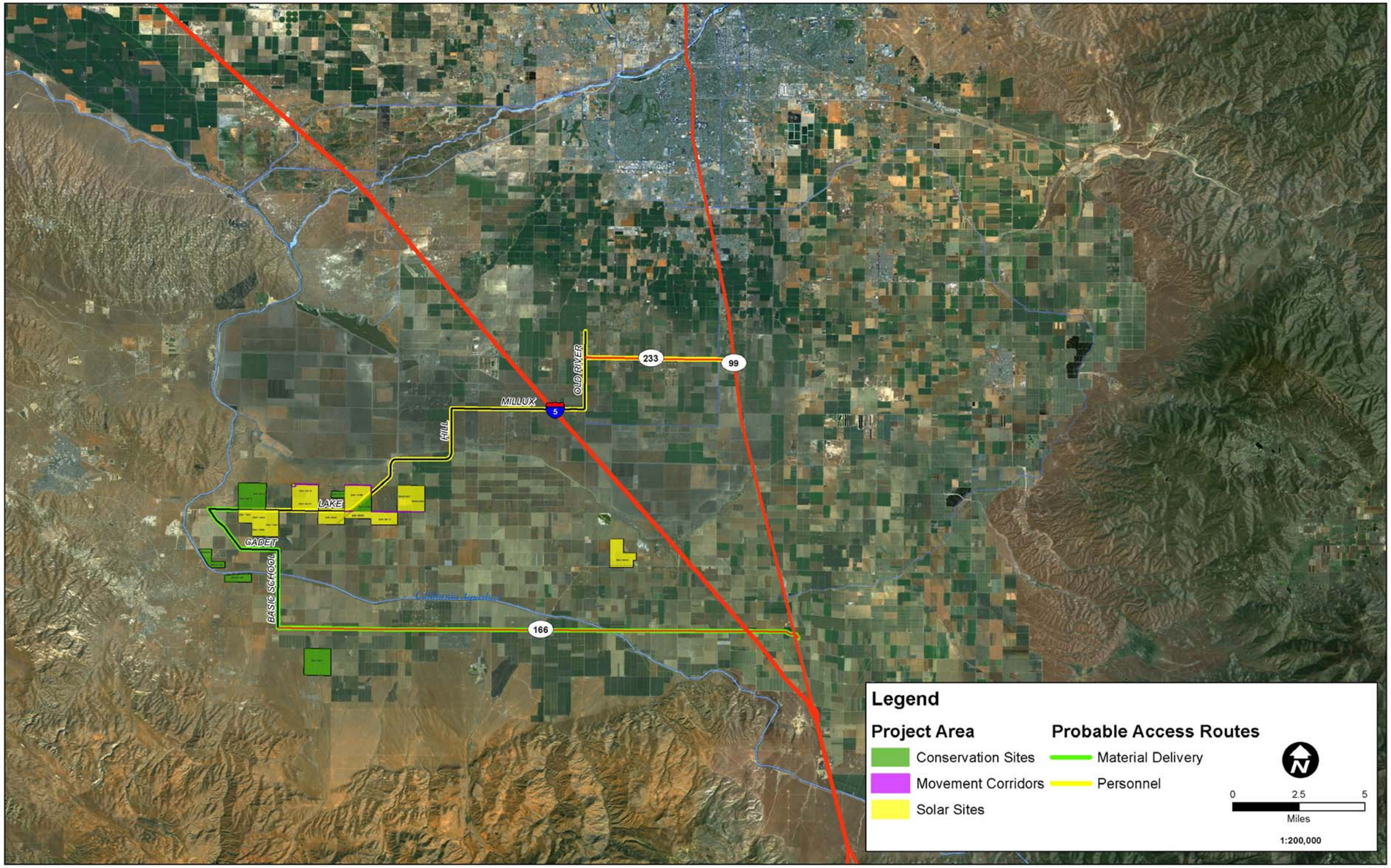
The Proposed Action is to develop and maintain a PV solar complex and an HCP for a Solar Complex for which Incidental Take Permit (ITP) coverage under the FESA is necessary. Activities included in the HCP (Covered Activities) allow for: (1) pre-construction, construction, operation and maintenance, and decommissioning activities within Solar Sites; (2) management and maintenance activities associated with Movement Corridors and Conservation Sites, including monitoring and reporting activities; and (3) activities associated with implementation of the conservation program specified in this HCP.

The establishment of conservation easements on Conservation Sites and the initiation of management actions on those sites will be phased to coincide with the development of Solar Sites.

Roadways in and around the Covers lands are described in Section 2.0 of this EIS. Figure 4.12-1 depicts the road and highway system serving the HCP Permit Area, highlighting likely access routes.

4.12.4.1 Construction and Decommissioning

It is anticipated that a 640-acre Solar Site (1 square mile) could be constructed over a 12 to 18 month period, with a peak construction workforce of 200 people. Construction would be expected to generally occur during the day, Monday through Friday. The development is expected to rely mostly on Kern County's skilled labor pool for its construction workforce and it is anticipated that construction workers would come from the city of Bakersfield.



Document Path: \\BK-SERVER-02\Projects\Projects\2009\090160.02\GIS\MXD\Revised\4.12-1 Maricopa EIS Roads.mxd

Quad Knopf

WORKERS AND MATERIALS ROUTES
MARICOPA SUN SOLAR LLC

Figure
4.12-1

This page intentionally left blank.

The primary construction materials delivery routes are anticipated to be I-5 and Interstate 99. Workforce traffic will originate from Bakersfield, northeast of the project site. Likely personnel travel routes are depicted on Figure 4.12-1 as are probable truck delivery routes.

Existing County and State roads serving the project construction areas (the proposed Solar Sites) are far below acceptable (LOS C) levels. Table 4.12-1's projected construction trips, based on the conservative assumption that all Solar Sites are being constructed at one time, estimates trip generation at such low rates that current LOS levels will be little affected.

Table 4.12-1
Peak Project-Level Construction Trip Generation

Time	Directional Distribution %		In	Out	Total Trips (per Square Mile)	Project-Level Trips (5.93 Square Miles)
	In	Out				
5:00 a.m. to 9:00 a.m.	52	11	114	24	138	818
2:00 p.m. to 6:00 p.m.	14	49	30	106	136	806
AM Peak Hour	52	11	28	6	34	202
PM Peak Hour	14	49	8	28	36	214

Decommissioning activities, and timespan, are estimated to occur over the same timespan and to occasion the same material quantity, transport and, most conservatively, the same personnel requirements as construction, thus, the same traffic-related environmental consequences.

The HCP will require approval of an amendment to the Circulation Element of the Kern County General Plan (GPA 5, Map 158 and GPA 1, Map 159) to eliminate future road reservations for midsection lines in Sections 19, 21, 23, 25, 26, 27, 29, and 30, T32S, R25E MDB&M and Section 19, T32S, R26E MDB&M. This would allow solar panels to be placed throughout the solar sites, and not require setbacks from road reservations. Elimination of the road reservations at the midsection lines will not result in any increase in the traffic load or capacities of the existing street system. The roadway reservations are currently undeveloped, and the designation of future roadways was intended as a placeholder until detailed development plans for a parcel or section of land were proposed.

In order to ensure that the Permit Area's access roads stay at existing structural/surfacing conditions, mitigation measures must be implemented. They will be required by the County and will reduce the effect of truck trips to a minimal level.

4.12.4.2 Mitigation Measures

Prior to the issuance of building or grading permits, the County of Kern will require the project operator to submit documentation of the following:

MM 4.12-1: Prior to the issuance of building or grading permits the project operator shall:

a. Submit engineering drawings of any proposed access road design for the review and approval of the Kern County Roads Department.

b. Obtain an encroachment permit from the Kern County Roads Department for applicable roads in the Kern County Road Maintenance System.

c. Enter into a secured agreement with Kern County to ensure that any County roads that are demonstrably damaged by project-related activities are promptly repaired and, if necessary, paved, slurry-sealed, or reconstructed as per requirements of the state and or Kern County.

d. Identify the roads to be used during construction, and be responsible to repair any damage to non-County maintained roads that may result from construction activities; submit to the Kern County Planning and Community Development Department a preconstruction video log and inspection of roadway conditions for those roads to be used during construction.

MM 4.12-2: Subsequent to completion of construction and to decommissioning, submit post-construction/post decommissioning video log and inspection reports to the County in DVD format. The County, in consultation with the HCP's engineer, shall determine the extent of remediation required, if any.

Given the HCP Alternative's limited construction and decommissioning traffic loadings on the roads and highways serving it, compliance with County regulations and implementation of the listed mitigation measures, the HCP Alternative will have no significant construction or decommissioning environmental consequences.

4.12.4.3 Operations

Solar module cleaning will require a total of 4,412 truck trips per year. This averages out to approximately 8 trips per day.

The proposed project will operate during daylight hours only, and therefore, it is assumed that peak traffic periods would correspond to the traditional peak hours from 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. Cleaning is expected to generally occur during the day, Monday through Friday. The water truck trips for cleaning are anticipated to be spread over the course of an eight-hour work day; this trip frequency poses no potential for traffic congestion on the area's lightly traveled roads. Additional operations-related trips (including maintenance trips) at the project site will be infrequent and minimal. Project operational traffic is anticipated to be local in nature. Based on the location of the available water wells proposed to provide water for panel

cleaning, the water trucks will travel approximately 5 miles between wells and the solar facilities.

4.12.4.4 Cumulative Effect

The area evaluated for traffic and transportation effects is southwest Kern County.

The sporadic agricultural development of the Covered Lands, the agricultural and resource development of the balance of southwest Kern County, and Statewide influences on traffic loadings on HCP-serving sections of State Route 99 and I-5, have created no significant traffic effects in excess of designed levels of service.

There is no readily available, documented, mitigated or unmitigated, predictive development in southwest Kern County which would create traffic-related environmental consequences for the County's road system serving the Project Area. Statewide development creating such traffic-related environmental consequences on State Routes 99 and I-5 is too speculative to include in this analysis.

The HCP Alternative, as mitigated, was determined to create no significant environmental consequences.

The HCP Alternative therefore creates no significant cumulative traffic-related environmental consequences.

4.12.5 Reduced Permit Area Alternative

This Alternative would provide for a reduction of Permit Area from 5,784.3 acres to 3,682 acres by removing from the Project: Sites 4-S/4-M (652.5 acres), 6-S (320.9 acres), 7-S/7-M (481.2 acres), and 17-C (647.7 acres), 1,696 acres, 45% of the HCP Solar Sites area. The lands excluded from the Permit Area would likely remain vacant and would continue to be disked on a regular basis for weed control. If water became available, these lands would likely be converted to active agricultural production.

The methodology and database for analysis of this Alternative are the same as those for the HCP Alternative. They will not, however, be repeated herein. This section will, rather, textually analyze any traffic effects which would differ because of changes from the HCP Alternative.

4.12.5.1 Construction and Decommissioning

The 55% reduction in Solar Sites occasioned by this Alternative would correspondingly reduce both the duration of and the estimated daily and hourly traffic volumes involved in implementation of this Alternative. These calculated reductions result from the conservative assumption of the traffic analysis for the HCP Alternative – that all Solar Sites are being constructed (and decommissioned) concurrently.

Construction loading effects on roads and highways would likewise be reduced by 55%.

4.12.5.2 Mitigation Measures

The same compliance with County regulations, and implementation of the same mitigation measures, would be required for this Alternative.

As with the HCP Alternative, such compliance and implementation coupled with existing minimal traffic volumes on roads and highways serving the Covered Lands and Permit Area, and the minimal daily and hourly traffic volumes generated by Reduced Permit Alternative construction and decommissioning, results in a conclusion that the Alternative creates no environmental consequences.

4.12.5.3 Operations

Anticipated personnel assignments for this alternative are the same as for the HCP Alternative; anticipated maintenance and panel-washing will predictably be 55% less. This alternative, like the HCP Alternative, will thus create no traffic-related environmental consequences.

4.12.5.4 Cumulative Effect

The same analyses described above for the No Action and Proposed HCP Alternative apply to this alternative but with somewhat lesser strength: the reduction of the Permit Area creates less cumulative traffic-related effects than the HCP Alternative.

Therefore, for the reasons described in Section 4.12.4.4, there are no significant traffic-related cumulative environmental consequences from the implementation of this alternative.

4.12.6 Comparison of Alternatives

There would be no changes in traffic or transportation required under the No Action Alternative. No mitigation measures would need implementation.

Under the Proposed HCP Alternative and Reduced Permit Area Alternative, there would be an increase in traffic associated with construction and decommissioning, but not an appreciable increase during operations.

A summary of the relative effects resulting from the proposed HCP Alternative and the Reduced Permit Alternative compared to the No Action Alternative is provided in Table 4.12-2. Comparisons are ranked at the project level and at the cumulative level having an overall effect that is more, less, or similar.

Table 4.12-2
Comparison of Alternatives to the No Action Alternative

Potential Effect	No Action	Proposed HCP	Reduced Permit Area
Construction and Decommissioning	—	More	More
Operations	—	More	More
Cumulative	—	More	More

This page intentionally left blank.

4.13 ENVIRONMENTAL JUSTICE

The analysis of environmental justice considers effects related to socioeconomics and health, and the potential effects of the alternatives on minority and/or low-income populations identified in the vicinity of the Covered Area. As discussed in Section 3.14, the Covered Area is considered concurrent with the Covered Lands with the exception of demographic data pertaining to socioeconomics and environmental justice, which are presented in the context of Kern County.

Environmental justice includes an analysis of four communities in the vicinity of the Covered Area, including unincorporated Maricopa, Taft Heights CDP, South Taft CPD, and the incorporated city of Taft.

4.13.1 Methodology

An overview of impacts to the general population was determined based on a review of resource impacts in Chapter 3 describing, for all alternatives, the nature of the impact, the significance level, the mitigation proposed, and the significance level of residual impacts.

This analysis considers the potential impacts of the Proposed Action on disproportionately minority and/or low-income populations identified in the vicinity of the Covered Area. These populations were compared to data for the "general population," which is a term used in the CEQ guidance (CEQ 1997). For this analysis, Kern County is used as the comparison population to determine whether effects are disproportionate.

As noted in the demographic data presented in Section 3.13.3.2, Table 3.13-4, Maricopa is the only the community to exceed County poverty rate levels. Maricopa has 12.7% more individuals and 7.7% more families under federal poverty levels than the general population, and therefore is identified as a low-income community for this analysis. The population in Taft Heights, South Taft as well as Taft city, and within Kern County as a whole, do not meet the environmental justice criteria for identifying a low-income population that may be affected by the proposed action.

According to Section 3.13.3.2, Table 3.13-2, which provides a breakdown of self-identified race and ethnicity for Kern County as a whole and the four neighboring communities, none of the four in the vicinity of the Covered Area meet the criteria as being a minority population.

4.13.2 Socioeconomics

The analysis of socioeconomics considered the potential effects of the proposed action on the generation of tax revenue (property and sales) and job creation. This analysis uses the following assumptions to determine a basis upon which to compare revenue, job creation and other benefits from the Proposed Action.

4.13.2.1 Job Creation

It is estimated that an estimated 200 workers per section, resulting in the creation of 2,800 construction jobs will result from the Proposed Action over the 8- to 10-year construction period. Although these are considered temporary jobs, it is anticipated that each phase of construction would last from 12 to 24 months, depending on the size of the specific facility. Kern County encourages solar developers to hire a minimum of 25% employees from the local labor force, and provides a list of available training programs and employment firms to assist in the local hiring effort.

4.13.2.2 Revenue and other Monetary Benefits

While it is difficult to quantify the revenue generated by the implementation of the Proposed Action, it is anticipated that the project would generate increased property taxes as a result of the cancellation of the Williamson Act land use contracts on the Covered Lands. Although only an estimate, it has been calculated that an additional $44,600 in potential annual property taxes would be paid on the non-contracted parcels. This equates to an estimated 1.3 million dollars on possible tax revenue that would be paid over the 30-year lifetime of the project.

The project is also required to pay fees to cover county-wide public protection based on the amount of ground covered by the proposed project. This fee is to be paid on an annual basis and would be used by the County to support the Sheriff's Office, County Fire Department and other public safety and protection services. This support would directly and/or indirectly benefit the residence of the four communities in the vicinity of the Covered Area

Other economic benefits within Kern County would include the money to local businesses, governments and households from the construction and operation over the lifetime of the project. While these cannot be quantified, it is expected that millions of dollars of revenue from payroll, from taxable equipment purchases, hospitality and service industry expenditures, etc., would directly and/or indirectly benefit the residents of the four communities in the vicinity of the Covered Area.

4.13.2.3 Health Benefits

After total build out of the project, it is anticipated that electricity generated will reduce the amount of electricity generated using fossil fuels, and therefore result in an offset of 558,794 metric tons of greenhouse gas emissions (GHG).

Additionally, air quality in the area would also improve with the implementation of the proposed project. While agricultural activities are not subject to San Joaquin Valley Air Pollution Control District (Air District) rules for criteria pollutants such as PM 10 or PM 2.5 (fugitive dust), the Proposed Action is subject to compliance with all other Air District rules and regulations. Thus, with the termination of disking and other agricultural activities, and the construction of the

proposed project, it is expected that fugitive dust and criteria pollutants emissions would decrease. The communities in close proximity to this project, as well as Kern County in general, would receive an immediate and direct benefit from the reduction in GHG, fugitive dust, and criteria pollutants.

4.13.3 No Action Alternative

This section summarizes the potential effects associated with the No Action Alternative. Under the No Action Alternative, the HCP would not be implemented, the proposed Incidental Take Permit (ITP) would not be issued, and the covered activities for the Maricopa Sun Solar complex would not occur. The 5,784.3 acres identified as the Solar Sites would likely remain vacant, the 1894.4 acres identified as Conservation Sites would not be permanently conserved, and the proposed Conservation Management Plan would not be implemented. Under this alternative, agricultural activities including grazing or disking, would likely continue.

Under the No Action Alternative, vacant agricultural lands would most likely remain fallow or vacant, while active agricultural lands would remain under production. Uses in and adjacent to the Covered Lands would remain as they are under the No Action Alternative.

As discussed above, Taft, South Taft and Taft Heights do not meet environmental justice criteria to be considered either a minority or low income population. Maricopa is considered a low income population. However, the No Action Alternative maintains the current environmental and socioeconomic conditions. Therefore, there would be no direct or indirect adverse environmental justice effects associated with No Action Alternative.

4.13.4 Proposed HCP Alternative

This Alternative considers activities associated with both the areas where PV solar facilities will be installed and the areas where Movement Corridors and Conservation Areas will be established in the 5,784.3-acre Covered Lands.

Ground disturbance activities associated with preparation and construction and similar activities within the PV facilities sites and the Conservation Areas have the potential to adversely affect communities in the vicinity of the Covered Area. Grubbing of vegetation, grading, paving, and installation of the solar facilities and associated infrastructure will require heavy equipment to grade the surface, or dig beneath the surface of the proposed Solar Sites. Ground-disturbing activities could be subject to project-specific approvals from federal, State, and local jurisdictions, which may require avoidance buffers and monitoring of activities.

As previously noted, much of the Covered Lands have been impacted by agricultural tilling or disking in the past. Agricultural activities are not regulated by the Air District, nor are they subject to local land use approvals or requirements. On the Conservation Areas, disking and

other ground disturbance will cease, allowing native vegetation and wildlife to become reestablished. Only in areas where reseeding is needed will the ground be disturbed. Under this Alternative, with the compliance of Air District rules and regulations, as well as other local requirements, project-generated emissions from short-term construction activities are anticipated to be minimal, and of less severity than those associated with unregulated agricultural activities. It is likely that communities in the vicinity of the Covered Area would benefit from improved, long-term air quality with the implementation of the Proposed Action.

Operation of the PV solar facilities and Conservation Areas is not likely to result in adverse effects on environmental justice populations. Long-term emissions would be minimal because there will be no emissions associated with the operation of the facility other than occasional maintenance that will require travel to the site. Otherwise, the site will be monitored from a remote location with no onsite emission emitting equipment.

As discussed above, Taft, South Taft and Taft Heights do not meet environmental justice criteria to be considered either a minority or low income population. Maricopa is considered a low income population. It is likely that with the reduction in unregulated agricultural activities (i.e., periodic disking, plowing, pesticide/herbicide application, etc) and compliance with all federal, State and local jurisdiction requirements incorporated into the Proposed Action, the community of Maricopa along with the other neighboring communities and Kern County in general, would benefit from improvements to air quality emissions of fugitive dust and greenhouse gases, and a reduced impact to biological resources. Additionally, socioeconomic benefits from job creation and monetary expenditures from the ongoing operations to local businesses, governments and households over the lifetime of the project is expected, and would directly and/or indirectly benefit the residents of the four communities in the vicinity of the Covered Area. This Alternative does not disproportionately impact on minority and low-income populations.

4.13.5 Reduced Permit Area Alternative

Under the Reduced Permit Area Alternative, the Permit Area would be reduced from 5,784.3 acres to 3,682 acres by removing from the Project: Sites 4-S/4-M (652.5 acres), 6-S (320.9 acres), 7-S/7-M (481.2 acres) and 17-C (647.7 acres). The lands excluded from the Permit Area would likely remain vacant and would continue to be disked on a regular basis for weed control, and would be similar to existing conditions. If water became available, these lands would likely be converted to active agricultural production.

The Reduced Permit Area Alternative is anticipated to have similar, but reduced impacts as the proposed HCP Alternative. With the reduction of 2,103.3 acres, ground disturbance activities associated with preparation and construction within the PV facilities sites would have a lessened potential to adversely affect environmental justice populations. However, as noted previously, compliance with federal, State and local rules and regulations, project-generated impacts from

PV facilities and Conservation Areas are anticipated to be minimal, and of less severity than those associated with unrestricted agricultural activities. Improved air quality and reduced impacts to biological resources over the life of the Reduced Permit Area Alternative would occur, but to a lesser extent with the possible continued agricultural activities on the excluded properties.

As discussed above, Taft, South Taft and Taft Heights do not meet environmental justice criteria to be considered either a minority or low income population. Maricopa is considered a low income population. Socioeconomic benefits, albeit at a reduced level, is still expected and would directly and/or indirectly benefit the residents of the four communities in the vicinity of the Covered Area. This Alternative does not disproportionately impact on minority and low-income populations

4.13.6 Cumulative Effects

The approach for analyzing cumulative effects is described in Section 4.0.3, Methods for Assessing Cumulative Effects.

The potential cumulative effects are analyzed in the context of the criteria discussed in Section 4.13.2, Methods, which includes each alternative's potential to cause adverse socioeconomic effects, including causing disproportionate effects on environmental justice populations As discussed above, the cumulative effects analysis area is concurrent with the Covered Lands, with the exception of demographic data, which are presented in the context of Kern County with respect to cumulative effects on socioeconomics or environmental justice.

As noted above, Kern County in general, as well as Taft, South Taft and Taft Heights, does not meet environmental justice criteria to be considered either a minority or low income population. Maricopa is considered a low income population. However, all four communities will be evaluated.

Cumulative effects related to environmental justice populations are indirect or secondary effects related to the future development of solar PV facilities that would be facilitated by the creation of a Conservation Area. Whether or not such effects would be substantial cumulatively is primarily dependent on the mitigation measures put in place by other federal, local, and State authorities pursuant to their project approval process.

4.13.6.1 Socioeconomic Effects and Environmental Justice

Under the No Action Alternative, the existing land uses and environmental conditions associated with each alternative regarding the PV solar facilities sites and the Conservation Areas would essentially maintain the current socioeconomic conditions in the Covered Area. This would result in no socioeconomic benefits from job creation and monetary expenditures, nor would any

health benefits associated with the proposed project be expected. Because the current uses are anticipated to continue, no cumulative adverse effects are expected. Therefore, there would be no direct or indirect adverse cumulative environmental justice effects associated with No Action Alternative.

Both the Proposed HCP Alternative and the Reduced Permit Area are expected to result in beneficial economic effects proportional to the extent of the proposed development. Economic benefits such as job creation, increases in monetary expenditures from construction, as well as the ongoing operations to local businesses, governments and households over the lifetime of the project is expected. These factors would directly and/or indirectly benefit the residents of Kern County as well as the four communities in the vicinity of the Covered Area. In addition, these communities, as well as Kern County, would receive positive health benefits from improvements to air quality emissions of fugitive dust and greenhouse gases, and a reduced impact to biological resources. Other projects in the region would similarly be expected to contribute in a meaning and positive way, and would result in cumulative beneficial economic and health benefits related to environmental justice populations.

The proposed action alternatives are therefore anticipated to have beneficial cumulative socioeconomic and health effects when considered with the other projects, and would result in a positive, cumulative contribution to the socioeconomic advantages realized by low-income and minority populations, as well as Kern County.

5.0 ADDITIONAL TOPICS REQUIRED BY NEPA

5.1 SUBSTANTIAL IRREVERSIBLE CHANGES TO THE ENVIRONMENT RESULTING FROM THE PROPOSED HCP

In accordance with NEPA, Section 102 (42 USC 4332), a DEIS must explain which environmental effects of the Proposed Action are irreversible or would result in an irretrievable commitment of resources, such as consumption of fossil fuels.

The Proposed Action would result in a minor irretrievable commitment of groundwater for routine panel cleaning and fossil fuel to construct, operate, decommission, and implement protection measures outlined in Chapter 2.0. Therefore, an irreversible commitment of nonrenewable resources would occur as a result of long term project operations. However, assuming that those commitments occur in accordance with the adopted goals, policies and implementation measures of the Kern County General Plan, as a matter of public policy, those commitments have been determined to be acceptable. Because solar equipment only has a lifespan of up to 25 years, at the end of the project operation term, the project will be decommissioned and deconstructed. As identified in Chapter 2.0, project related structures, access roads, solar facilities, etc. will be removed (except habitat enhancements, which will be preserved) and the land will be restored to conditions equivalent or better than existing conditions. Therefore, the environmental effects of the Proposed Action are reversible and the Proposed Action would not result in a use of irretrievable resources.

5.2 RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

In accordance with NEPA, Section 102 (42 USC 4332), a DEIS must include a discussion of the relationship between the short-term uses of the environment and the maintenance and enhancement of long-term productivity. The Proposed Action is designed to ensure that the long-term preservation and enhancement provided through the Conservation Program (including conservation easements, management plans, habitat enhancement and take minimization measures) would be in place in advance of existing habitat conversion and will continue after project decommissioning. This will be accomplished through the dedication of conservation easements.

The Proposed Action would protect and restore the natural environment in order to foster increases in the populations of the Covered Species.

5.3 SUBSTANTIAL ADVERSE EFFECTS THAT CANNOT BE AVOIDED

The Proposed Action or alternatives would not contribute to cumulative effects in the study area associated with Aesthetics, Agriculture, Cultural Resources, Geology/Soils, Hazards/Hazardous Materials, Land Use/Planning, Mineral Resources, Public Services, Transportation/Traffic, or Environmental Justice.

Future development covered by the Proposed Action or the Reduced Permit Area Alternative would result in substantial cumulative effects associated with Air Quality and Biological Resources. Even with the incorporation of feasible mitigation measures, impacts would remain substantial.

5.4 GROWTH-INDUCING EFFECTS

NEPA requires that an EIS address the indirect effects of a proposed action. Indirect effects may include "growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems" (40 CFR 1500 (1508.8(b)). Growth-inducing effects are indirect effects of a Federal action "which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable" (40 CFR 1500 (1508.8(b)). Direct growth-inducing effects occur if a Federal action would foster population growth, including the construction of housing; lead to urbanization of land in a remote area; or lead to substantial economic expansion or growth. Indirect growth inducement may occur where the Federal action removes impediments to growth in an area such as one with a lack of infrastructure. Examples of growth-inducing projects include construction of a road or wastewater treatment facilities.

Growth inducement can be a result of new development that requires an increase in employment, removes barriers to development, or provides resources that lead to secondary growth. With respect to employment, the Proposed Action would not induce substantial growth because it would temporarily employ a number of individuals whom are expected to be based in the nearby areas in and around Bakersfield. Because construction for each site would be temporary over a relatively short period, and overall buildout would extend over a long period of time, it is not likely that construction activities would require substantial numbers of people to relocate residence to Kern County. Therefore, this project would not result in a large increase in employment that would substantially induce growth.

Although the Proposed Action would contribute to energy supply, which supports growth, the development of power infrastructure is a response to increased market demand and is not a factor that induces new growth. Kern County planning documents already permit and anticipate a certain level of growth in the area of the Proposed Action and in the state as a whole, along with

attendant growth in energy demand. It is this anticipated growth that drives energy-production projects, not vice versa.

The project would supply energy to accommodate and support existing demand and projected growth, but it would not foster any new growth. Therefore, any link between the Proposed Action and growth in Kern County would be speculative.

5.5 ENVIRONMENTALLY PREFERABLE ALTERNATIVE

In addition to the Proposed Action, two alternatives were considered: The Reduced Permit Area Alternative and the No Action Alternative.

Under the Reduced Permit Area Alternative, the Permit Area would be reduced from 5,784.3 acres to 3,682 acres by removing from the Project: Sites 4-S/4-M (652.5 acres), 6-S (320.9 acres), 7-S/7-M (481.2 acres) and 17-C (647.7 acres).

The No Action Alternative assumes that the HCP would not be implemented, the proposed Incidental Take Permit (ITP) would not be issued, and the Covered Activities for the Maricopa Sun Solar complex would not occur. The 5,784.3 acres identified as the Permit Area would likely remain undeveloped, the 1,894.4 acres identified as Conservation Sites would not be permanently conserved, and the proposed Conservation Management Plan would not be implemented.

In comparison, the No Action Alternative has the least amount of environmental effects (see Table 5-1). The Proposed Action and the Reduced Permit Area Alternative have similar effects, but because of the reduction in the amount of land, the Reduced Permit Area Alternative has less environmental effects than the Proposed Action. However, the Proposed Action is the preferred alternative because it provides the greatest amount of Conservation Site land and therefore has the most beneficial effect on biological resources as compared to the No Action Alternative and the Reduced Permit Area Alternative.

Table 5-1
Overall Summary Comparing Environmental Effects of the Alternatives

Topic	Proposed Action / Preferred Alternative	Reduced Permit Area Alternative	No Action Alternative
Aesthetics / Visual Resources	No substantial adverse effects, either individually or cumulatively.	*Less than the Proposed Action.* No substantial adverse effects, either individually or cumulatively.	*Less than the Proposed Action and Reduced Permit Alternative.* No substantial adverse effects, either individually or cumulatively.
Agriculture	No substantial adverse effects, either individually or cumulatively.	*Less than the Proposed Action.* No substantial adverse effects, either individually or cumulatively.	*Less than the Proposed Action and Reduced Permit Alternative.* No substantial adverse effects, either individually or cumulatively.
Air Quality and Greenhouse Gas	Unavoidable substantial adverse effects (cumulative only).	*Less than the Proposed Action.* Unavoidable substantial adverse effects (cumulative only).	*Less than the Proposed Action and Reduced Permit Alternative.* No substantial adverse effects, either individually or cumulatively.
Biological Resources	Unavoidable substantial adverse effects (cumulative only).	*Less than the Proposed Action.* Unavoidable substantial adverse effects (cumulative only).	*Less than the Proposed Action and Reduced Permit Alternative.* No substantial adverse effects, either individually or cumulatively.
Cultural Resources	No substantial adverse effects, either individually or cumulatively.	*Less than the Proposed Action.* No substantial adverse effects, either individually or cumulatively.	*Less than the Proposed Action and Reduced Permit Alternative.* No substantial adverse effects, either individually or cumulatively.
Hazards and Hazardous Materials	No substantial adverse effects, either individually or cumulatively.	*Less than the Proposed Action.* No substantial adverse effects, either individually or cumulatively.	*Less than the Proposed Action and Reduced Permit Alternative.* No substantial adverse effects, either individually or cumulatively.
Hydrology and Water Resources	No substantial adverse effects, either individually or cumulatively.	*Less than the Proposed Action.* No substantial adverse effects, either individually or cumulatively.	*Less than the Proposed Action and Reduced Permit Alternative.* No substantial adverse effects, either individually or cumulatively.

Topic	Proposed Action / Preferred Alternative	Reduced Permit Area Alternative	No Action Alternative
Land Use and Planning	No substantial adverse effects, either individually or cumulatively.	*Less than the Proposed Action.* No substantial adverse effects, either individually or cumulatively.	*Less than the Proposed Action and Reduced Permit Alternative.* No substantial adverse effects, either individually or cumulatively.
Mineral Resources	No substantial adverse effects, either individually or cumulatively.	*Less than the Proposed Action.* No substantial adverse effects, either individually or cumulatively.	*Less than the Proposed Action and Reduced Permit Alternative.* No substantial adverse effects, either individually or cumulatively.
Public Services	No substantial adverse effects, either individually or cumulatively.	*Less than the Proposed Action.* No substantial adverse effects, either individually or cumulatively.	*Less than the Proposed Action and Reduced Permit Alternative.* No substantial adverse effects, either individually or cumulatively.
Traffic and Transportation	No substantial adverse effects, either individually or cumulatively.	*Less than the Proposed Action.* No substantial adverse effects, either individually or cumulatively.	*Less than the Proposed Action and Reduced Permit Alternative.* No substantial adverse effects, either individually or cumulatively.
Environmental Justice	No substantial adverse effects, either individually or cumulatively.	*Less than the Proposed Action.* No substantial adverse effects, either individually or cumulatively.	*Less than the Proposed Action and Reduced Permit Alternative.* No substantial adverse effects, either individually or cumulatively.

6.0 LIST OF AGENCIES AND ORGANIZATIONS CONSULTED

California Department of Conservation

California Department of Fish and Wildlife

County of Kern

Kern Council of Governments

Native American Heritage Commission

San Joaquin Valley Air Pollution Control District

Southern San Joaquin Valley Information

United States Department of Agriculture

United States Fish and Wildlife Service

7.0 LIST OF PREPARERS

7.1 UNITED STATES FISH AND WILDLIFE SERVICE

Mike Thomas – Chief, Conservation Planning Branch, Endangered Species Division

Sheila Larsen – Analyst, Conservation Planning Branch, Endangered Species Division

7.2 QUAD KNOPF, INC.

Randy Chafin, AICP – Project Manager

Laura Hall – Environmental Analyst

Ginger White, AICP – Environmental Analyst

Harry Tow, P.E., AICP – Environmental Analyst

Tyler Schade – Biologist, Environmental Analyst

Andy Glass – Biologist, Environmental Analyst

Bud Rice – GIS Specialist

Travis Crawford, AICP – Quality Assurance/Quality Control

Courtney Lee – Project Administrator/Document Production

Wendy Erickson – Project Administrator/Document Production

Vanessa Williams – Project Administrator/Document Production

7.3 TKM CONSULTING, INC.

Kathy Wood – Principal – Peer Review

7.4 JAYMIE BRAUER, ENVIRONMENTAL PLANNING SERVICES

Jaymie Brauer – Owner

8.0 REFERENCES

8.1 PRINTED

AECOM. 2013. Attachment DR 1, pile driver noise analysis. June 2013. 3 October 2013 <http://www.energy.ca.gov/sitingcases/blythe_solar/pv_amendment/20130617_attachments_DR_set_01/Attachment_DR_01.pdf>.

___. 2010b. Maricopa Sun, LLC Solar Project. Biological Assessment.

___. 2010a. Delineation of Wetlands and Waters of the United States, Maricopa Sun Solar Project, Kern County, California..

___. 2012. 1-hour extreme ozone attainment demonstration plan. 11 December <http://www.valleyair.org/Air_Quality_Plans/AQ_plans_Ozone_Final.htm>.

___. 2012. Evaluation of the Blunt-Nosed Leopard Lizard, Maricopa West Solar Project, January 2012.

___. 2012. National Wetlands Inventory (NWI) Map. 2012. http://www.fws.gov/wetlands/data/index.html

___. 2013. *Federal Endangered and Threatened Species List*. Sacramento Fish and Wildlife Office, Sacramento, California.

California Air Resources Board and American Lung Association of California. 2007. Recent research findings: health effects of particular matter and ozone air pollution. 16 August 2013 <http://www.arb.ca.gov/research/health/fs/PM-03fs.pdf>.

California Air Resources Board, 2010. 2010. State and national ambient air quality standards. 18 November 2010 < http://www.fraqmd.org/aaqs.htm>.

California Air Resources Board. 2009. Top 4 summary. 1 October 2013 <http://www.arb.ca.gov/adam/php_files/aqdphp/topfour1.php>.

California Air Resources Board. 2012. Cap-and-Trade regulation instructional guidance, chapter2: is my company subject to the cap-and-trade regulation? September 2012.

___. 2013. Mobile source emission inventory—categories. 30 September 2013 < http://www.arb.ca.gov/msei/categories.htm>.

California Department of Conservation, Farmland Mapping & Monitoring Program. August 2013. http://www.conservation.ca.gov/dlrp/fmmp/Pages/Index.aspx.

California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) Online Mapping System. Kern County Oil Fields. August 2013. http://conservation.ca.gov/doms/doms-app.html.

California Department of Conservation. 2013. Oil gas & geothermal-frequently asked questions. 3 October 2013 <http://www.conservation.ca.gov/dog/faqs/Pages/Index.aspx#how_are_wells_plugged>.

California Department of Finance. 2011. http://www.dof.ca.gov/research/demographic/state_census_data_center/census_2010/#SF

California Department of Fish and Wildlife. 2013. California Natural Diversity Database RareFind 4. California Department of Fish and Wildlife. Sacramento, CA

California Department of Public Health. Epidemiologic summaries of selected general communicable diseases in California, 2001-2008: surveillance and statistics section infectious diseases branch division of communicable disease control center for infectious diseases California Department of Public Health. October 2011. 17 December 2012 <http://www.cdph.ca.gov/programs/sss/Documents/Epi-Summaries-CA-2001-2008-083111.pdf#page=17>.

California Department of Transportation. 2009. Traffic Volumes for Interstate 5, SR-119, -33, -66. 10 March 2010 < http://trafficcounts. dot.ca.gov/2009all/2009TrafficVolumes.htm>.

California Department of Water Resources. 2003. California's Groundwater Bulletin 118 – Update 2003. Sacramento, CA. August 2013. http://www.water.ca.gov/groundwater/bulletin118/update2003.cfm.

California Employment Development Department (2012) http://www.labormarketinfo.edd.ca.gov/Labor_Force_Unemployment_Data_for_Cities_and_Census_Areas.html

California Native Plant Society, 2012. Inventory of Rare and Endangered Plants (online edition v7-07b). California Native Plant Society. Sacramento, CA. http://www.cnps.org/inventory.

California Native Plant Society (CNPS). 2013. Inventory of Rare and Endangered Plants. California Native Plant Society. Sacramento, CA. http://www.cnps.org/inventory.

California Office of Historic Preservation. August 2013. http://ohp.parks.ca.gov/ListedResources/?view=county&criteria=15

Centers for Disease Control and Prevention. 2012. Symptoms of Coccidioidomycosis (Valley Tever). 12 December 2012. <http://www.cdc.gov/fungal/coccidioidomycosis/symptoms.html>.

Central Valley Regional Water Quality Control Board. 2004. Water Quality Control Plan for the Tulare Lake Basin, Second Edition. Final. Sacramento, CA. Amended 2004.

_____. 2004. Surface Water Ambient Monitoring Program Tulare Lake Basin Annual Report: Fiscal Years 2002/2003 and 2003/2004. August 2013. http://www.swrcb.ca.gov/rwqcb5//water_issues/swamp/water_quality_reports/tularelakebasin_annrpt_0204_fact.pdf

Cowardin, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States.* USDI Fish and Wildlife Service, Washington D.C. Office of Biological Services.

Endangered Species Recovery Program (ESRP). 2006. A synthesis of restoration research conducted near Tranquillity, California. Central Valley Project Improvement Act , Land Retirement Demonstration Project, 57 pp.

Environmental Justice Guidance Under the National Environmental Policy Act (1997)

Executive Office of the President. 2013. The President's climate action plan. June 2013. 3 September 2013 <http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf>.

Garner, D. K., Thao, Y. Vu, M. Cegielski, and G. Stewart. 2012. Kern County communitywide greenhouse gas emission inventory 2005 baseline year-2020 forecast.

___. 1996. Habitat Conservation Planning and Incident Take Permit Processing Handbook. July 19, 2011 http://www.fws.gov/endangered/esa-library/pdf/HCPBKTOC.PDF

Germano, D. J., G. B. Rathbun, and L. R. Saslaw. 2012. Effect of grazing and Invasive grasses on desert vertebrates in California. Journal of Wildlife Management 76(4): 670-682.

ICF International, Inc. 2010. Draft Delineation of Wetlands and Waters of the United States, Maricopa Solar Sun Project. August.

___. Natural Resources Conservation Service, 2009. Soil survey of Kern County, California, southwest part. http://soils.usda.gov/survey/printed_sureys.

Kern County. 2010. Draft Environmental Impact Report: SCH# 2010031034, Volume 1, Chapters 1 through 11, Maricopa Sun Solar Complex Project, Maricopa Sun, LLC. November 2010.

Kern County. 2010. First Public Draft, Kern County Valley Floor Habitat Conservation Plan, December 2006.

Kern County. 2004. Kern County General Plan. Adopted June 15. Bakersfield, California. Approved June 15.

Kern County General Plan - Land Use, Open Space and Conservation Element. 2009.

Kern County. 2009. Kern County Zoning Ordinance. August 2013. http://www.co.kern.ca.us/planning/pdfs/KCZOMar09.pdf

Kern County Public Health Services Department. 2012. Kern County Coccidiodomycosis update. 12 December 2012 <http://www.kernpublichealth.com/pdfs/divisionOfHealthAssessment/2011Update2.pdf>.

Kern County Zoning Ordinance. July 2012

Natural Resources Conservation Service. 2002. Soils. 30 September 2013 <http://archive.is/prxR1>.

O'Farrell, M. J., and C. E. Uptain. 1985. LaJet solar energy project – Phase I impact of construction and initial operation on Stephen's kangaroo rat (*Dipodomys stephensi*), 12 pp.

Quad Knopf, 2009. Preliminary Biological Evaluation of Section 13, A Potential Conservation Area for the Maricopa Sun Solar Project.

___. 2010a. Maricopa Sun West Solar Complex, LLC. Biological Assessment

___. 2010b. *Supplemental Biological Assessment. Analysis of Impacts along Power Conveyance Facilities. Maricopa Sun, LLC Solar Project.* Prepared for Maricopa Orchards, August.

___. 2010c. Delineation of Wetlands and Waters of the United States, Maricopa Sun Solar Project, Kern County, California.

___. 2010d. Draft Delineation of Wetlands and Waters of the United States: Maricopa Sun Solar Project, Kern County, California, August 2010.

___. 2010e. Maricopa Sun, LLC Solar Project. Blunt-nosed Leopard Lizard Supplemental Report.

___. 2010f. Conservation Plan: Maricopa Sun, LLC Solar Project.

___. 2012. Evaluation of the Blunt-Nosed Leopard Lizard, Maricopa West Solar Project, January 2012

___. 2013. Evaluation of the Blunt-Nosed Leopard Lizard, Maricopa West Solar Project, January 2012

___. 2013. Habitat Conservation Plan, Maricopa Sun Solar Complex Project Maricopa Sun, LLC, Kern County, California, June 2013

Pacific Legacy, Inc. 2010. Cultural Resources Inventory of the Maricopa Solar Project, Kern County, California. Final. Santa Cruz, Ca. Prepared for Quad Knopf, Inc.

Rathbun, G.B.E. Cypher, S. Fitton, D.J. Germano, and L.R. Saslaw. 1997. Effects of Livestock Grazing on a Community of Species at Risk of Extinction in the San Joaquin Valley, California. Annual Report, December 5, 1997.

San Joaquin Valley Air Pollution Control District, 2002. Guide for assessing and mitigation air quality impacts. January 10, 2002 revision, Adopted August 20, 1998.

San Joaquin Valley Air Pollution Control District. 2011. 16 August 2013 <http://www.valleyair.org/aqinfo/attainment.htm>.

San Joaquin Valley Air Pollution Control District. 2001. Rule 8011, general requirements (adopted November 15, 2001).

Solar Energy Industries Association, 2011, Issues and Policies, Water Use Management.

South Coast Air Management District. 2008. URBEMIS 2007 (version 9.2.4). 30 September 2013 < http://www.aqmd.gov/ceqa/urbemis.html>.

Uniform Building Code. 1997. 26 September 2013. < http://www.ivi intl.com/pdfs/IVI_seismic_map_zones.pdf>.

United States Army Corps of Engineers (USACOE). 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment station, Vicksburg, MS.

United States Census Bureau 2012. http://www.census.gov/main/www/cen2000.html

United States Department of Agriculture. Forest Service. 2008. Species Accounts: Animals http://www.fs.fed.us/r5/scfpr/projects/lmp/read.htm.

United States Department of Agriculture. Natural Resources Conservation Service. 2009. Soil survey of Kern County, California, southwest part. http://soils.usda.gov/survey/ printed_ surveys/.

United States Environmental Protection Agency. 2011. Overview of greenhouse gases. 16 August 2013 < http://www.epa.gov/climatechange/ghgemissions/gases.html>.

United States Environmental Protection Agency. 2013a. 1 October 2013 <http://www2.epa.gov/webguide/pdf-files>.

___. 2013b. 2013 proposed carbon pollution standard for new power plants. 2 October 2013 <http://www2.epa.gov/carbon-pollution-standards/2013-proposed-carbon-pollution-standard-new-power-plants>.

United States Fish and Wildlife Service. 2013. Federal Endangered and Threatened Species List

United States Fish and Wildlife Service. 2012. Supplemental Draft Environmental Impact Statement; Tehachapi Uplands Multiple Species Habitat Conservation Plan.

United States Fish and Wildlife Service. 1998. *Recovery Plan for the Upland Species of the San Joaquin Valley, California.* United States Fish and Wildlife Service, Portland, Oregon, 319 pages.

United States Fish and Wildlife Service. 1996. Habitat Conservation Planning and Incident Take Permit Processing Handbook. July 19, 2011 <http://www.fws.gov/endangered/esa-library/pdf/ HCPBKTOC.PDF>.

University of Arizona. 2010. Valley Fever (Coccideoidomycosis). 2 October 2013 <https://www.vfce.arizona.edu/valleyfeverinpeople/faqs.aspx>.

University of Idaho. 2013. The twelve soil orders, soil taxonomy. 2 October 2013 <http://www.cals.uidaho.edu/soilorders/aridisols.htm>.

University of Wisconsin, Institute for Research on Poverty (2012) http://www.irp.wisc.edu/faqs/faq1.htm).

Wheeler Ridge – Maricopa Water Storage District. 26 August, 2013. http://www.wrmwsd.com.

Williams, D.F. 1986. Mammalian Species of Special Concern in California. California Department of Fish and Game Wild. Manag. Admin. Div. Rep. 86-1, Sacramento, CA., 112 pp.

8.2 PERSONAL COMMUNICATIONS

Curtis Uptain, Pers. Comm with California Valley Solar

Curtis Uptain, Pers. Comm with Howard Clark, Biologist with HT Harvey and Associates

9.0 ACRONYMS

AADT	annual average daily traffic
AB 32	Assembly Bill 32
AC	alternating current
ACOE, Corps	Unites States Army Corps of Engineers
ACWA	Association of California Water Agencies
ALUCP	Airport Land Use Compatibility Plan
AMSL	above mean sea level
APN	assessor parcel number
BLM	Bureau of Land Management
BMP	best management practice
BP	before present
BPS	best performance standards
BVARA	Buena Vista Aquatic Recreation Area
CAAQS	California Ambient Air Quality Standard
CalARP	California Accidental Release Prevention Program
CalEPA	California Environmental Protection Agency
CalOSHA	California Occupational Safety and Health Administration
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act
CCTS	Central California Taxonomic System

CDF	California Department of Forestry & Fire Protection
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFC	chlorofluorocarbons
CFR	Code of Federal Regulations
CGS	California Geological Survey
CH4	methane
CHP	California Highway Patrol
CIP	Capital Improvement Plan
CMP	Congestion Management Plan
CNDDB	California Natural Diversity Data Base
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO2	carbon dioxide
CPUC	California Public Utilities Commission
CRHR	California Register of Historic Resources
CSC	State of California Species of Concern
CUP	Conditional Use Permit

CUPA	Certified Unified Program Agency
CVC	California Vehicle Code
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
dBA	decibel A-weighting
DBCP	dibromchloropropane
DHS	Department of Health Services
DOC	California Department of Conservation
DOGGR	California Division of Oil, Gas, and Geothermal Resources
DOI	Department of the Interior
DPM	diesel particulate matter
DPR	Department of Pesticide Regulation
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EA	Environmental Assessment
EDB	ethylene dibromide
EDD	Employment Development Department
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EJ	Environmental Justice
EO	Executive Order
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration

FAQ	frequently asked questions
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FMMP	Farmland Mapping and Monitoring Program
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
FTA	Federal Transit Administration
GAMAQI	Guide for Assessing and Mitigating Air Quality Impacts
GHG	greenhouse gas
HCD	California Housing and Community Development
HCP	Habitat Conservation Plan
HFCs	hydrofluorocarbons
HMBPs	Hazardous Materials Business Plans
HSWA	Hazardous and Solid Waste Act
I-5	Interstate 5
ITA	Indian Trust Assets
ITP	Incidental Take Permit
KCFD	Kern County Fire Department
KCOG	Kern Council of Governments
kV	kilovolts
LIM	Land Inventory Monitoring
LOS	Level of Service

MBTA	Migratory Bird Treaty Act
mg/L	milligrams per liter
MMI	modified mercalli intensity
mph	miles per hour
MS4s	Municipal Separate Storm Sewer System
MSDS	Material Safety Data Sheets
MW	megawatt
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NFIA	National Flood Insurance Administration
NHPA	National Historic Preservation Act
NO2	nitrogen dioxide
NOA	Notice of Availability
NOI	Notice of Intent
NOx	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPPA	California's Native Plant Protection Act
NPR	Naval Petroleum Reserve
NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
NSB	National Scenic Byways
NWI	National Wetlands Inventory
OEHHA	Office of Environmental Health Hazard Assessment

OES	California Office of Emergency Services
OHW	ordinary high water
OSHA	Occupational Safety and Health Administration
PFCs	perfluorocarbons
PG&E	Pacific Gas and Electric Company
PM10	particulate matter 10 microns or smaller
PM2.5	particulate matter 2.5 microns or smaller
ppm	parts per million
ppt	parts per trillion
PRC	Public Resources Code
PRD	Parks and Recreation Department
PV	photovoltaic
RARE	rare, threatened or endangered species
RCRA	Resource Conservation and Recovery Act
RHNA	Regional Housing Needs Assessment
ROD	Record of Decision
ROG	reactive organic gases
RPS	Renewable Portfolio Standard
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Boards
SB	Senate Bill
SIP	State Implementation Plan
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District

SKIC	South Kern Industrial Center
SMARA	Surface Mining and Reclamation Act
SPCC	Spill Prevention, Control, and Countermeasure
SR 119	State Route 119
SR 166	State Route 166
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TSCA	Toxic Substances Control Act
TDS	Total Dissolved Solids
UBC	Uniform Building Code
USACOE	U.S. Army Corps of Engineers
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
USFWS or Service	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
VFHCP	Valley Floor Habitat Conservation Plan
WILD	Wildlife Habitat
WDRs	waste discharge requirements
WOUS	Waters of the United States

Engineering / Surveying

Planning

Landscape Architecture

Biology

Land Development

5110 West Cypress Avenue
Visalia, California 93277
(559) 733-0440

6051 North Fresno Street, Suite 200
Fresno, California 93710
(559) 449-2400

3300 Douglas Boulevard, Suite 310
Roseville, California 95661
(916) 784-7823

5080 California Avenue, Suite 220
Bakersfield, California 93309
(661) 616-2600

Quad Knopf