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Bird and Bat Conservation Strategy
Genesis Solar Energy Project -
Riverside County, California

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LIST OF ACRONYMS

ACC	air-cooled condenser
ACEC	Areas of Critical Environmental Concern
APLIC	Avian and Power Line Interaction Committee
APP	Avian Protection Plan
BBCM	Bird and Bat Conservation Measure
BBCS	Bird and Bat Conservation Strategy
BEPTL	Blythe Energy Project Transmission Line
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
CBOC	California Burrowing Owl Consortium
CDFG	California Department of Fish and Game (also CDFW)
CDFW	California Department of Fish and Wildlife (also CDFG)
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CI	confidence interval
cm	Centimeter
CPM	Compliance Project Manager
CRS	Colorado River Substation
CV	coefficient of variation
CVSR	California Valley Solar Ranch
DB	Designated Biologist
Desert Sunlight	Desert Sunlight Solar Plant
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FEIS	Final Environmental Impact Statement
ft	Foot
Gen tie-line	Generation tie-line, transmission line
Genesis	Genesis Solar LLC
GIS	geographic information system
GPS	Global Positioning System
ha	Hectare
HTF	heat transfer fluid
I-10	Interstate 10
in	Inch
km	Kilometer
kph	kilometers per hour
kV	Kilovolt
m	Meter
MBTA	Migratory Bird Treaty Act
mph	miles per hour
MW	Megawatt
NEPA	National Environmental Policy Act
Plan	post-construction monitoring plan for the Project
Project	Genesis Solar Energy Project
PV	Photovoltaic
REAT	Renewable Energy Action Team
SCA	solar collector assembly
solar trough	mirrored parabolic troughs
SPUT	Special Utility Permit
SSG	solar steam generators
TAG	Technical Advisory Group
trough	solar trough
US or U.S.	United States

USC	United States Code
USFWS	United States Fish and Wildlife Service
WEAP	Worker Environmental Awareness Program
WRRS	Wildlife Response and Reporting System

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1.0 INTRODUCTION

Genesis Solar LLC (Genesis) has constructed and operates the Genesis Solar Energy Project (Project), located 25 miles (40 kilometers [km]) west of Blythe, in Riverside County, California (Figure 1). The Project is a 250-megawatt (MW) solar thermal power generating facility that consists collectively of two power blocks, power generating equipment (solar collector assemblies [SCAs] of mirrored parabolic troughs [solar troughs or troughs]), support facilities, and evaporation ponds. Linear facilities include a transmission line, distribution line, natural gas pipeline, and a main access road that are mostly co-located for approximately 10.5 km (6.5 miles). The Project comprises approximately 1,800 acres (728 hectares [ha]). The solar field and associated structures comprise 1,727 acres (699 ha) and linear facilities comprise 93 acres (38 ha). The Project is located on land managed by the Bureau of Land Management (BLM).

To monitor and manage Project-related avian and bat injuries and/or fatalities, the California Energy Commission (CEC) and BLM established BIO-16 as part of their Conditions of Certification/Mitigation Measures for the Project, which requires Genesis to develop an Avian Protection Plan (APP). This APP was initially prepared and approved by the CEC, BLM, California Department of Fish and Wildlife (CDFW [formerly California Department of Fish and Game (CDFG)]), and U.S. Fish and Wildlife Service (USFWS) (collectively referred to as the Renewable Energy Action Team [REAT] or agencies) in January 2011. Due to additional avian and bat mortality information obtained during project construction, this document is being revised at the request of the REAT and will now be referred to as the Bird and Bat Conservation Strategy (BBCS) to be consistent with current nomenclature. This BBCS replaces the APP and was developed in coordination with the REAT to provide a written record of the Project's efforts to monitor potential project impacts to birds and bats and to document conservation measures that have been or will be taken to avoid, minimize, and/or mitigate for potential impacts. After introductory material on project description, the BBCS purpose, siting and construction-phase measures and regulatory framework, this BBCS addresses post-construction monitoring and adaptive management.

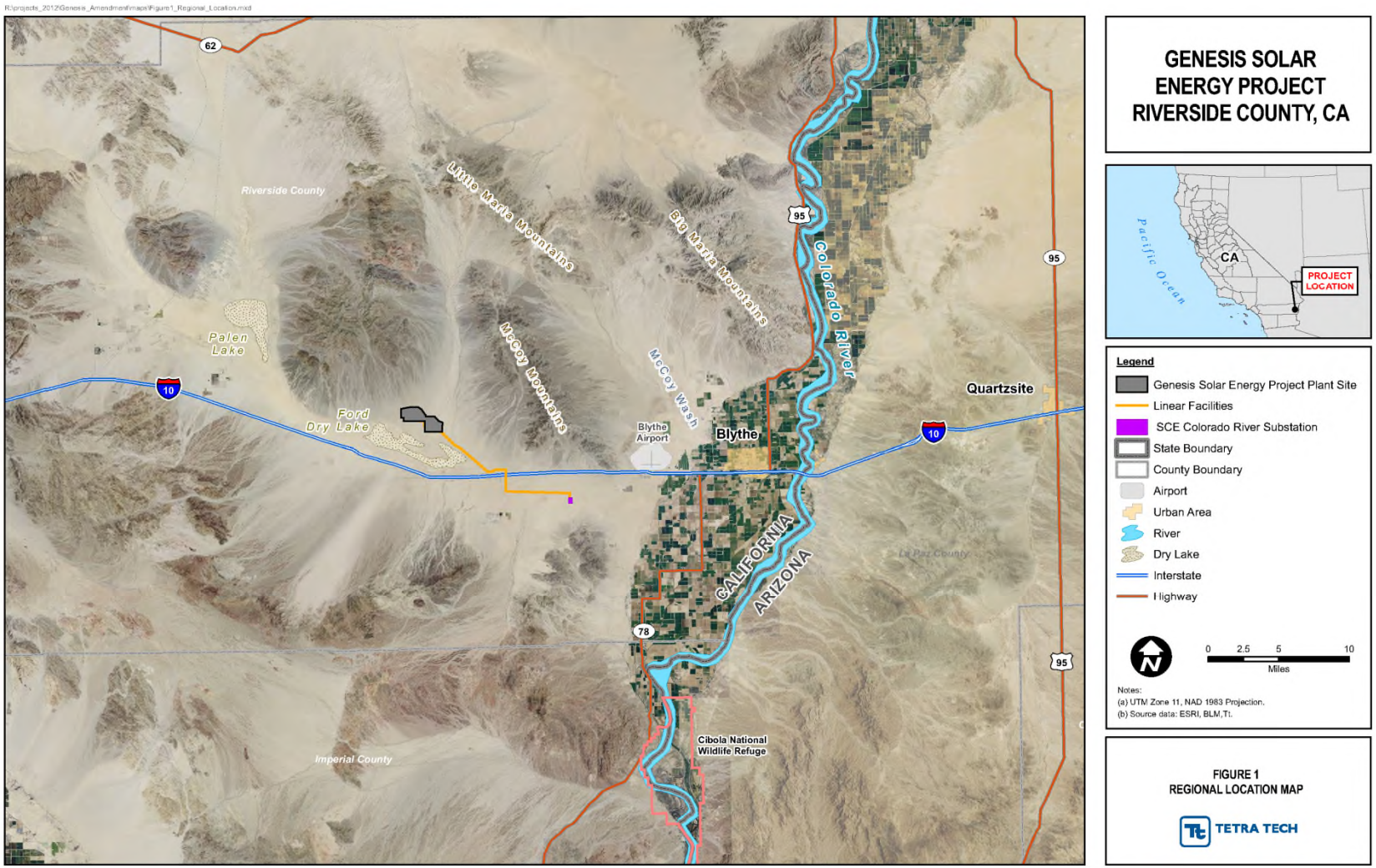

Figure 1. Location of the Genesis Solar Energy Project, Riverside County, California.

1.1 Purpose

The primary purpose of this BBCS is to describe post-construction monitoring protocols that will identify the extent of mortality and injury to bird and bat species and guide the adaptive management process intended to avoid, minimize, and/or mitigate impacts consistent with the Project's approval documentation. This BBCS includes the following objectives:

- Identify operational activities that may increase potential adverse effects to avian and bat species on and adjacent to Project components;
- Describe measures that were taken before and during construction to minimize and document mortality;
- Provide details for an Avian Fatality Monitoring Study to be conducted post-construction, including applicable approved protocols that would be used for any surveys and/or monitoring conducted; and
- Specify the adaptive management process that will be used to address potential adverse effects on these species.

1.2 Regulatory Setting

Several federal and state laws and regulations, including National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Protection Act (BGEPA), and the California Endangered Species Act (CESA), provide the foundation for the development of this BBCS.

1.2.1 National Environmental Policy Act

Under NEPA (42 United States Code [USC] §§ 4321-4370h), federal agencies are required to prepare an environmental impact statement (EIS) for any major federal action significantly affecting the quality of the human environment. An EIS must include an examination of the environmental impacts of a proposed project, a reasonable range of alternatives for a project, and other related matters. Environmental impacts of the Project have been addressed in the Final EIS (FEIS) (BLM 2010).

1.2.2 Endangered Species Act

Certain species at risk of extinction, including many birds and bats, are protected under the federal ESA. The ESA defines and lists species as "endangered" and "threatened" and provides regulatory protection for the listed species. The ESA provides a program for conservation and recovery of threatened and endangered species. Section 7(a)(2) of the ESA directs all federal agencies to insure that any action they authorize, fund, or carry-out does not jeopardize the continued existence of an endangered or threatened species or destroy or adversely modify designated or proposed critical habitat (collectively, referred to as protected resources).

1.2.3 Migratory Bird Treaty Act

The MBTA (16 USC §§ 703, *et seq*.), makes it unlawful to "pursue, hunt, take, capture or kill; attempt to take capture or kill; possess; offer to or sell, barter, purchase, or deliver; or cause to be shipped, exported, imported, transported, or received any native migratory bird, part, nest, egg, or product." The MBTA, enforced by USFWS, protects all MBTA-listed migratory birds within the United States. In the continental U.S., native non-covered species generally belong to the Order Galliformes. Common non-native species not protected by the MBTA include rock pigeon (*Columba livia*), Eurasian collared-dove (*Streptopelia decaocto*), European starling (*Sturnus vulgaris*), and house sparrow (*Passer domesticus*; USFWS 1973). Although permits may be obtained to collect MBTA-listed birds for scientific purposes or to destroy depredating migratory birds, the MBTA rarely provides any permit mechanism authorizing the incidental take of migratory birds in connection with otherwise lawful activities, and has not provided a permit mechanism for avian mortality associated with wind and solar energy. Nevertheless, federal agencies such as the BLM have been directed to evaluate the effects of its actions on migratory birds, with an emphasis on species of concern (per Executive Order 13186).

1.2.4 Bald and Golden Eagle Protection Act

The BGEPA (16 USC §§ 668-668d) prohibits the take, defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb," of any bald eagle (*Haliaeetus leucocephalus*) or golden eagle (*Aquila chrysaetos*). Through recent regulation (50 Code of Federal Regulations [CFR] § 22.26; USFWS 2009), the USFWS can authorize take of bald and golden eagles when the take is associated with, but not the purpose of, an otherwise lawful activity and cannot practicably be avoided. The USFWS has issued Eagle Conservation Plan Guidance (USFWS 2013) for land-based wind energy projects to help project proponents avoid unanticipated take of bald and golden eagles and comply with the BGEPA. Although the guidelines were developed for land-based wind energy projects, certain components of eagle surveys and monitoring are applicable to other renewable energy projects, including solar plants, and have been incorporated into this BBCS as appropriate.

1.2.5 California Department of Fish and Game Codes

CDFG Code Sections 2050-2085 – These codes encompass the applicable declarations and definitions of the CESA.

CDFG Code Sections 3503 and 3503.5 – These codes state that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird (including birds of prey) or take, possess, or destroy birds of prey, except as otherwise provided by this code or any regulation made pursuant thereto.

CDFG Code Sections 3511, 4700, 5050, and 5515 – These state laws classify and prohibit the take of "fully protected" bird, mammal, amphibian/reptile, and fish species in California.

CDFG Code Section 3513 – This code prohibits any take or possession of birds that are designated by the MBTA as migratory non-game birds except as allowed by federal rules and regulations promulgated pursuant to the MBTA.

CDFG Code Section 4150 – This code defines all mammals that naturally occur in California as non-game mammals with exceptions for those defined as game mammals, fully protected mammals, or fur-bearing mammals. Non-game mammals or parts thereof may not be taken or possessed except as otherwise provided by this code or any regulation made pursuant thereto.

1.3 Corporate Policy and Coordination

Genesis maintains a commitment to work cooperatively to minimize adverse impacts to protected bird and bat species. Through the planning and construction stages of the Project, Genesis and its contractors and consultants worked in coordination with federal and state agency personnel regarding necessary wildlife surveys, siting considerations, mitigation measures and adaptive management to ensure that potential issues that could affect bird and bat species were identified as early as possible in the planning process and addressed through appropriate design, mitigation and adaptive management measures. Genesis will continue to work with the agencies to implement conservation measures intended to avoid, minimize, and/or mitigate potential impacts to bird and bat species, including those measures identified in this BBCS.

2.0 PROJECT DESCRIPTION

The Project is located approximately 25 miles west of the City of Blythe, in an undeveloped area of the Sonoran Desert (Figure 1). Surrounding features include the McCoy Mountains to the east, the Palen Mountains (including the Palen/McCoy Wilderness Area) to the north, and Ford Dry Lake to the south. The majority of the vegetation within the Project is Sonoran creosote bush scrub. Patches of stabilized and partially stabilized sand dunes, and playa and sand drifts over playa, also occur in and around the Project. There are no perennial water bodies, cliffs, and only minimal land devoted to agricultural use in the Project Area or in the immediate vicinity; however, the Colorado River corridor, an important migratory flyway, is located approximately 25 miles to the east.

The Project is a concentrated solar electric generating facility which uses parabolic trough technology. The Project consists of two independent concentrated solar electric generating facilities with a nominal net electrical output of 125 MW each, for a total net electrical output of 250 MW. Electrical power is produced using steam turbine generators fed from solar steam generators (SSG). The SSG receives heated heat transfer fluid (HTF) from solar thermal equipment comprised of SCAs that collect energy from the sun.

The Project uses dry cooling for power plant cooling. In dry-cooling systems, fans blow air over a radiator system to remove heat from the system via convective heat transfer. In the air-cooled condenser (ACC), steam from the steam turbine exhausts directly to a manifold radiator system that expels heat to the atmosphere, condensing the steam inside the radiator.

Each 125-MW unit has one double-lined evaporation pond located on the eastern edge of Unit 1. Each pond has a surface area of approximately 3.5 acres (1.4 ha). As a requirement of the CEC/BLM permits, these ponds are netted to protect wildlife from the materials accumulating in the ponds. Residue from the facility's water treatment system is contained within these ponds. The average pond depth is eight feet (ft; two meters [m]) and residual precipitated solids will be removed approximately every seven years to maintain a solids depth no greater than approximately three ft (about one m) for operational and safety purposes. The ponds were designed and permitted as Class II Surface Impoundments in accordance with Colorado River Regional Water Quality Control Board requirements, as well as the requirements of the California Integrated Waste Management Board.

A transmission line (also referred to as a Generation [Gen] tie-line), distribution line, access road, and a natural gas pipeline are co-located in one linear corridor to serve the Project. A primary fiber-optic communication line is mounted on transmission line poles. A secondary fiber-optic communication line is mounted on distribution line poles and/or buried underground within existing, disturbed access/maintenance roads. The Gen tie-line extends an additional mile (1.6 km) to the south, crosses Interstate 10 (I-10), and ties into the Blythe Energy Project Transmission Line (BEPTL) where it is mounted on the existing pole structures of the BEPTL to interconnect with Southern California Edison's Colorado River Substation (CRS) to the east.

The area disturbed by the Project, which includes both permanent and temporary disturbance, is 1,819.5 acres (736.3 ha), and includes 1,727 acres for the solar field and 93 acres for linear facilities.

Project construction is complete, and the Project is currently operational. Project features – including the SCAs, overhead electrical feeder and distribution lines, the Gen tie-line, evaporation ponds, and the perimeter security fence – pose fatality and injury risks to birds and bats. This BBCS focuses on permanent Project infrastructure elements, including the SCAs, power blocks, perimeter fence, evaporation ponds, overhead electrical feeder and distribution lines, and the Gen tie-line. To minimize threat of electrocution and collision, the Project's electrical distribution infrastructure was built to avian-safe standards following Avian Power Line Interaction Committee (APLIC) guidelines (APLIC 2005, 2006, 2012). Should birds or bats collide with on-site distribution power lines, injuries and fatalities will be documented during sampling of SCAs, as well as incidentally by Project staff during other activities.

3.0 SITE CHARACTERIZATION

The Project is located within the northeastern portion of Chuckwalla Valley, an area east of Palm Springs in the Colorado Desert, a subsection of the Sonoran Desert. The Project occurs in the Colorado River Basin within the Chuckwalla Valley Drainage Basin. This is an internally drained basin and all surface water flows to Palen Dry Lake in the western portion of Chuckwalla Valley and Ford Dry Lake in the eastern section of Chuckwalla Valley. Palen Dry Lake is characterized as a "wet playa" since it supports significant groundwater discharge at the

ground surface by evaporation. Ford Dry Lake is characterized as a "dry playa" with groundwater sources occurring well below the surface of the dry lake bed and as a result receives occasional inflow of surface water.

The 2,273-acre (920-ha) Chuckwalla Valley Dune Thicket Areas of Critical Environmental Concern (ACEC) occurs approximately immediately west of the southern terminus of the project transmission line, and is managed for its wildlife habitat use, specifically for birds. In addition, the Palen/McCoy Wilderness Area is immediately north of the Project site. The project site and immediate vicinity supports five major natural communities: Sonoran creosote bush scrub, stabilized and partially stabilized desert dunes, playa and sand drifts over playa, chenopod scrub, and desert wash woodland. All of these communities except the Sonoran creosote bush scrub are considered sensitive according to the BLM Proposed Northern and Eastern Colorado Desert Coordinated Management Plan and Final Environmental Impact Statement (BLM 2002). The project is located within the Pacific Flyway, which refers to the general migratory area from the Rocky Mountains to the Pacific Ocean. Migrating birds will pass over the Project and throughout the Pacific Flyway through the spring and fall migration.

The 2010 FEIS prepared for the Project (BLM 2010) describes the biological setting of the Project area. The FEIS included results of biological surveys conducted in areas of potential impact associated with the solar field and linear facilities and possible alternative sites. Before construction began on the Project, vegetation primarily consisted of Sonoran creosote (*Larrea tridentata*) bush scrub. To prepare for installation of the SCAs, the Project site was cleared of vegetation, such that the Project landscape is now relatively flat and uniform, and clear of vegetation within the solar field.

An open portion of the Colorado River Aqueduct runs around the north end of Chuckwalla Valley. The Project includes two 3.5-acre (1.4-ha) evaporation ponds. All of these water features have the potential to attract water-associated birds and shorebirds, either during migration stopover periods or in the course of local and intraregional movements. However, evaporation ponds will be permanently netted and flagged to discourage use by birds.

4.0 CONSERVATION MEASURES IMPLEMENTED BEFORE AND DURING CONSTRUCTION

4.1 Project Siting and Pre-Siting Data Collection

The Project site is located in an area that lacks features that could serve as major bird attractants. There are no perennial bodies of water, agricultural areas, cliffs, major migration corridors, or dense vegetation within the Project area or immediate vicinity, nor is the area identified as an Important Bird Area (National Audubon Society 2010). This limits the number and extent of areas near the Project that can serve as attractants to bird species, thereby reducing the abundance of bird species expected in the general area. However, the Colorado River corridor, an important migratory flyway, is located approximately 25 miles to the east.

In an effort to place the Project infrastructure in locations that would result in the least risk to populations of birds and bats, data on site characteristics and wildlife occurrence was collected and evaluated.

4.1.1 Site-Specific Wildlife Surveys

Comprehensive biological resource surveys were conducted between winter 2007 and spring 2010. Multiple survey methods were used to target all special-status wildlife and their habitats. These surveys included:

- Spring and winter avian point count surveys per BLM protocols (BLM 2009);
- Golden eagle helicopter surveys per USFWS recommended guidelines (Pagel et al. 2010); and
- Western burrowing owl (*Athene cunicularia*) surveys per California Burrowing Owl Consortium (CBOC) guidelines (CBOC 1993)

Results of avian point count surveys conducted before construction suggested that mean use of the Project area by birds was low (Tetra Tech and Karl 2009, 2010a, 2010b).

- A total of 336 birds were detected during spring avian point count surveys and 274 birds during winter avian point count surveys
- Horned lark (*Eremophila alpestris*) was the most commonly observed species during both spring and winter avian point count surveys. Other commonly detected species included black-throated sparrow (*Amphispiza bilineata*) and cliff swallow (*Hirundo pyrrhonota*) during spring surveys, and sage sparrow (*A. belli*) during winter surveys. All other species composed less than 6% of the total number of birds observed during either survey season.
- No ESA-listed threatened or endangered species were detected during spring or winter avian point count surveys; however, one state-threatened species (Swainson's hawk [*Buteo swainsoni*]) and three California Species of Special Concern (loggerhead shrike [*Lanius ludovicianus*], northern harrier [*Circus cyaneus*], and short-eared owl [*Asio flammeus*]) were detected during spring point count surveys. The loggerhead shrike and northern harrier were also detected during winter point count surveys.
- No bald or golden eagles were observed during avian point count surveys or incidentally during any surveys.
- Three golden eagle nests were identified within the 10-mile (16-km) survey buffer. These consisted of two inactive nests, one in the McCoy Mountains and the other in the Palen Mountains, and one potentially active nest in the Palen Mountains, but no eagles were observed using these nests.

- No other raptors were found nesting within three miles (five km) of the Project; one prairie falcon (*Falco peregrinus*) was observed nesting on the same cliff that the golden eagle nest in the Palen Mountains was observed.
- Biologists identified burrowing owl habitat, recent sign (burrows, whitewash, feathers, and pellets), and observed burrowing owls on three occasions (once in December 2007 and twice in 2009). Two burrowing owl sightings were made during winter surveys and one occupied burrow was identified. However, no active nests were detected in during spring 2009.

4.2 Facility Design

Many conservation measures were incorporated into the design of Project facilities to reduce the potential effects of Project infrastructure on bird and bat populations, including:

- Transmission line structures are monopole design instead of lattice tower design to minimize perching and nesting opportunities.
- Utility lines were built in compliance with APLIC (2006) guidelines to prevent electrocution, including the recommended distances that phase conductors should be separated (minimum 60 inches [in; 150 centimeters (cm)]), or the use of perch diverters or specifically designed avian protection materials where the minimum distance is not feasible.
- The 230-kilovolt (kV) transmission line conductors are more than 60 in apart, thus minimizing risk of electrocution to golden eagles.
- The 6-mile (10-km) construction power/alternative back feed power distribution system is below 60 kV. These lines have smaller separations than transmission lines which can increase risk of electrocution, therefore Genesis followed APLIC guidance with spacing and insulation to minimize risk of golden eagle electrocutions.
- All lighting is installed such that lamps and reflectors are not visible from beyond the project site, does not cause excessive reflective glare, direct lighting does not illuminate the nighttime sky (except for required Federal Aviation Administration aircraft safety lighting), and illumination of the project and its immediate vicinity is minimized.
- All lighting is of minimum necessary brightness consistent with operation safety and security.
- Lights in high illumination areas not occupied continuously have timer switches or motion detectors, and to the greatest extent feasible, Project lighting is used only as needed.

4.3 Construction Phase Conservation Measures

- During construction all trash and food-related waste was placed in self-closing containers and removed daily from the site.

- Equipment and vehicle travel were limited to existing roads or specific construction pathways during construction. Construction traffic, parking, and lay-down areas occurred within previously disturbed areas to the extent feasible.
- A site-specific Worker Environmental Awareness Program (WEAP; BIO-6) informed Project personnel about the biological constraints of the Project. The WEAP included information regarding sensitive biological resources, restrictions, protection measures, individual responsibilities associated with the Project, and the consequences of non-compliance.
- Water applied to dirt roads and construction areas (trenches or spoil piles) for dust abatement was the minimal amount needed to meet safety and air quality standards in an effort to prevent the formation of puddles, which could attract birds and other wildlife.
- During construction, road killed animals or other carcasses associated with the Project were reported and removed promptly.
- Minimization of the spread of weeds and introduction of new weed species is managed by implementing the Weed Management Plan (as required by Condition of Certification BIO-14).
- Potential impacts of the Project on golden eagles were monitored through annual inventory surveys during construction, as required by Condition of Certification BIO-28.
- The potential impacts of the Project on burrowing owls was minimized through the implementation of the Project's Burrowing Owl Relocation and Mitigation Plan (as required by Condition of Certification BIO-18).
- Surveys were conducted prior to initiation of construction activities to identify nesting or breeding wildlife. When nesting birds were detected, biologists implemented the avoidance measures set forth in Condition of Certification BIO-8.
- The risk of attracting common ravens (*Corvus corax*) to the Project area, which could result in increased predation pressures on prey species, was controlled through implementation of the Common Raven Monitoring, Management, and Control Plan (as required by Condition of Certification BIO-13).
- Speed limits were limited to 25 miles per hour (mph; 40 km per hour [kph]) on dirt roads and 45 mph (72 kph) on paved main access road.

5.0 INCIDENTAL AVIAN MORTALITY INFORMATION DURING CONSTRUCTION AND EARLY OPERATION

As of November 7, 2014, 272 avian and bat injuries or mortalities have been documented on-site during construction of the Project (Appendix A). Avian mortalities have been reported by construction and operations staff incidental to their work activities. Consequently, the incidental nature of the data needs to be considered when evaluating the information reported to date. Data collected incidentally do not provide enough information to accurately quantify the scope of actual avian mortalities on a project site. However, these data can provide important information

such as the composition of species which may be at risk in the future. In addition, the data provide insights into project features and types of injuries that may be associated with fatalities (Kagan et al. 2014).

6.0 POST-CONSTRUCTION MONITORING PLAN

This section outlines a standardized approach to document known and projected bird and bat fatalities and injuries, and to estimate seasonal and annual post-construction fatality rates associated with Project features. The post-construction monitoring plan (Plan) includes an approach to determine whether there are spatial patterns of fatality rates within the solar field (i.e., different fatality rates near the exterior compared with the interior area of the solar field). The Plan is consistent with the CEC Condition of Certification BIO-16 APP (synonymous with BBCS) and builds on standards and guidelines developed for the electric-utility and renewable-energy industries to quantify the risk of fatality and injury for birds and bats that may result from interactions with energy-related infrastructure (e.g., Anderson et al. 1999; APLIC 2005, 2006, 2012; CEC and CDFG 2007; USFWS 2010, 2012). In particular, the Plan outlines a statistically sound spatial and temporal sampling design, including protocols for independently estimating and correcting for quarterly searcher-efficiency and seasonal (i.e., at least quarterly) scavenger (avian and mammalian) removal rates. It describes specific data to be collected during scheduled carcass searches, protocols for handling dead or injured birds and bats, and procedures for reporting incidents to relevant government agencies.

6.1 Goals and Objectives

Primary goals of the post-construction fatality monitoring program are:

1. Estimate overall annual avian fatality rate and species composition associated with the Project infrastructure. This estimate will include mortality associated with SCAs, overhead lines including the Gen tie-line, perimeter fence and other features of the Project that may result in injury and fatality.
2. Determine whether there are spatial and temporal/seasonal patterns of mortality associated with project infrastructure (e.g., different fatality rates near SCAs on the edge of the solar field versus. the interior area of the solar field).
3. Provide information that will assist the CEC and BLM, in consultation with the USFWS and the CDFW, in understanding which species and potentially which regional populations are at risk.

Collect data in such a way that the CEC and BLM, in consultation with the USFWS and CDFW, may make comparisons with other solar sites.

These goals are structured in a way that provides information on seasonal differences in fatality rates, and information about which taxonomic groups are most vulnerable. Fatality estimates will be adjusted to address carcass persistence and searcher efficiency as they potentially change through the monitoring year. Additionally, carcass persistence trials will inform search intervals. The sampling design is intended to follow to the USFWS Land-Based Wind Energy Guidelines

(USFWS 2012), which states that "the carcass searching protocol should be adequate to answer applicable Tier 4 questions at an appropriate level of precision to make *general* conclusions about the project*, and is not intended to provide highly precise measurements of fatalities*" (p. 45; emphasis added). Under the proposed sampling plan, precision is expected to vary based on carcass detectability: less precision is expected for estimates of small-bird fatality compared to estimates of large-bird fatality.

Consistent with the above goals, the specific objectives of this Plan are as follows:

1. Conduct fatality searches for a minimum of two years according to a spatial and temporal sampling plan that provides representative and statistically sound coverage of the SCAs, consistent with monitoring required of other industries. The need for additional monitoring beyond the second year will depend on an evaluation of the survey results from the first two years to determine if the goals of the monitoring program have been met (see Section 9.0, Technical Advisory Group and Adaptive Management). The need to extend the monitoring period will be determined by the CEC and BLM in consultation with the USFWS and CDFW. To the extent possible, standardized monitoring, as approved by the CEC and BLM in consultation with the USFWS and CDFW, will commence within 45 days of the date a final BBCS has been approved. Implementation of any agency required pre-monitoring meetings, training and searcher efficiency/carcass removal trials may extend the start of monitoring beyond 45 days after the BBCS is deemed final.
2. Conduct statistically sound, seasonal assessments to quantify and evaluate carcass removal rates (i.e., carcass removal, destruction including dismemberment, or burial in sand due to scavengers, decay, or other abiotic [e.g., wind] or human [e.g., vehicle activity] factors) and support calculation of adjusted fatality rates that account for variation in carcass removal rates by season and carcass type/size classes. These assessments will also be used to guide search intervals.
3. Use current, scientifically validated and accepted methods for calculating fatality rates adjusted for searcher-efficiency, carcass removal rates, and spatial and temporal sampling intensity. As data are collected, adaptive management of the study design and monitoring protocol may be necessary and will follow the process in Section 9.0.
4. Summarize the species composition of fatalities according to taxonomic family, and ecological guild (e.g., raptors, water-associated birds, passerines, etc.) to aid in understanding species or groups at risk.
5. To the extent possible, summarize the composition of fatalities according to their likely propensity to collide with project components during the day versus during the night based on known migratory patterns for the particular species.

6. Aid in identifying potential fatality causes and correlates by including additional information that is readily available beyond that which is under the Special Utility Permit (SPUT), such as the weight of fresh whole birds, and summaries of preceding weather conditions (e.g. a rain gauge on site will record rainfall), which would have made migration likely (e.g., low pressure systems moving cross continent to the north of the Project area, followed by periods of high pressure systems).
7. Data summaries, and accompanying raw data, and any geographic information system (GIS) shapefiles will be reported to the CEC and BLM with each quarterly report.

6.2 Monitoring Methods

A monitoring program will be implemented for at least two years post-construction as specified below. Survey results and analysis will inform adaptive management decisions regarding any additional appropriate and practicable Bird and Bat Conservation Measures (BBCMs) to avoid, minimize, and/or mitigate for observed impacts.

6.2.1 Post-Construction Monitoring of Solar Collector Assemblies

The fundamental characteristics of a sampling program designed to produce valid estimates of fatality rates for a solar farm (including the number of SCAs to be searched, the search interval, the seasonal extent of coverage, and the number of years of sampling) are determined based on several factors. These factors include the questions of interest, the species of interest (e.g., resident, migratory, and/or wintering species) in the Project area, desired precision, best estimates of carcass-removal rates, searcher efficiency, the Project size and layout, and other relevant environmental (i.e., seasonal patterns), landscape, and habitat characteristics.

The following sections describe the protocol for fatality monitoring. Post-construction fatality monitoring consists of regular searches of robust samples of SCAs, the perimeter fence line, the Gen tie-line, distribution line, the perimeter of the power blocks and safely accessible areas under the ACCs, and the evaporation ponds, which are all described in detail below. Monitoring will be conducted by operations personnel who have received specialized training (described in Section 7.0) or by qualified biologists. Fatality monitoring is anticipated to begin within 45 days of approval of the BBCS.

The number of fatalities found during searches represents a minimum number of fatalities at a project because not all fatalities that occur are found by searchers. Therefore, carcass persistence trials and searcher efficiency trials will be conducted concurrently with systematic fatality monitoring to account for bias attributable to carcass removal by scavengers and searcher efficiency. Other potential biases will exist because it is possible for injured animals to leave the site.

Data collected during searches are used in conjunction with bias trial data to estimate fatality rates (Section 6.6) for birds and bats at the Project during initial years of operation. These estimates can be combined into a composite site-wide fatality estimate based on the fatality

rates observed at each Project component. Per acre estimates provide a means of scaling fatality information to be comparable to other projects.

Annual fatality rates will be calculated for all bird species combined, small (0-100 grams), medium (101-999 grams), and large (1,000+ grams) birds, raptors, and special-status species groups (as defined by USFWS, CDFW, and BLM regulations). In some cases, the sample size for a species group of interest, such as eagles or other sensitive species, may be too small to allow for the calculation of reliable fatality estimates (see Section 6.6). In these cases, numerical counts of total fatalities detected during standardized searches and incidental discoveries for each of these species or species groups will be reported, and the statistical estimate and associated confidence intervals (CIs) will be annotated as likely unreliable.

Because little is known about causes or patterns of fatalities associated with solar projects, the methods outlined in this section are derived from those used on wind energy projects and the nearby Desert Sunlight Solar Farm Project (Desert Sunlight). Methods and timing outlined here may be modified adaptively in cooperation with the REAT agencies over the course of the study as Project-specific information is gained to maximize effectiveness and efficiency of the monitoring program (e.g., search interval, number of SCAs searched, plot size, and analytical method).

6.2.2 Survey Strategy

Sampling strategies used in carcass searches at wind energy facilities have typically involved transect sampling, whereby searchers walk or drive along pre-defined transects and search for carcasses in a swath where width depends on visibility, target taxa, and other factors. A distance-sampling approach has been developed for carcass searching at Desert Sunlight (WEST 2014), and is currently being implemented. Distance sampling involves searchers walking or driving a transect line, but it departs from transect survey methodology in its assumptions about carcass detection along the transect line. Distance sampling assumes that searcher efficiency decreases (possibly dramatically) as a function of distance from the observer, and is ideally suited to situations in which animals (or carcasses) are sparsely distributed across a landscape (Buckland et al. 1993).

Because the rows of solar arrays at PV facilities are close together, walking individual rows is much less efficient because of these very narrow viewsheds. A distance sampling approach where searchers walk or drive perpendicular to the rows and look longer distances down the rows for carcasses is much more cost efficient. The layout of solar arrays at Desert Sunlight and ground visibility makes it well-suited for this distance-sampling approach.

The layout of SCAs at the Project and very good ground visibility may be well-suited for a distance-sampling approach. However, given the troughs are elevated, wider spaced (approximately 15 m [49 ft] compared to 4.0 m [13 ft] with solar arrays) to allow driving within rows, and longer (300 m [984 ft] compared to 140 m [459 ft]), and the lack of vegetation and fewer obstructions, a different survey approach will be used compared to Desert Sunlight's approach.

Given the good clear viewsheds for carcass searches at this site (i.e., little vegetation), and the wide spacing of the rows, searchers will use vehicles to conduct the SCA surveys. Other Project sites and other solar technologies may not lend effective monitoring by vehicle searches. Searchers will drive transects parallel to the rows of SCAs and centered between rows. All searches will be performed by driving transects at a speed of approximately eight kph (five mph) or less with the searchers' window open. The surveys may be conducted with one searcher (i.e., the driver) or two (i.e., a second searcher in the front passenger seat). Each searcher will search on their side of the vehicle generally out to approximately 30 m (98 ft) (i.e., ground area encompassing two troughs).

6.2.3 Spatial Sampling Design

The following hierarchical terminology is useful for describing the spatial and temporal sampling design used to monitor the solar field:

1) **Solar trough**: A parabolic mirror that concentrates sunlight onto a pipe carrying heat transfer fluid.
2) **Solar collector assembly (SCA)**: An assembly including troughs, pipes with heat transfer fluid, and support structures that allow the trough to track the sun measuring 150 m (492 ft) in length.
3) **Row**: two SCAs, end to end (300 m).
4) **Block:** A spatially contiguous collection of SCAs within which sample units will be established.

The sampling design and effort is loosely based on a statistical precision analysis using data from the California Valley Solar Ranch (CVSR), as well as a simulation-based analysis that was informed by searcher efficiency and carcass removal rates in the desert southwest region region (Appendix B). Sampling effort that includes 20% of the SCAs is expected to produce a reasonable coefficient of variation (CV = 100% * standard deviation / mean) (approximately 20%) if fatality rates are greater than 1.0 fatality/MW/year, and the search interval is at most 21 days. This level of precision is generally considered adequate for answering the primary questions of interest in fatality monitoring studies (Strickland et al 2011).

Based on the simulation analyses, data from CVSR, consultation with relevant permitting and wildlife agencies, and consideration of the characteristics of this particular Project, sampling will encompass approximately 30% of the completed SCAs as summarized in Table 1.

Table 1. Solar collector assemblies sampling area characteristics.

Total fenced area	1,727 acres (699 ha)
Proportion sampled of SCAs	30%
Sampling unit	30% sample of SCAs
Number of blocks (whole facility)	18
Migration season search interval (March 1 through May 31, September 1 thru October 31)	7 days unless adjusted by BLM, CEC, and Wildlife agencies based on results carcass persistence trials.
Non-migration season search interval (June 1 through August 31, November 1 through Feb 28)	21 days unless adjusted by BLM, CEC, and Wildlife agencies based on results of carcass persistence trials.
Anticipated surveys per year	Approximately 31 surveys
Duration of sampling	Minimum 2 years

Because both the layout of the solar SCAs and the landscape of the Project (i.e., flat and free of vegetation) are largely uniform, a simple random sampling design is likely to be adequate for sampling the SCAs. However, in interest of caution, a spatially balanced sampling design will be used. Because spatially balanced designs ensure that sample effort is distributed over the whole study area, they help to ensure that spatial patterns of fatalities – should they exist – can be extracted from the data. The drivers of spatial variation in avian activity may be important to the statistical sampling design if avian use patterns affect the distribution of mortalities on the project site. As an example, factors that may affect avian use patterns include: 1) habitat variation around the Project site; or 2) the possibility that distinct movement corridors variably concentrate birds over certain areas of the Project site (e.g., migrating or commuting water-associated birds).

The Project consists of two units, each comprising rows of SCAs arranged in blocks. Unit 1 contains eight blocks and Unit 2 contains ten blocks (Figure 2). Each block comprises rows of SCAs that run north to south, and the rows are approximately 17 m (56 ft) apart. Searches will be conducted by searchers walking or driving parallel to a row of SCAs and scanning the ground 34 m (112 ft) to the left (i.e., two rows). If a second observer is used in the front passenger seat, this individual will look to the right. Because the searches may be conducted by a single individual in a vehicle, searches will be confined to the direction that affords the driver the best view of the ground (west when driving north, east when driving south).

To ensure a spatially balanced design, each block will be sampled using a systematic sample of 30% of pairs of rows with a random starting point. A new set of rows will be selected for sample units in the second year, per USFWS request. The exact number of rows to be sampled will depend on the configuration of rows within blocks.

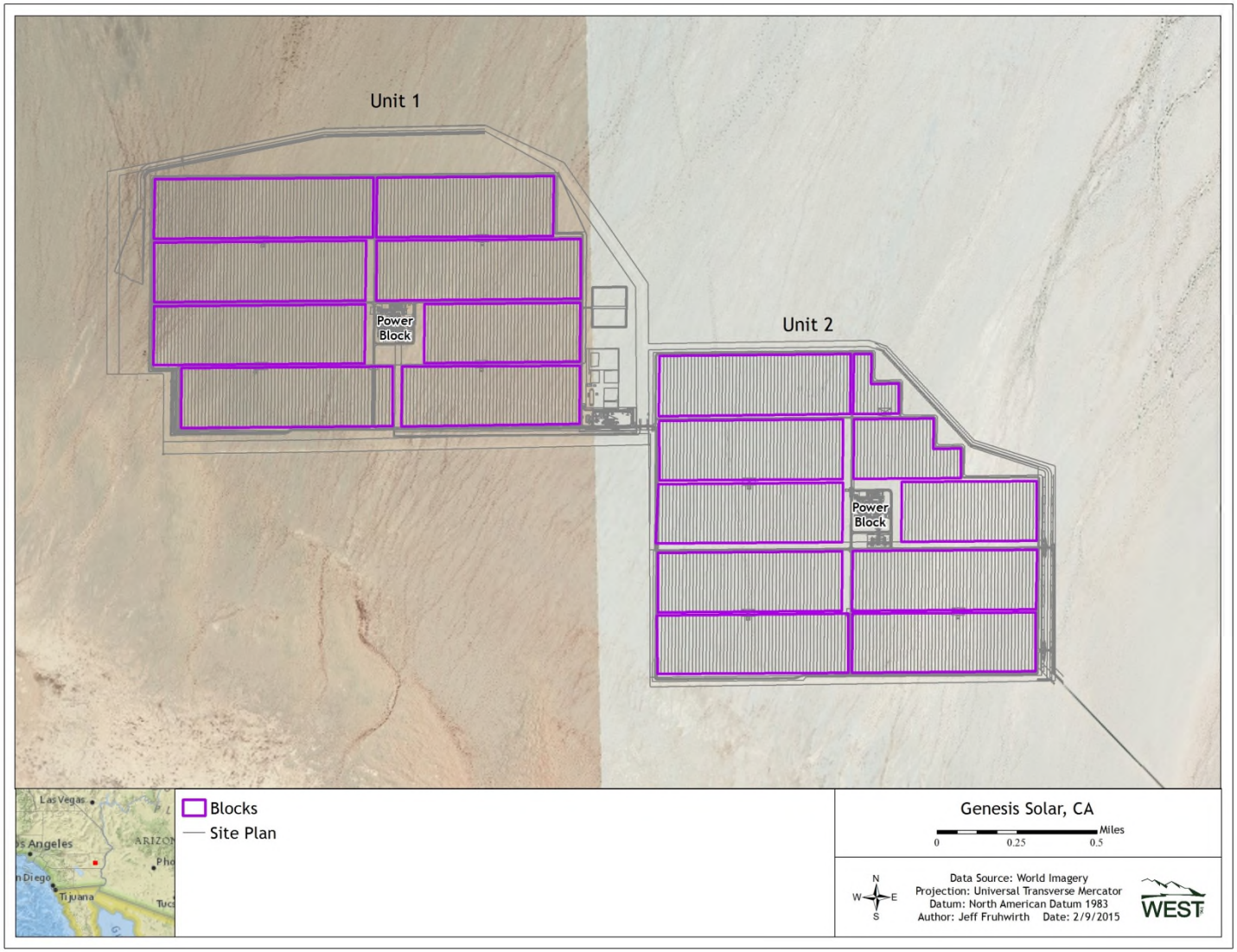

Figure 2. Layout of the Genesis Solar Energy Project in Riverside County, California. Blocks of SCAs are outlined in purple, and one sample unit would be established in each block, capturing enough adjacent rows to compose 30% of the SCAs.

Sample units for fatality searches were chosen as a systematic sample with random start locations in each block of SCA rows (Figure 3). Sample units were defined as eight contiguous rows of SCAs, and to reach a sample of 30% of the facility, 35 sample units were assigned (35 sample units * 8 rows per unit / 920 rows in the facility = 30.3%). Sample units were distributed evenly among the blocks of SCAs such that most blocks (n = 17) were assigned two sample units and the smallest block (n = 1; Block E on the schematic) was assigned one sample unit. Within each block of SCA rows, the first row of the first sample unit was selected at random from the western half of the block. The second sample unit was assigned in the same relative position within the eastern half of the block. Genesis may request Technical Advisory Group (TAG; see Section 9.0) approval for changes to the sample unit selection due to onsite logistics, maintenance issues and other factors.

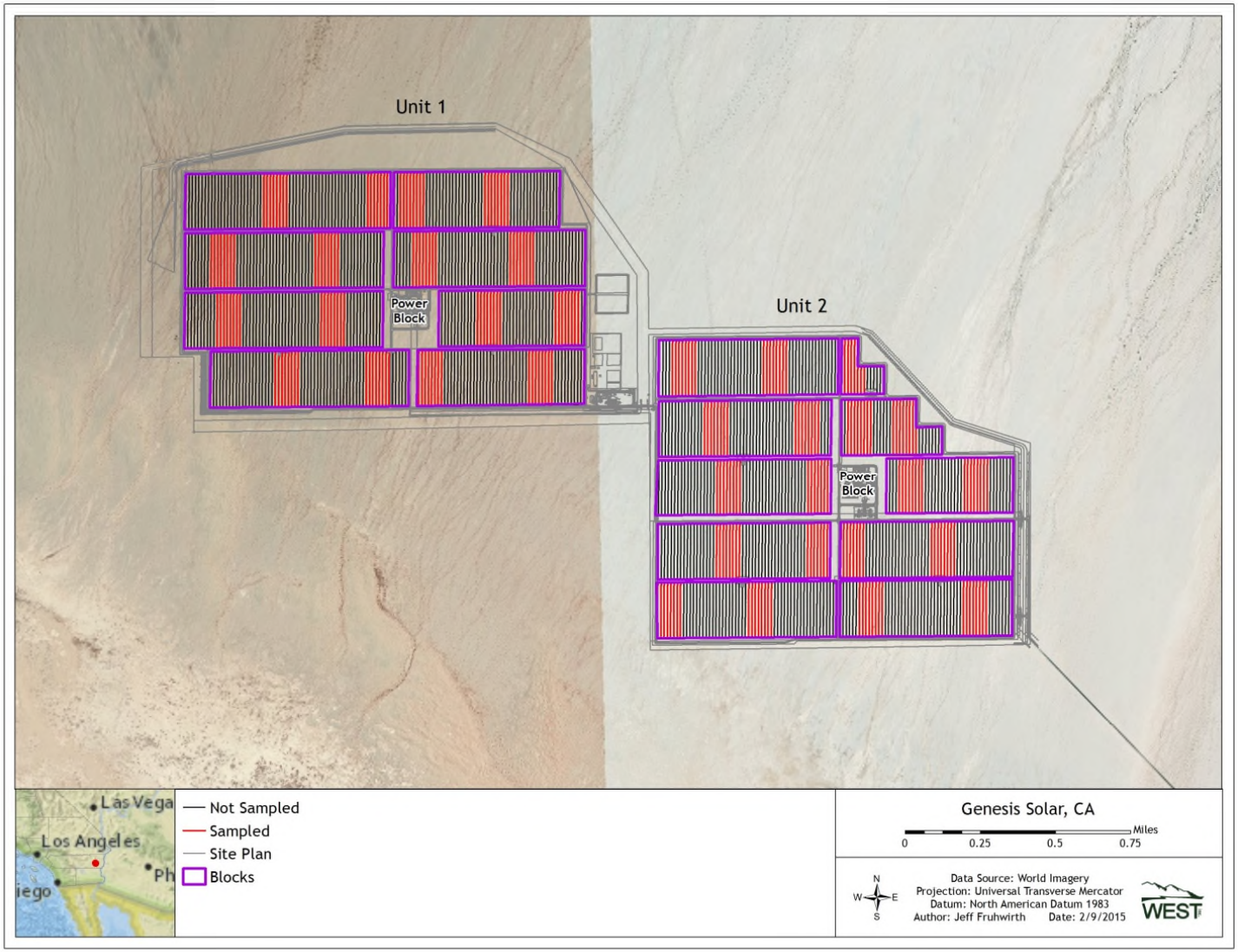

Figure 3. Layout of sampling units in both Unit 1 and Unit 2. Sampling units consist of eight rows of SCAs.

6.2.4 Temporal Sampling Design

The appropriate frequency of fatality surveys depends on the species of interest and average carcass persistence times (Smallwood 2007, Strickland et al. 2011, USFWS 2012). Large raptors tend to persist and remain detectable for extended periods (weeks to months) due to low scavenging rates and relatively slow decay rates. If only large species were of interest, extended search intervals of 30–45 days might be appropriate; however, smaller birds and bats typically disappear at much faster rates, so shorter search intervals are required to ensure effective documentation of fatality rates among these species.

Publically accessible data from three wind-energy studies in the desert southwest region of California and western Arizona provide additional, relevant insight (Chatfield et al. 2009, 2010; Thompson and Bay 2012). These studies recorded average persistence times of 17.5–46.8 days for large birds (average 29.0 days; median 22.6 days) and from 5.6–17.4 days (average 9.9 days; median 6.5 days) for small birds. If the median carcass-persistence time for small birds and bats on the Project site ranks toward the low end of values from these studies, which is typical for a broad range of other studies, a 7-day search interval may be required to effectively document fatality rates for small birds and bats. If, however, small-bird and bat carcass-persistence rates are closer to or exceed the median value from these studies, then longer search interval may be more appropriate. The initial indications of rapid scavenging by ravens at Desert Sunlight suggested that a shorter search interval may be needed to provide precise fatality estimates for small bird and bat carcasses. Later data from Corvus (2014) suggests that there is a period of rapid initial removal, particularly for small and medium carcasses with 50% of carcasses in these size classes removed in eight and five days, respectively. Overall, mean carcass persistence in May and June at Desert Sunlight was greater than 10 days for any size of carcass, and greater than 24 days for large carcasses.

Based on these considerations, preliminary data collected at Desert Sunlight, and based on the simulation analyses discussed previously, the search interval for fatality monitoring will be variable depending on season (Table 1). Searches will be conducted every seven days during standard spring and fall migration periods (March 1 – May 31, and September 1 – October 31), and every 21 days during summer and winter (June 1 to August 31, and November 1 to February 28/29). After the first six months of fatality monitoring and concurrent carcass-removal trials (see below) have been conducted, the search interval may be adjusted based on estimates of carcass persistence. Some migration for some species may occur outside these periods and this will be considered when evaluating the data regarding timing of mortality for species.

Adjusting fatality counts for carcass removal works best when the search interval remains constant through time (Huso 2010); however, within survey periods, season-specific estimates of carcass persistence can be calculated and incorporated in the overall estimation process when variable search intervals are used in different seasons (Shoenfeld 2004; Huso 2010, 2012; and other estimators all have facility to accommodate season-specific estimates). In addition, survey schedules will ensure that fatality surveys are evenly spaced in time to

maximize detection of potential, unusual fatality events (Strickland et al. 2011). For these reasons, a standard schedule for completing the surveys will be developed and followed, such that some surveys occur on each day of the standard work week and all sampling units are surveyed on a regular schedule, as dictated by the season.

6.2.5 Survey and Data Collection Protocols

Fatality surveys will be conducted with the searchers striving for a consistent pace/drive speed and approach, and a uniform search effort throughout the search. Searchers will use binoculars at their discretion only to confirm the presence of a carcass. The Project has rigorous safety protocols in place that address heat and other safety issues. When a potential carcass is detected, the observer will immediately confirm detection and, if valid, fully document it according to standard protocols (see below). Depending on the size and nature of the carcass, the observer will either immediately collect the carcass (smaller, easily collected and transported packages) or flag it and place a cone or bucket to identify for pick-up once the sampling-unit survey is completed (larger, messier, or otherwise complicated collections) or to identify it to species at a later time. If the observer is not permitted, they are not allowed to handle and collect the carcass. All carcasses will be stored in freezers on-site until the CEC, BLM and USFWS determine the ultimate disposition.

All bird and bat injuries and fatalities discovered during, or incidental to, the standard carcass surveys will be documented according to the requirements and standards reflected in the USFWS Avian Injury and Mortality Reporting Form. An additional column will be added to the form indicating revisions to the form and the date of such revisions. The form is a reporting requirement of the SPUT Permit issued to the Project to authorize the handling of dead or injured birds. In addition, finds will be classified as a fatality according to standards commonly applied in California (Altamont Pass Monitoring Team 2007, CEC and CDFG 2007). For this Project, to be classified as a fatality when only feathers are found, each find must include a feather spot consisting of groups of feathers composed of at least two or more primary flight feathers, of at least five or more tail feathers, or two primaries within five m (16.4 ft) or less of each other, or a total of 10 or more feathers of any type concentrated together in an area of three square m (m^2; 32 square ft [ft^2]). Avian biologists will make their best attempt to classify feather spots by size according to the sizes or identifying features of the feathers. A separate fatality estimate will be made for feather spots for which size classification is impossible. Digital photographs will be taken to document all incidents. All carcasses will be examined and where possible cause of death will be recorded (e.g., burns may indicate electrocution or contact with heated surfaces, and blunt trauma may indicate collisions).

All fatalities will be assigned to a size class, a taxonomic family, and an ecological guild and weight categories (e.g., 0-100 grams; 101-999 grams; and 1,000+ grams). Species will also be classified as resident, overwintering, or whether they are diurnal or nocturnal migrants (or both). It is necessary to know size classes to appropriately correct for searcher efficiency and scavenging, and information about taxonomic family, ecological guild, and time of day when active are relevant to the specific USFWS and project goals of the monitoring plan.

To ensure accurate documentation of the fatality locations, the observer will record the SCA number, Global Positioning System (GPS) coordinates in latitude/longitude of the carcass location using a handheld device accurate to ± 3.0 to 4.0 m (9.8 to 13.1 ft), and a measurement of the distance from the fatality location to the observer when the carcass was detected.

Data records for each survey will also include: 1) full first and last names of all relevant searchers and searcher position (e.g., driver, passenger) in case of future questions; 2) start and stop times for each individual sampling-unit survey; 3) a description of the weather conditions during each search; 4) a standardized description of the current habitat and visibility classes represented within each sampling unit; and 5) a description of any search-area access issues, if relevant. Data collected will also include all appropriate fields contained in the SPUT Permit.

All personnel involved in implementing this BBCS and handling carcasses will be included as sub-permittees under the Project's USFWS SPUT Permit, issued either to the Project or a consultant authorized by the Project. All personnel implementing this plan and handling carcasses will also be covered under any applicable CDFW Scientific Collecting Permit if provided and issued either to the Project or its consultant. Ideally, the relevant state and federal permits will allow fatalities discovered during the study to be removed from the field, stored on-site in a freezer, and used in searcher-efficiency and carcass-removal bias trials. Necessary exceptions will apply to all special-status species (see below). Searchers will place all discovered carcasses or body parts that are not of a special-status species and are not part of an ongoing bias trial in zip-locked plastic bags, clearly label each bag with the incident number, and deliver the bags for storage in the designated freezer at the Project facility.

6.2.6 Power Block and ACC Monitoring

In addition to monitoring SCAs, the perimeter of power block areas (including underneath the ACC units) will be searched for avian and bat carcasses or injuries by walking the perimeter of each power block and within safely accessible areas underneath the ACC units. The areas will be searched with the same frequency and schedule as SCAs. Carcasses will be placed along the perimeter of the power blocks during carcass persistence trials conducted at the SCAs. Carcass persistence time will not be estimated separately for power blocks, but estimates of carcass persistence at SCAs may include some areas around power blocks. Operations personnel make daily inspections throughout the power block and also regularly within the ACCs, so wildlife incidents or issues within these areas will be addressed and reported through this effort.

6.2.7 Evaporation Pond Monitoring

Genesis Solar will implement monitoring of evaporation ponds. The measures outlined below for monitoring impacts related to the presence of the evaporation ponds were determined through consultation with the CEC, USFWS, and CDFW, in compliance with the CEC's Condition of Certification **BIO-21**.

Evaporation ponds will be monitored for fatalities using the same frequency selected for monitoring within the SCAs, fence and Gen tie-line (every seven days during spring and fall migration and approximately every 21 days during summer and winter). Each survey will consist of the searcher walking or driving the perimeter of each evaporation pond. The searcher will record observations on the designated reporting form (Appendix C). Incidental carcass discoveries made during visits to ponds by operations personnel will be included in fatality estimates. Monthly reporting of evaporation pond monitoring is required, per **BIO-21**.

6.2.8 Generation Tie-Line (Gen Tie-Line) and Distribution Line Monitoring

Power lines are built to APLIC (2005, 2006, 2012) guidelines; as such fatality due to power lines is considered to have been minimized. The Project has a new 230-kV transmission line that runs from the Project switch yard to the I-10 corridor along the site access road and then is co-located with the BEPTL as it goes east to the CRS. In addition, there is a new distribution line that runs on the opposite side of the site access road and parallel to the transmission line. A 25% sample of the section of both lines from the Project fence to the Project outer gate located near the Wiley's Well Road rest stop will be searched for carcasses. This section of line will be broken into 300-m (984-ft) segments and a minimum of 25% of the segments will be selected using a systematic sample with a random starting point. This sample area will be walked every seven days during spring and fall migration and approximately every 21 days during summer and winter. The searchers will park at the north or south edge of the segment and walk a meandering transect under one of the lines (distribution or Gen tie-line) during each visit, scanning for birds within 15 m (49 ft) of the transect line. When they reach the end of the segment, they will then cross the road and change directions, searching for carcasses in a similar manner under that line. The purpose of monitoring these overhead lines is primarily to identify potential high-risk areas. Thus, different sections of the lines will be sampled during the second year of monitoring. Injuries and fatalities along these lines will be documented in the same manner as used for those discovered during the SCA carcass surveys, and will be reported to the USFWS and CDFW as part of the same overall reporting process. The searcher will record observations on the designated reporting form.

6.2.9 Perimeter Fence Monitoring

The perimeter fence around the Project consists of approximately 12 miles (19 km) of chain link fencing with opaque, vertical, vinyl slats. These slats make the fence opaque and give it the appearance of a solid wall, thus reducing the likelihood that birds or bats will collide with the fence. The perimeter fence will be searched approximately once every seven days during spring and fall migration, and approximately once every 21 days during winter and summer periods. The outside of the fence has a small pathway for driving along a portion of the west side of both Unit 1 and 2, and the south side of a portion of Unit 1, while most of the entire inside of the fence has driving access. The entire fence is 12 miles in length, so searchers will survey an equivalent length of fence, with approximately 1.5 to 2.5 miles (2.4 km) surveyed along drivable sections of the outside of the fence, and the remaining 9.5 to 10.5 miles (16.9 km) will be surveyed from the inside of the fence. Travel speed will be no greater than five mph while searching to ensure quality detection, and safety. Personnel conducting fence checks will document bird and bat injuries and fatalities discovered along the surveyed areas. Injuries and

fatalities along the fence line will be documented in the same manner as used for those discovered during the SCA carcass surveys, and will be reported to the REAT agencies as part of the same overall reporting process. Searcher efficiency trials will be conducted along the surveyed areas in a similar fashion to the trials at the SCAs. Carcass removal trials conducted at SCAs will include areas near the inside of the fence as well.

6.2.10 Clearance Surveys

Depending on when fatality surveys commence, a one-time clearance survey will be conducted beginning approximately 21 days before the first round of official surveys begins in all areas planned for survey (fence line, Gen tie-line sample areas and SCAs). The purpose of this survey will be to clear/remove carcasses from the survey area. If there is a delay in receiving the necessary collection permits, the carcasses will be covered with a bucket or cone. The sequence of clearance surveys will mirror the schedule for the first official survey to ensure that the interval between the clearance survey and the first standard survey is approximately the same for all sampling units. This is necessary to ensure that carcasses detected during the first round of surveys represent only fatalities that occurred during a preceding interval equivalent to the search interval that will apply afterward. Carcasses that are missed during the clearance survey will cause an upward (conservative) bias in the fatality estimate. Additionally, some estimators (such as the Huso estimator described above) become biased if carcasses that are not detected during a trial are still available during subsequent trials. This 'bleed through' effect can be ameliorated by including only fresh carcasses in the fatality estimate, where 'fresh' means a carcass that has arrived since the previous search. Carcasses that cannot reliably be aged (probably most carcasses) will be assumed to be fresh; this will cause an upward (conservative) bias in the fatality estimate.

6.3 Bird Rescue

Searchers will record any injured or rescued birds or bats located during surveys. Birds will be assessed by a qualified biologist to determine if it is appropriate to transport the individual to the nearest permitted rehabilitation facility for proper care, or to release them. Injured raptors will be handled only by experienced personnel and will be taken only to rehabilitation facilities that are permitted to handle raptors; this provision is particularly important for eagles. From the Project site, the closest rehabilitation facilities capable of handling all avian species are:

- Coachella Valley Wild Bird Center, 46500 Van Buren, Indio, California, 92201; Phone: 760-347-2647; Contact: Linda York, Executive Director; Hours of Operation: 9:00am-12:00pm, 7 days a week. http://coachellavalleywildbirdcenter.org/
- The Living Desert Zoo & Gardens, 47900 Portola Avenue, Palm Desert, California, 92260; Phone: 760-346-5694 x8 x1; Contact: Sheila Lindquist, North American Manager; Hours of operation: 8:00am-1:30pm (June-September), 9:00am-5:00pm (October-May), 7 days a week (closed Christmas Day). http://www.livingdesert.org/animals/wildlife-rehabilitation/
- Hope Wildlife Rescue, 18950 Consul Avenue, Corona, California 92881; Phone: 951-279-3232; Contact: Bill Anderson or Cyndi Floreno.

- All God's Creatures Wildlife Rescue & Rehabilitation, Chino Hills, California, Phone: 909-393-1590; Contact: Lori Bayour; http://www.allgodscreatures.net/index.html; no address available, contact by phone.
- International Bird Rescue, Los Angeles Center, San Pedro, California, 90731; Phone: 310-514-2573; Hours: 8:00 am - 5:00 pm. International Bird Rescue specializes in waterbird rescue.
- A list of wildlife rehabilitators maintained by the CDFW: http://www.dfg.ca.gov/wildlife/WIL/rehab/facilities.html
- The California Council for Wildlife Rehabilitators: http://www.ccwr.org/resources/rehabilitation-facilities-region-6.html

If stranded, but apparently uninjured, water-associated birds are discovered at any time during surveys, the searcher will take immediate steps to notify an on-call biologist, and assist with efforts to secure the bird and have it transferred as expediently as possible to Lake Tamarisk for release into the water. If a qualified biologist is not available, all stranded birds (injured or apparently uninjured) should be immediately taken to a rehabilitator for evaluation. Injured or exhausted water-associated birds should be taken to International Bird Rescue, which specializes in the care and rehabilitation of water-associated birds. If a mass event involving many such birds is observed, the searcher, if not an approved biologist, will immediately notify on-call biologist or other biological personnel working on the site about the details and request their assistance identifying injured versus non-injured birds and transporting injured birds to the nearest rehabilitation facility. International Bird Rescue can also assist with mass stranding events. Rehabilitation facilities should be compensated for the costs associated with each bird put under their care.

If a searcher discovers a dead individual of a species that is fully protected by the state or federally or state-listed as threatened or endangered, and for which handling is not specifically authorized under the applicable salvage permits, he/she will collect data and photos as for any other fatality, but will cover it with a bucket or cone and flag the location and leave it in place. If it has been confirmed as a federally listed species under the ESA, the searcher will immediately call a USFWS Office of Law Enforcement special agent to determine the appropriate follow-up action. All such injury and fatality incidents must be reported to the CEC Compliance Project Manager (CPM).

6.4 Searcher Efficiency Trials

Estimating searcher-efficiency is a standard component of fatality studies. Searcher efficiency rates can be estimated by covariates of interest (e.g., season, habitat, and carcass size classes), which are typical factors of interest for fatality studies (CEC and CDFG 2007, Huso 2010, Korner-Nievergelt et al. 2011, USFWS 2012, Smallwood 2013). Independent searcher-efficiency trials will be conducted to help assess and adjust for potential spatial bias in the distribution of fatalities among SCAs. Separate trials will be conducted to assess detection probability associated with the Gen tie-line searches. Modifications to search strategies (e.g., transect width, vehicle speed) will be considered if searcher efficiency is very low.

The desert landscape in which this Project is located generally changes little with the seasons, save for brief periods following winter and spring rains when floods may occur and blooming plants may flourish. A recent meta-analysis involving data from more than 70 wind-energy projects suggested that including habitat visibility class as a predictive variable generally eliminated any otherwise apparent seasonal effects on searcher efficiency (Smallwood 2013). The searcher efficiency trials for this Project will be repeated seasonally (winter, spring, summer, and fall) and trials will be organized so that all search personnel participate in bias trials. Placement of trial specimens will be timed to limit the number of trial carcasses placed on the landscape at any one time (minimizing the chance of artificially attracting scavengers or, conversely, scavenger swamping; Smallwood 2007). This approach will also ensure that any new searchers that join the crew participate in searcher efficiency trials. The trials will also be managed to ensure effective quantification of searcher efficiency in relation to predefined habitat visibility classes (low, medium, and high, if relevant), size classes of birds (small, medium, and large), and facility type (SCA, Gen tie-line).

The bias-trial sample sizes required to produce precise, adjusted fatality estimates are not well established, in part because needs may vary substantially depending on actual project-specific searcher efficiency, carcass removal, and fatality rates. In addition, if growth of new vegetation, or substrate heterogeneity caused by flood events, is sufficient to create a new visibility class under the SCAs, the specimen numbers would need to increase to effectively account for this factor. It will also be necessary to ensure that the estimates of searcher efficiency encompass variation among multiple searchers. The influence of individual searchers will not be accounted for in a formal, statistical sense by including “searcher” as a covariate in the estimation model; however, all searchers will be tested similarly. Each searcher will be exposed to multiple test specimens of each size class, and at similar repeated levels if testing in different habitat visibility classes is required. A minimum of 15 carcass samples per small size class, 10 for medium, and five for large is anticipated within the SCA (including the fence line), and Gen tie-line sampling areas per season. Searcher efficiency will be summarized for each individual searcher but to avoid needlessly inflating the variance of the estimate, individual searcher effects will not be included in the fatality estimation model.

Besides representing birds of different sizes, another important factor to consider in searcher-efficiency and carcass-removal trials is the bird species to use as trial specimens. Ideally, all carcasses used for both searcher-efficiency and carcass-removal trials should reflect the range of species likely to be encountered as fatalities in the Project area (CEC and CDFG 2007). Because obtaining sufficient samples of “natural” carcasses often is difficult, researchers frequently resort to using readily available, non-native surrogate species in bias trails; however, this practice may result in biased results when compared to studies that use only “natural” specimens (Smallwood 2007). For all bias trials, this program will maximize use of representative native or naturalized species authorized by permits, either found during the study or gathered elsewhere, as needed, and from diverse sources where possible, but all trial carcasses will be obtained and deployed in a manner that are consistent with applicable regulatory requirements.

Another factor that influences carcass detectability is how fresh and intact the carcass is (Smallwood 2007, 2013). If multiple pieces of a depredated or scavenged carcass are scattered over a modest area, in some cases the fatality may be more easily detected; however, detectability generally decreases when only remnants of a carcass are present, or when the carcass is aged and degraded. Nevertheless, in contrast to wind-energy projects, there is little expectation that this Project will cause injuries and fatalities that result in dismembered carcasses, so this factor is not expected to influence searcher-efficiency or carcass-removal rates (Smallwood 2013). Therefore, bias trials conducted in this study will involve primarily intact carcasses. The searcher-efficiency trial specimens may range from freshly thawed to partially decayed (i.e., selected, subject to availability, to mimic the range of carcass decay that typically accrues over 7-day to 21-day periods).

A field supervisor or other biologist not currently involved in the standard surveys will place the trial specimens and will recover any specimens missed by the searchers. Care will be taken to limit the evidence of carcass placement by the technicians. The ground is relatively hard and compact, and vehicle tracks are found along the rows. Trial carcasses will be tossed from the vehicle to eliminate or reduce visual cues. All trial specimens will be placed according to a sampling plan that randomly allocates carcasses of different sizes among survey plots and survey days within the assessment areas, but is stratified to ensure equitable representation of different searchers, SCAs versus Gen tie-line and seasons. To minimize the possibility of unnecessarily attracting scavengers or, conversely, contributing to scavenger swamping, which could affect ongoing carcass-removal trials (Smallwood 2007, Smallwood et al. 2010), placement of searcher-efficiency trial specimens will be distributed throughout the year (appropriately organized to provide season-specific estimates with adequate samples to provide a robust estimate of searcher efficiency), with few specimens placed at any one time. Carcasses will be placed carefully to minimize disturbance of substrates that may bias carcass detection.

All trial specimens will be inconspicuously marked with a piece of black electrical tape wrapped around one leg, in a manner that allows the searcher to readily distinguish trial specimens from new fatalities, but without rendering the specimen unnaturally conspicuous (Smallwood 2007, USFWS 2012). To ensure a degree of “natural” placement, carcasses will be tossed towards the designated, randomly chosen placement spot from a distance of three to six ft (one to two m). Documentation of each location will include GPS coordinates, notes about the substrate and carcass placement, and a digital photo of the placement location.

Searchers will have only one opportunity to discover placed specimens. Any missed specimens will be recovered as quickly as possible after surveys have been completed in a given area, and after the searcher(s) have become aware of the trial through discovery of one or more specimens. Some researchers have argued for leaving missed specimens in place to enable possible discovery in a subsequent survey and thereby mimic the natural situation in which “bleed-through” is possible (e.g., Smallwood 2013, Warren-Hicks et al. 2013; discussed further below). Although this approach may have merit in some situations, its potential value for this

Project is offset by the need to avoid attracting ravens, which represent a threat to desert tortoises (*Gopherus agassizii*) living in the area (Ironwood Consulting 2010).

6.5 Carcass Persistence Trials

The degree to which carcasses persist on the landscape depends on a variety of factors reflecting seasonal and inter-annual variation in habitat, climate, and the scavenger community. The composition and activity patterns of the scavenger community often vary seasonally as birds migrate, new juvenile birds and mammals join the local population, and mammalian scavengers variably hibernate or estivate. The scavenger community may also vary substantially from year to year because of variation in annual reproduction and survival related to changes in landscape condition. Seasonally and annually variable climatic conditions also may contribute to variation in carcass decay and removal rates due to variation in temperatures, solar insolation, wind patterns, and the frequency of flooding events. Therefore, to ensure accurate treatment of this bias factor, carcass-persistence rates typically are assessed on a quarterly or at least semi-annual basis during each year that fatality surveys are conducted (CEC and CDFG 2007, USFWS 2012, Smallwood 2013). It is also imperative that carcass-persistence trials effectively account for the influence of carcass type/size, given that persistence times may vary widely depending on the species and size class involved (Smallwood 2013).

To quantify carcass persistence, 15 small, 10 medium, and five large carcasses will be randomly placed and monitored within the SCAs (including the fence line), and along the overhead lines each season. A minimum of half of the carcasses in the SCAs will be monitored, using motion-triggered, digital trail cameras (e.g., see Smallwood et al. 2010) while the remaining will be visited on foot, for 30 days or until the carcass has deteriorated to a point where it would no longer qualify as a documentable fatality. Some of the carcasses along the overhead lines will be monitored with cameras if theft and vandalism concerns can be resolved. For carcasses not set up with cameras, the carcass will be visited once a day for the first four days, and then every three to five days until 30 days is reached. Fake cameras or cameras without bias trial carcasses will also be placed to avoid training ravens to recognize cameras as "feeding stations". Periodic ground-based checking of carcasses also will occur to guard against misleading indicators of carcass removal, such as wind blowing the carcass out of the camera's field of view. To minimize potential bias caused by scavenger swamping (Smallwood 2007, Smallwood et al. 2010), carcass-persistence specimens will be distributed across the entire Project, not just in areas subject to standard surveys, and new specimens will be placed every two to three weeks in small numbers.

Trial specimens will include only intact, fresh (i.e., estimated to be no more than one or two days old and not noticeably desiccated) bird carcasses that are either discovered during the study or are acquired from other sources after having been frozen immediately following death. If permits allow, preference will be to use carcasses of species that occur in the area. Surrogates, such as game birds and waterfowl, that are similar in size and appearance to species that occur in the area, will be obtained from commercial sources and used if necessary to meet the required sample sizes. However, domestic waterfowl or gamebirds that are white or brightly

colored (e.g. male pheasants) will not be used. Scavenging rates for surrogates may be artificially high, at least when compared to raptors (Smallwood 2007, 2013) and may lead to conservative fatality estimates (i.e., an overestimate) for some taxa/groups.

To reduce possible biases related to leaving scent traces or visual cues that may unnecessarily alert potential scavengers, all carcasses used in carcass-persistence trials will be handled with latex gloves, and handling time will be minimized. All trial specimens will be inconspicuously marked with a small piece of green electrical tape wrapped around a leg to distinguish them from both unmarked fatalities and searcher-efficiency trial specimens.

Upon conclusion of the relevant monitoring period, each trial specimen will be classified into one of the following categories:

- **Intact:** Whole and unscavenged other than by insects
- **Scavenged/depredated:** Carcass present but incomplete, dismembered, or flesh removed
- **Feather spot:** Carcass scavenged and removed, but sufficient feathers remain to qualify as a fatality, as defined above
- **Removed:** Not enough remains to be considered a fatality during standard surveys, as defined above

Estimates of the probability that a carcass persisted between search intervals and therefore was available to be found by searchers will be used to adjust carcass counts for bias.

6.6 Estimating Adjusted Fatality Rates

The sampling design will enable calculation of fatality estimates adjusted for searcher-efficiency, carcass-persistence rates, and proportion of area sampled for each target project component. The adjustment for searcher efficiency will occur by virtue of applying standard methods for analyzing detection data with the data partitioned by season and standardized carcass size classes.

The fatality estimates will be adjusted for variation in carcass persistence and searcher efficiency, by applying seasonal and carcass-size-specific correction factors to the observed unadjusted fatality estimates.

For illustrative purposes, we summarize here the basic formulation of the Huso estimator, the first part of which pertains to fatality estimation for different strata, or groups. Essentially, the smallest group for which fatalities are estimated can be considered a stratum, with stratum *k* representing, for example, a set of similarly sized birds within a defined habitat visibility class. Note that strata should be defined to ensure minimum variance in detection probabilities within individual strata, whereas probabilities may vary considerably among strata (e.g., for small versus large birds, or in habitats of low versus high visibility). Depending on the circumstances, there can be strata based on species groups, size classes, seasons, habitats, and/or infrastructure types (also could conceivably model distance categories as another covariate).

For a particular stratum *k* for a given survey plot and search interval, fatality (*F*) can be estimated as:

$$\hat{F}_k = \frac{c_k}{g_k},$$

where c_k is the number of observed carcasses and g_k is the probability of detecting a carcass. The detection probability *g* typically is the product of three variables: the probability of a carcass persisting (*r*), the probability of a carcass being observed if it persists (*p*), and the effective proportion of the interval sampled (*v*):

$$\hat{g} = \hat{p} * \hat{r} * \hat{v}.$$

The probability of a carcass being observed if it persists (i.e., searcher efficiency; *p*) is estimated as:

$$\hat{p} = \frac{number\_observed}{number\_available},$$

with data for calculating this metric derived from searcher-efficiency trials where known numbers of carcasses are distributed over the search area and carcass detection rates are quantified.

The probability that a carcass persists (*r*) is estimated as:

$$\hat{r} = \frac{\bar{t}(1-e^{-I/\bar{t}})}{I},$$

where $\bar{t}$ is the estimated mean carcass persistence time and *I* is estimated as:

$$I = \min(I_a, \tilde{I}),$$

where I_a is the minimum actual time between searches and $\tilde{I}$ is the effective search interval, defined as:

$$\tilde{I} = -\log(0.01) \cdot \bar{t}.$$

The effective proportion of the interval sampled (*v*) is estimated as:

$$\hat{v} = \min(1, \tilde{I} / I_a).$$

For a given plot in search interval *j*, the adjusted total number of fatalities is calculated as:

$$\hat{F}_j = \sum_{k=1}^{K} \hat{F}_{jk} \ ,$$

where $\hat{F}_{jk}$ is the estimated number of fatalities within stratum *k* of search interval *j*. A stratum may be a project component, such as the Gen tie-line or SCAs.

Finally, the estimate of Project-wide total fatalities during a given search interval is estimated as:

$$\hat{F} = \frac{1}{a} \times \left(\sum_{i=1}^{n} \frac{1}{\pi_i} \sum_{j=1}^{J} \hat{F}_{ij} \right),$$

where $\hat{F}_{ij}$ is the number of fatalities on plot *i* in search interval *j*, *a* is the proportion of area that was searched and π_i represents a modified weight associated with an unequal probability sample (Huso 2010), and is the product of the probability of selecting plot *i* and the proportion of fatalities contained in plot *i*. The total number of search intervals is *j*, assuming that there is the same number of search intervals for each plot. In practice, one need not assume that *j* is constant, but presenting it this way simplifies the notation.

Adjusted fatality estimates for the Project will be expressed per unit area (e.g., acres, SCAs) per year for each of the facility components (overhead lines, fence, SCAs).

6.7 Incidental Fatality Documentation

Once post-construction fatality monitoring begins, all subsequent bird and bat injuries and fatalities detected incidental to the standardized, post-construction monitoring program will be classified as "incidental finds," documented using similar procedures as used for specimens discovered during the standardized surveys, and integrated with records from the standardized surveys for summary reporting and evaluation purposes. Incidental finds that occur outside of standard search areas will not be included in calculations of adjusted post-construction fatality estimates, but will be summarized within seasonal and annual reports (discussed below).

From a statistical standpoint, a bias will occur if carcasses that are found in standard search areas but not during standardized surveys are recorded and removed prior to the next search of that SCA. Per USFWS direction, and to be consistent with the raven management plan, these carcasses will be reported directly to an approved avian biologist. These incidental finds will be documented using the same procedures as those discovered during standardized surveys. Data from incidental finds within standardized search areas will be included in analyses to estimate mortality to be conservative. Appropriate caveats can be included within the seasonal and annual reports to document the potential magnitude of any biases created by recovering these carcasses.

Carcasses, including feather spots, found during standardized carcass searches will be labeled with a unique number, and species, sex, age, date, time found, location (GPS coordinate), condition (e.g., intact, scavenged, feather spot), observer, and any comments that may indicate cause of death will be collected. All carcasses will be photographed in situ at minimum with 12 megapixel cameras, showing the dorsal, ventral, and head areas. Once documented, carcasses will be handled in accordance with USFWS SPUT Permit conditions and placed in a dedicated, lockable, freezer at the Project, or as otherwise directed by the CEC CPM or responsible agencies.

6.8 Nest Management

Birds may utilize Project facilities for nesting. Any bird nests found will not be touched until an approved avian biologist is consulted. If a nest is found, an approved avian biologist will check the nest for activity and document findings with pictures. These pictures will be furnished to the agencies upon request. Nests that contain eggs or young are considered active and are protected for species listed under the MBTA and CDFG Code. Therefore, active nests will be left in place. Genesis will consult the CEC, BLM, CDFW, and USFWS if an active nest or a nest belonging to an eagle or threatened or endangered species is identified as a problem nest, and needs to be addressed. Nests that are confirmed to be inactive (i.e., do not contain eggs or young), do not belong to eagles or other threatened or endangered species, and will cause operational problems, will be removed.

7.0 MINIMUM CREDENTIALS OF MONITORING PERSONNEL AND TRAINING

The fatality monitoring program will be overseen by an avian biologist approved by CEC and BLM in consultation with Wildlife agencies that has demonstrated the ability to accurately identify the species of birds and bats potentially impacted by the project. This approved avian biologist may also be approved as a “Designated Biologist” (DB) under applicable Conditions of Certification for BBCS Implementation. Additional biologists will be approved by the CEC and BLM in consultation with the wildlife agencies for the purpose of accurately identifying species of birds and bats potentially impacted by the project. The approved biologists will assist with fatality monitoring and will be available to respond to incidents at the Project that require expert assistance (e.g. uncertain species identification, possible listed species, or injuries) within 24 hours. In addition, an approved avian biologist will be on-site during days of standardized monitoring.

Carcass searchers may include solar facility staff. Searchers will be trained in the sampling and search methodology, basic identification and documentation of carcasses, implementation of carcass removal trials and notification of a rehabilitation center in the event of injured birds or bats. Final identification of species shall be done by approved avian biologist(s). Only staff/technicians that are listed under the SPUT Permit will be allowed to handle carcasses. Accurate identification of rare, special status species will be emphasized during training. All searchers will have photo cards to help classify specimens of sensitive species and will take photographs of all finds. All data collection will be standardized and an approved avian biologist

will be responsible for final decisions on species identification; however, all observations that were not conclusive will be reported.

The curriculum and training materials for training of non-biologist personnel in monitoring methods will be prepared and conducted by an avian biologist approved by BLM and CEC prior to initiation of the study. Training materials must be reviewed and approved by BLM and CEC. Components of the training program will include:

- A classroom-based portion with lecture and handout materials, and photographic or specimen-based (if available) basic species identification;
- A field-based portion that allows trainees the opportunity to practice and receive feedback on conducting carcass searches and trials, proper documentation of mortality events, basic identification of species, completing data forms, and following protocols for assessing and assisting injured birds and bats;
- Field tests of each participant; and
- A training log to be updated with each trainee's name and contact information upon successful completion of the course.

The avian biologist that will conduct the training will, minimally, have a master's degree in biological sciences, zoology, botany, ecology, or a related field, and at least one year of field experience with avian or bat research or monitoring in the region and experience in identifying birds and bird carcasses to species. All reference material should be maintained and provided to the agencies in the event that there are questions about species identification.

8.0 REPORTING

Standardized instructions will be provided to site personnel and qualified biologists to follow in response to wildlife incidents at the Project (Appendix C).

8.1 USFWS Bird Fatality/Injury Reporting Program

The Project will report all documented bird injuries and fatalities to the USFWS using the required Avian Injury and Mortality Reporting Form that is a reporting requirement of the USFWS SPUT Permit issued to the Project to authorize the handling of dead or injured birds. SPUT reporting will be submitted monthly or in accordance with the terms of the permit to the USFWS, BLM, and CEC. Similar reporting to the CDFW will be accomplished as a condition of any relevant Scientific Collecting Permit that the CDFW may issue to authorize the handling of dead or injured birds under state law.

8.2 Summary Reports

8.2.1 Seasonal Reports

Seasonal electronic summaries of all biological monitoring activities will be submitted to the CEC, BLM, USFWS, and CDFW throughout the monitoring period. After the fourth quarter of

each year of monitoring, a biologist representing the Project will assist the Project in preparing and submitting to the CEC, CDFW, BLM, and USFWS an annual report that summarizes dates, durations, and results of all fatality monitoring conducted to date (see section 8.1.2).

To address the specific objectives of the monitoring plan, seasonal reports will include the observed fatality rates broken out by likely diurnal, and likely nocturnal species, and for ecological guilds of interest (e.g., raptors, water-associated birds, passerines) for each of the facility types. Species composition of carcasses, and the results of the bias trials will also be reported. Seasonal reports will also include spatial analyses of the data that address whether fatalities are randomly distributed throughout the facility. All raw field notes, field data, photographs, and GIS data will be submitted to the agencies. The Technical Advisory Group (TAG) co-chairs (see below) will distribute the seasonal reports to TAG members and schedule a quarterly meeting (or more frequently if necessary) within 30 days of the receipt of the seasonal reports, for reviewing and documenting the TAG members comments and recommendations on the reports. The TAG will approve the seasonal and annual reports prior to being published on the Genesis website at the CEC.

8.2.2 Annual Reporting

Following completion of fourth quarter monitoring, the biologist representing the Project will assist the Project in preparing and submitting to the CEC, CDFW, BLM, USFWS, and TAG, an annual report that includes similar information in the seasonal reports, and that summarizes dates, durations, and results of all fatality monitoring conducted to date. In addition, the annual report will provide overall adjusted fatality estimates with CIs, and fatality estimates by season. In addition, to the extent possible, fatality rates will be estimated and reported for likely diurnal, and likely nocturnal species, and for ecological guilds of interest (e.g., raptors, water-associated birds, passerines). The Project owner will prepare an exacting reporting schedule for the agencies, but the report is anticipated to be completed within 90 days after completion of field surveys for the annual monitoring cycle.

After two years of data collection the lead biologist will assist in preparing an overall report that describes study design and results of avian and bat fatality monitoring. This second year report will serve as the annual report for the second year of monitoring, as well as the overall report that covers both years of monitoring. This report will be used to modify or conclude monitoring as appropriate. The report will be submitted to the CEC, CDFW, BLM, and USFWS within two months of completion of second year data collection. To address specific objectives of the monitoring plan, these annual reports will include overall fatality estimates with CIs, and fatality estimates by season. To the extent possible, fatality rates will be estimated and reported for likely diurnal, and likely nocturnal species, and for ecological guilds of interest (e.g., raptors, water-associated birds, passerines). These reports will also include spatial analyses of the data that address whether fatalities are randomly distributed throughout the facility.

The review and approval of the annual report shall follow the same guidelines for the seasonal reports as outlined in Section 8.2.1 above.

9.0 TECHNICAL ADVISORY GROUP AND ADAPTIVE MANAGEMENT

A TAG will monitor Project activities, including fatality data, to provide recommendations to the BLM and CEC on the need for any adaptive management based on reported data. The TAG will consist of one member of the CEC, BLM, USFWS, and CDFW (REAT agencies). Two additional non-voting members, representing Genesis Solar, LLC would serve as members of the TAG. Person(s) with scientific expertise may be invited by TAG members, if deemed appropriate. In addition, representatives from the consultants involved in the conduct of the studies will typically be invited to attend and participate in TAG meetings. The TAG will provide advice and recommendations to the BLM Authorizing Officer and the CEC CPM on developing and implementing effective measures to monitor, avoid, minimize, and mitigate impacts to wildlife species and their habitats related to operations. The BLM Authorized Officer and the CEC CPM will evaluate any recommendations of the TAG, including discussions with Genesis concerning new measures or measures that are not completely detailed in this BBCS, requisite effectiveness monitoring, and make a decision on what monitoring and measure(s) to require for implementation.

CEC and BLM TAG members will serve as TAG co-chairs, whose duties will include overseeing the dissemination of Project data (including data on fatality events), setting up and moderating meetings, reviewing of fatality data, and documenting adaptive management recommendations for the Project. It is the TAG co-chairs' responsibility to coordinate meetings and involve all team members.

The guiding principles, duties, and responsibilities of the TAG include the following.

- The TAG is only an advisory group.
- Recommendations will be based on best available science and existing approvals and permits to address specific issues resulting from the Project.
- Recommendations will generally be made by consensus. Where consensus cannot be reached, multiple recommendations will be put forth to the BLM and CEC for a final decision.
- Provide sufficient flexibility to adapt as more is learned about the Project as well as strategies to reduce avian impacts if warranted.
- Review results of fatality monitoring.
- If BLM and CEC determine, based on post-construction monitoring, that bird mortality caused by solar facilities is having potentially adverse impacts on special-status bird populations, or is having any other California Environmental Quality Act (CEQA) significant impact (per CEQA Guidelines, Appendix G), the TAG may recommend adaptive management strategies such as installing additional bird flight diverters, alterations to Project components that have been identified as key mortality features, or implementing other appropriate actions to address the relevant findings based on the data.

- Review annual report on status of compliance with mitigation measures and permit conditions and provide recommendations to the BLM Authorized Officer and CEC CPM as necessary.
- Evaluate effectiveness of implemented adaptive management strategies and provide the BLM Authorized Officer and CEC CPM with recommendations based on findings.
- The TAG will terminate when the BLM Authorized Officer and CEC CPM determine that monitoring and any adaptive management measures have been implemented.

The TAG shall hold the first meeting prior to commencement of post-construction monitoring to review any final details of the monitoring plan. Subsequent meetings will be held following each monitoring season and after the end of each annual monitoring cycle.

After the initial 3-month period, the TAG will review the findings for each monitoring season to determine if adjustments to the monitoring frequency are warranted based on carcass persistence trial results. Genesis and the agencies will also meet at the end of the second year of monitoring to determine if continued/focused monitoring is warranted. Continued/focused monitoring may be warranted if data indicate that bird mortality caused by solar facilities is substantial and is having potential adverse impacts on special-status bird populations, is having any other CEQA significant impact (per CEQA Guidelines, Appendix G), or there are other special circumstances. Such monitoring will be designed to address specific concerns that are identified after review of the data.

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Appendix A. Incidental Bird Mortalities and Injuries Previously Reported as of November 7, 2014, from Genesis Solar Energy Project, Riverside County, California

Appendix A. Incidental Bird mortalities and injuries previously reported as of November 7, 2014, from Genesis Solar Energy Project, Riverside County, California.

Species Common Name (AOU English Name)	# of Mortalities Reported
unidentified bird	53
brown-headed cowbird	23
mourning dove	13
eared grebe	12
duck spp.	11
tree swallow	8
Bullock's oriole	7
cliff swallow	7
western grebe	7
yellow-headed blackbird	7
barn owl	6
passerine spp.	6
American coot	5
American kestrel	5
grebe spp.	5
common loon	3
great blue heron	3
lesser goldfinch	3
lesser nighthawk	3
pied-billed grebe	3
ruddy duck	3
sparrow spp.	3
yellow warbler	3
American avocet	2
blue-winged teal	2
Brewer's blackbird	2
brown pelican	2
bunting spp.	2
green-winged teal	2
gull spp.	2
Lincoln’s sparrow	3
orange-crowned warbler	2
red-tailed hawk	2
ring-billed gull	2
rock dove	4
rock wren	2
sandpiper spp.	2
Say's phoebe	2
sora	2
western meadowlark	2
barn swallow	1
black phoebe	1
blackbird spp.	1
black-headed grosbeak	1
black-necked stilt	1
black-throated grey warbler	1
bufflehead	1
common raven	1
Cooper's hawk	1

Appendix A. Incidental Bird mortalities and injuries previously reported as of November 7, 2014, from Genesis Solar Energy Project, Riverside County, California.

Species Common Name (AOU English Name)	# of Mortalities Reported
Eurasian collared dove	1
flycatcher spp.	1
gadwall	1
greater roadrunner	1
great-tailed grackle	1
hermit thrush	1
hermit warbler	1
heron spp.	1
herring gull	1
horned grebe	1
house finch	1
house wren	1
killdeer	1
least sandpiper	1
MacGillivray's warbler	1
marsh wren	1
red-necked phalarope	1
rough-winged swallow	1
swallow spp.	1
Townsend's warbler	1
warbler spp.	1
western grebe	1
western tanager	1
white-crowned sparrow	1
white-throated swift	1
white-winged dove	1
Wilson's warbler	1
Grand Total	**272**

Appendix B. Summary of Statistical Simulations for Experimental Design from the California Valley Solar Ranch (CVSR)

Recent statistical power and precision analyses conducted for another solar project being built approximately 200 miles (322 km) north of the Project site provides some guidance for developing a spatial sampling regime (TerraStat Consulting Group 2013). These simulations were based on projected sampling across an entire 392-MW solar thermal facility, so the results may not accurately reflect the expectation at facilities of different sizes or where sampling is constrained to smaller portions of a large facility; nevertheless, the general guidance they provide is useful. The simulation analyses were parameterized based on several wind-energy studies conducted in the desert southwest region, and incorporated one of several well-studied mathematical approaches for estimating fatality rates adjusted for proportion of area sampled, search interval, searcher efficiency, and carcass persistence (Shoenfeld 2004). The power analyses assessed the effect of varying the proportion of area sampled from 1% to 30%, using search intervals of seven, 21, and 25 days, and simulating four hypothetical mortality rates (0.5, 1.0, 5.0, and 10 fatalities/MW/year), assuming exponentially distributed carcass removal rates with means of 7.4 or 21.8 days and searcher efficiencies of 0.55 and 0.69 for small and large birds, respectively. The simulation results indicated that the 90% CI for the facility-wide fatality estimate narrowed as the survey area increased, as the search interval decreased, and as the simulated mortality rate increased. The coefficient of variation (CV) provides a way to evaluate the relative amount of imprecision in an estimate. The CV is useful because it does not depend on the size of the estimate and so can be compared between large and small estimates. Larger values of CV are associated with estimates that are less precise: a CV of 100% indicates an estimate with a standard deviation that is equal to the mean. At all of the simulated fatality rates, and based on a 21-day search interval, the CV for the fatality estimates approached an asymptote once the proportion of area searched reached about 20%. In addition, at the 20% sample level, the CV for the fatality estimates was less than 25% for mortality rates that exceeded 1.0 fatality/MW/year. This level of precision generally is considered adequate for answering the primary questions of interest in such fatality studies (Strickland et al. 2011), and is consistent with guidance from the USFWS Land-Based Wind Energy Guidelines (USFWS 2012), which states that “the carcass searching protocol should be adequate to answer applicable Tier 4 questions at an appropriate level of precision to make *general* conclusions about the project*, and is not intended to provide highly precise measurements of fatalities*” (p. 45; emphasis added). At the lowest simulated mortality rate, with a 21-day search interval, the coefficient of variation was above 50% at 20% of area sampled, which would be considered a marginal precision level for answering the questions of interest. From a practical standpoint, the importance of precision is diminished if impacts are low. For example, if the take estimate is 0.1 bird per year with 200% CV, this suggests a 90% confidence interval of about (0, 0.4), or a range of less than half a bird per year. On the other hand, if the take estimate is 100 birds per year and the CV is 20%, the 90% confidence interval is (61, 139), or a range of 78 birds per year.

At the lower simulated mortality rates, increasing the proportion of area sampled from 20% to 30% had less impact on the precision compared to decreasing the search interval from 21 days to seven days. For the two highest simulated mortality rates, however, varying the search interval had less effect on the precision of the adjusted fatality estimates, whether based on 20% or 30% of area sampled, with the CVs remaining between about 8% - 19%. At the 1.0

fatality/MW/year mortality rate with 20% of the area sampled, the CV increased from about 25% with a 7-day search interval to about 40% with a 21-day search interval. At the 0.5 fatalities/MW/year mortality rate with 20% of the area sampled, the relevant change in the CV was from 37% to 57%.

Analysis of data from the CVSR in San Luis Obispo County, California (H.T. Harvey and Associates 2014) corroborates the simulation results. The CVSR is a recently completed 250-MW facility comprising nine discrete photovoltaic solar arrays, which collectively cover approximately 642 ha (1,586 acres) of primarily degraded annual grassland. Beginning in fall 2012, 100% of two arrays were surveyed weekly for bird and bat fatalities using 50-ft (15-m) transects for large birds and 20-ft (6-m) transects for bats and small birds. A total of 175 avian fatalities was found during standardized surveys in the two arrays over 10 months. The Huso (2010) estimator was used to estimate the number of fatalities based on documented fatalities adjusted for searcher efficiency and carcass persistence.

Two methods were used to evaluate the potential effects of reduced search area on fatality estimates at CVSR. Spatial clustering of fatalities was evaluated using Global Moran's I index, which indicates whether objects are clumped, uniform, or random in their spatial distribution (ESRI ArcInfo 10.0, geographic statistical toolbox). Spatial clumping of fatalities within the individual arrays would introduce additional uncertainty into the fatality estimates if sampling covered considerably less than 100% of the survey area. The second method involved resampling the observed fatality data to generate distributions of fatality estimates that would have resulted from searching less than 100% of the study area. Sample sizes varied from one sample unit up to the total number of sample units in the study area (180). (At CVSR, a sample unit was one "tracker unit," a group of 18 rows of solar panels covering approximately 0.34 ha [0.85 acres]; sample units at CVSR were about a quarter the size of the proposed sample units at Desert Sunlight and the Project). For each sample size, 2,000 simulated datasets were generated from the original data. Then, for each simulated dataset, the total number of fatalities for the study area was calculated by scaling the sample count according to the proportion of area represented in the sample. This procedure resulted in a distribution of possible fatality estimates for each level of area sampled. Based on these distributions, means, 90% CIs, and CVs were calculated for each sample size to evaluate the effect of sampling variation on the magnitude and precision of the fatality estimates.

The geospatial analysis indicated that the distribution of fatalities in the two, 100% searched arrays did not differ significantly from a random distribution (H.T. Harvey and Associates 2014). Results of the resampling analysis indicated that the mean fatality estimates and the 90% CIs for those estimates stabilized at about 20% of area sampled (Figure 1). Examined in a different way, the results indicated that the CVs of the sample distributions declined with increasing sample size and that, again beyond about 20% of area sampled, further increases in area sampled resulted in only small increases in precision (Figure 2). Moreover, at the 20% sample level, the CV for the fatality estimates was well below 20%, which is a level of precision that is considered adequate for answering the primary questions of interest in such fatality studies (Strickland et al. 2011, USFWS 2012). With regard to applying these results to other sites, it is

important to note that the results may be sensitive to: 1) the relative proportions of large and small birds represented in the fatality sample, which were combined for this analysis; 2) the number and distribution of fatalities across the site; and 3) the influence of variation in searcher efficiency and carcass persistence.

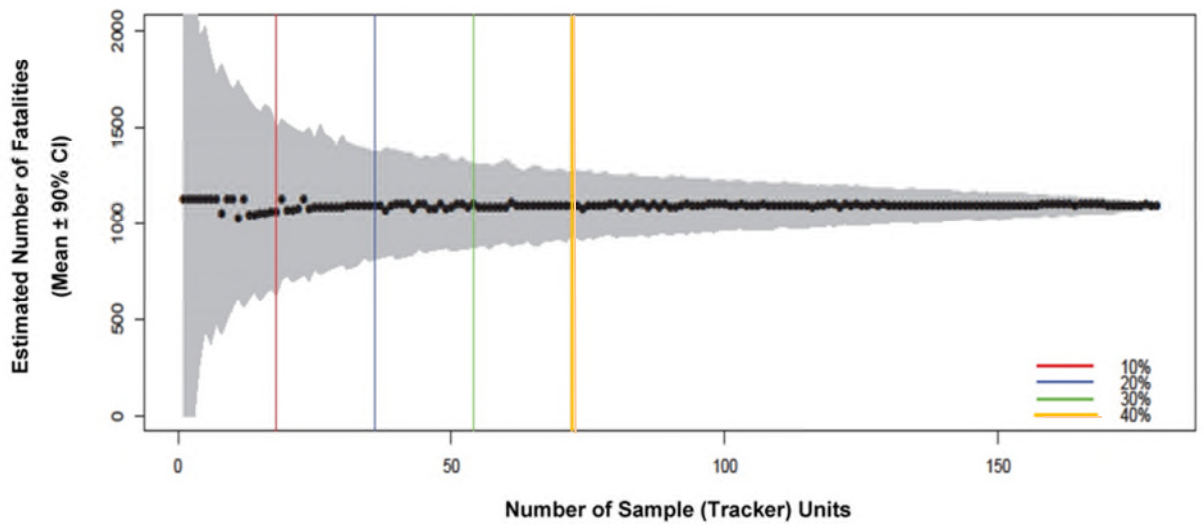

Figure 1. Resampling results from the California Valley Solar Ranch illustrating how the accuracy and precision of fatality estimates and varies with proportion of area sampled.

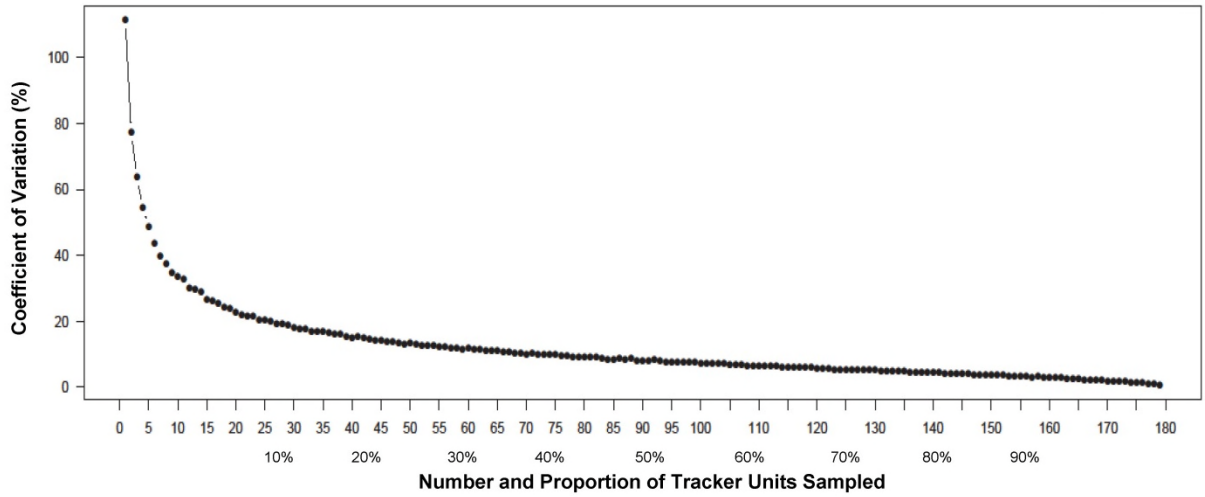

Figure 2. Resampling results from the California Valley Solar Ranch illustrating how the coefficient of variation for fatality estimates varies with proportion of area sampled.

Appendix C. Genesis Wildlife Response and Reporting System (WRRS)

GENESIS
WILDLIFE RESPONSE AND REPORTING SYSTEM (WRRS)

BACKGROUND AND INTRODUCTION

Genesis will voluntarily implement a wildlife incident response and reporting system. Genesis will record and report all dead and injured wildlife including but not limited to birds found incidentally in the project areas over the entire life of the project as part of the project operations and monitoring efforts. The purpose of this Wildlife Response and Reporting System (WRRS) is to standardize the actions taken by site personnel in response to wildlife incidents found within project boundaries. The WRRS provides direction for site personnel who may encounter a wildlife incident in an effort to fulfill obligations in reporting wildlife incidents. Wildlife fatalities or injuries found by project personnel or others will be reported and processed following the protocols described in this document.

GENESIS WRRS POLICY

This WRRS will be active for the life of the solar projects. All employees, contractors and subcontractors of Genesis have a responsibility to comply with all environmental laws and regulations. Most birds are protected by the federal MBTA, and eagles are further protected by the BGEPA. In addition, the state of California has an Endangered Species Act (CESA). Under the federal statutes, it is illegal to harm, harass, kill, or collect birds that may be found in the solar facility. A summary of these statutes is presented below. It is recognized that other wildlife including bats are generally not protected by federal or state law unless listed as a threatened or endangered species. However, it is the policy of Genesis to treat all wildlife incidents the same as avian incidents and include them in the WRRS.

It is illegal to collect an injured or dead bird without appropriate federal and state permits. **THE TOUCHING, POSSESSION, TRANSFER, OR TAMPERING WITH ANY WILDLIFE SPECIES (ALIVE OR DEAD) BY GENESIS EMPLOYEES OR SUBCONTRACTORS IS STRICTLY PROHIBITED UNLESS CONSISTENT WITH PERMITS.** The WRRS is designed to provide a means of recording and collecting data about wildlife species found in the solar facilities to increase the understanding of solar and wildlife interactions. Genesis maintains an ongoing commitment to investigate wildlife incidents involving company facilities and to work cooperatively with federal and state agencies in an effort to minimize the potential for future bird and wildlife fatalities. The objective of this policy is to insure that the best available information about wildlife incidents found in Genesis facilities is recorded and the proper authorities are notified. It is the responsibility of Genesis employees, contractors and subcontractors to report all wildlife incidents as outlined in this WRRS.

APPLICABLE LAWS AND REGULATIONS

Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (MBTA) (16 USC 703-712) is the cornerstone of migratory bird conservation and protection in the United States. The MBTA implements four treaties that provide for international protection of migratory birds. It is a strict liability statute wherein proof of intent is not an element of a "taking" violation. Wording is clear that most actions resulting in a taking or possession (permanent or temporary) of a protected species can be a violation, regardless of intent.

Specifically, the MBTA states: “Unless and except as permitted by regulations...it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess…any migratory bird, any part, nest, or egg of any such bird…(The Act) prohibits the taking, killing possession, transportation, and importation of migratory birds, their eggs, parts, and nests, expect when specifically authorized by the Department of the Interior." The word "take" is defined as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap capture, or collect."

The MBTA protects 836 species of migratory birds (listed in 50 CFR 10.13), including waterfowl, shorebirds, seabirds, wading birds, raptors, and passerines. Generally, the MBTA protects all birds in the U.S. except upland gamebirds (e.g., pheasant, quail, etc.), rock doves (pigeons), European starlings, and English house sparrows. Nearly all birds found at Genesis are protected under the MBTA.

Bald and Golden Eagle Protection Act

In June 1940, Congress signed into law the Bald and Golden Eagle Protection Act (BGEPA) (16 USC 668-688d) which affords additional protection to the bald and golden eagle. Specifically, the BGEPA states: “Whoever, with the United States or any place subject to the jurisdiction thereof, without being permitted to do so as provided…shall knowingly or with wanton disregard for the consequences of his act take, possess, transport…at any time or in any manner, any bald or golden eagle, alive or dead, or any part, nest or egg thereof shall be fined…that the commission of each taking or other act prohibited by this section, with respect to a bald or golden eagle, shall constitute a separate violation of this section." Penalties for violations of the BGEPA are up to $250,000 and/or 2 years imprisonment for a felony (violations are defined as a felony), with fines doubled for organizations.

Endangered Species Act

In 1973, the Endangered Species Act (ESA) (16 USC 1513-1543) was passed to protect endangered and threatened species and to provide a means to conserve their ecosystems. Under the ESA, Federal agencies are directed to utilize their authorities to conserve listed species, as well as "Candidate" species that may be listed in the near future, and make sure that federal agencies' actions do not jeopardize the

continued existence of these species. As with the MBTA and the BGEPA, the ESA as amended prohibits the taking of species listed under the act as threatened or endangered.

BLM Sensitive Species

BLM Sensitive Species are species designated by the State Director and includes only those species that are not already federal listed proposed, or candidate species, or State listed because of potential endangerment. BLM's policy is to "ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as threatened or endangered."

California Fish and Game Code

Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code outline protection for fully protected species of mammals, birds, reptiles, amphibians, and fish. Species that are fully protected by these sections may not be taken or possessed at any time. CDFW cannot issue permits or licenses that authorize the "take" of any fully protected species, except under certain circumstances such as scientific research and live capture and relocation of such species pursuant to a permit for the protection of livestock. Furthermore, is the responsibility of the CDFW to maintain viable populations of all native species. To that end, the CDFW has designated certain vertebrate species as Species of Special Concern because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction**.**

GENESIS WILDLIFE INCIDENT REPORTING

The following procedures are to be followed when Genesis personnel or subcontractors discover a wildlife fatality or injury while on site. These procedures are intended to be in place for the life of the project and are independent of the post-construction monitoring studies. Prior to the initiation of operations, on-site training will be provided to Genesis personnel and subcontractors, including new personnel and subcontractors as they are hired, regarding the implementation of this WRRS.

When To Use The WRRS - What Constitutes A Reportable Incident?

For the purposes of this reporting system, *incident* is a general term that refers to any wildlife species, or evidence thereof, that is found dead or injured within the solar project. Note that an incident may include an injured animal and does not necessarily refer only to a carcass or fatality.

An intact carcass, carcass parts, bones, scattered feathers, or an injured wildlife species all represent reportable incidents. Genesis personnel and subcontractors shall report all such discoveries even if you are uncertain if the carcass or parts are associated with the facility.

> A ***fatality*** is any find where death occurred, such as a carcass, carcass parts, bones, or feather spot.
>
> A ***feather spot*** is defined as a groups of feathers composed of at least two or more primary flight feathers, of at least five or more tail feathers, or two primaries within five m (16.4 ft) or less of each other, or a total of 10 or more feathers of any type concentrated together in an area of three square m (m^2; 32 square ft [ft^2]).
>
> An ***injury*** or injured animal is any wildlife species with an apparent injury, or that exhibits signs of distress to the point where it cannot move under normal means or does not display normal escape or defense behavior.

Prior to assuming a wildlife species is injured, it should be observed to determine if it cannot or does not display normal behaviors. For example, raptors will occasionally walk on the ground, especially if they have captured a prey item. Raptors also "mantle" or hold their wings out and down to cover a prey item. These types of behaviors may make the wings appear broken or the animal injured. Identification of specific behaviors typical to the life cycles and distress behaviors of wildlife will be part of the Genesis wildlife training program. Always exercise caution before approaching an injured wildlife species. **Under no circumstances are site personnel that are not included in the SPUT permit allowed to handle carcasses or injured animals.**

Note: *Any incident involving a federally or state listed threatened or endangered species, bald eagle, or golden eagle must be reported to CEC, USFWS and/or California Department of Fish and Wildlife (CDFW) within 24 hours of identification. See project personnel listing for contact information.*

MATERIALS NEEDED TO REPORT AN INCIDENT

1. A copy of this WRRS
2. A Wildlife Incident Report Form (see Attachment 1)
3. Project Personnel Listing and Contact Information
4. Pencil, Pen
5. Camera
6. Field Guide to Birds of North America
7. Flagging

GENESIS WILDLIFE RESPONSE AND REPORTING PROCEDURES

The following procedures apply if the incident involves a **Wildlife Fatality** or **Injured Wildlife Species**:

- **Leave the subject animal in place**. A flag may be used to mark its location for easy finding while the data sheet is being completed. It is recommended that any flagging be marked with the date, time, and initials of the recorder. **DO NOT HANDLE THE CARCASS.**
- **Report** the find to the Site Operations Manager immediately.
- The Site Operations Manager shall complete the following steps:
    - **Photograph** the incident as it was found in the field. Take at least two pictures: a close up shot of the animal as it lays in the field and a broader view of the animal (marked by a flag) with the road, turbines, or other local features in the view. For the close up picture, place an object (e.g., radio, pencil, coin, etc.) next to the carcass for a scale of size. In addition, photographs should be taken to aid in species identification. These should include dorsal and ventral shots of the whole bird with at least one wing spread, if possible. Close-ups of the head and the spread wing should also be included, along with any other diagnostic characters that are identified for the taxonomic group in a field guide.
    - **Prepare a Wildlife Incident Report Form.** The form and associated instructions are presented below.
    - **Report** the find to Genesis' Environmental Department.

The following procedures apply if the incident involves an **Injured Wildlife Species**:

- **Move** to a distance far enough away that it is not visibly disturbed or uneasy due to your presence. **DO NOT ATTEMPT TO CAPTURE OR HANDLE AN INJURED ANIMAL.**
- **Report** the find immediately to the Operations Site Manager
- The Site Operations Manager shall complete the following steps:
    - **Report** the find to the Environmental Affairs Lead immediately.
    - **Contact** a local rehabilitation center (*see contact list below*) for further instructions on handling and transport/pickup of the injured animal.
    - **Prepare a Wildlife Incident Report Form.** The form and instructions for filling out the form are provided below.

*** Any incident involving a federally or state listed threatened or endangered species or a bald or golden eagle must be reported to the CEC, USFWS and/or CDFW within 24 hours of identification. These incidents will be reported to the agency verbally by the Operations Manager, Designated Biologist, or Genesis' Environmental Department.**

GENESIS

WILDLIFE INCIDENT REPORTING FORM

INCIDENT DETAILS

Project Location/Name:

Name of Observer/s:_____ Date: _____ Time: _____

Type of Incident: ☐ Injury ☐ Fatality

Carcass Condition: ☐ Intact Carcass ☐ Partial Carcass ☐ Feathers Only

Age of Remains (days): ☐ 1-2 (fluid filled eyes) ☐ 2-4 (maggots) ☐ 5+ (dried bones/feathers)

Photos Taken: ☐ Yes ☐ No (Take photos of - Birds: beak, legs, feathers, body. Wildlife: face and ears, tail and feet, body)

Who was notified of incident? (see contact list below)_____

Comments on Carcass Condition or Behavior of Injured Animal:_____

_____

_____

LOCATION

Where Found: ☐ On Access Road ☐ SCA ☐ Under Power Line ☐ Substation

GPS Coordinates: UTM N:_UTM E:_DATUM:_____

Comments on Location:_____

_____

IDENTIFICATION

☐ Bird ☐ Bat ☐ Mammal ☐ Other:_____

Species (to best of ability):_____

Description of Color/Markings:_____

Does Animal Resemble a Species of Concern discussed at Training? ☐ Yes ☐ No

Identification Remarks:_____

_____

(Describe details of - Birds: beak size, color, and shape; leg size, color, and shape; feather color; body size. Bats: color of fur and wings; muzzle long or short, tail attached or extending; ear color and shape); Other Wildlife: color of fur, any markings, and body size. _____

_____

ENVIRONMENTAL CONDITIONS

Weather (Check all that apply): ☐ Clear ☐ Cloudy ☐ Rain ☐ Dust Storm

Approximate Temperature (F°):_____

Wind: ☐ Calm ☐ Breezy/Gusty ☐ Strong Winds

Habitat where found: ☐ Gravel (access road/turbine pad) ☐ Bare Ground ☐ Wash ☐ Desert scrub

OTHER NOTES/COMMENTS:_____

_____

_____

CONTACT LIST (Immediately notify one of these individuals of incident)

1. Operations Manager:
2. Environmental Affairs Lead:
3. Designated Biologist/Lead Avian Biologist: