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Letter of Transmittal

February 22, 2010

To: California Energy Commission
Attention: Docketing
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

From: Michele Scott
WorleyParsons
2330 East Bidwell, Suite 150
Folsom, CA 95630
(916) 817-3940

Dear Dockets:

As requested, please find a second original of the Genesis Solar Energy Project Draft Decommissioning and Closure Plan attached, as described below.

Pursuant to the provisions of Title 20, California Code of Regulation, WorleyParsons, consultant to Genesis Solar, LLC, hereby submits the Genesis Solar Energy Project Draft Decommissioning and Closure Plan. The Genesis Solar Energy Project is a 250 megawatt solar electric generating facility to be located between the community of Desert Center and the city of Blythe in eastern Riverside County, California.

This report is submitted as a supplementary report and accompanying data including figures, tables and appendices, to the Genesis Solar Energy Project Application for Certification and Genesis Solar Energy Project Application for Certification Data Requests, Sets 1A and 1B. A hard copy and electronic copy (CD) are included herein.

Please feel free to contact me with any questions or concerns at (916) 817-3940.

Sincerely,

Michele Scott
WorleyParsons



**DRAFT DECOMMISSIONING AND CLOSURE PLAN
GENESIS SOLAR ENERGY PROJECT, RIVERSIDE COUNTY, CALIFORNIA**

Prepared By:

Michele Scott, PMP
Senior Compliance Manager
February 2010

Reviewed By:

Bob Anders, a Professional Engineer in the State of California, as an employee of WorleyParsons, has reviewed the report with the title **Draft Decommissioning and Closure Plan**.

Bob Anders, PE
February 2010

PROJECT 5201206 – DRAFT DECOMMISSIONING AND CLOSURE PLAN

REV	DESCRIPTION	ORIG	REVIEW	WORLEY-PARSONS APPROVAL	DATE	CLIENT APPROVAL	DATE
A	Final Draft	M. Scott J. Marchek	J. Kimura	J. Kimura	12-Feb-10	K. Stein	16-Feb-10
B	Final	D. Builder	M. Tietze	B. Anders	19-Feb-10		



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GENESIS SOLAR ENERGY PROJECT, RIVERSIDE COUNTY, CALIFORNIA

DRAFT DECOMMISSIONING AND CLOSURE PLAN

**Genesis Solar Energy Project
Riverside County, California**

52011206

22 February 2010

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Draft Decommissioning and Closure Plan

Genesis Solar Energy Project

Riverside County, California

52011206

19 February 2010

Infrastructure & Environment

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GENESIS SOLAR ENERGY PROJECT, RIVERSIDE COUNTY, CALIFORNIA**

Disclaimer

The information presented in this document was compiled and interpreted exclusively for the purposes stated in Section 1 of the document. WorleyParsons provided this report for Genesis Solar, LLC solely for the purpose noted.

WorleyParsons has exercised reasonable skill, care, and diligence to assess the information acquired during the preparation of this report, but makes no guarantees or warranties as to the accuracy or completeness of this information. The information contained in this report is based upon, and limited by, the circumstances and conditions acknowledged herein, and upon information available at the time of its preparation. The information provided by others is believed to be accurate but cannot be guaranteed.

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Any questions concerning the information or its interpretation should be directed to Michele Scott.



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GENESIS SOLAR ENERGY PROJECT, RIVERSIDE COUNTY, CALIFORNIA**

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ABBREVIATIONS AND ACRONYMS

AFC	Application for Certification
AQMD	Air Quality Management District
BLM	Bureau of Land Management
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
CDFG	California Department of Fish and Game
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CHP	California Highway Patrol
CIWMB	California Integrated Waste Management Board
CPM	Compliance Project Manager
CRBRWQCB	Colorado River Basin Regional Water Quality Control Board
CUPA	Certified Unified Program Agency
DOT	Department of Transportation
DTSC	Department of Toxic Substances Control
ECM	Environmental Compliance Manager
HASP	Health and Safety Plan
HMBP	Hazardous Materials Business Plan
HSE	Health, Safety and Environment
HTF	Heat Transfer Fluid
LORS	Laws, Ordinances, Regulations and Standards
LTU	Land Treatment Unit
MW	megawatt
NEPA	National Environmental Policy Act
NOI	Notice of Intent
NPDES	National Pollution Discharge Elimination System
OSHA	Occupational Safety and Health Administration
PPE	Personnel Protective Equipment
POD	Plan of Development
Project	Genesis Solar Energy Project



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RCRA	Resource Conservation and Recovery Act
ROW	Right of Way
RoWD/JTD	Report of Waste Discharge/Joint Technical Document
RWQCB	Regional Water Quality Control Board
SPCC	Spill Prevention, Control and Countermeasures
SWPPP	Storm Water Pollution Prevention Plan
TSD	Transfer, Storage and Disposal
USEPA	U.S. Environmental Protection Agency



DRAFT DECOMMISSIONING AND CLOSURE PLAN GENESIS SOLAR ENERGY PROJECT, RIVERSIDE COUNTY, CALIFORNIA

1. INTRODUCTION

This report presents a Draft Decommissioning and Closure Plan for the Genesis Solar Energy Project, located in Riverside County, California. This plan was prepared for Genesis Solar, LLC. Genesis Solar, LLC proposes to construct two concentrated solar electric generating facilities with a nominal net electrical output of 125 megawatts (MW) each, for a total net electrical output of 250 MW. Collectively, the facilities are referred to as the Genesis Solar Energy Project (the Project). The Project is located in eastern Riverside County, between the communities of Blythe, California (approximately 25 miles east) and Desert Center, California (approximately 27 miles west).

Genesis Solar, LLC has applied for a 4,640-acre right-of-way (ROW) grant from the United States Department of the Interior, Bureau of Land Management (BLM) for development of the Project. The Project will consist of the main facility footprint and associated linear corridor. Once constructed, the Project would permanently occupy approximately 1,800 acres within the ROW grant area, plus approximately 90 acres for off-site linear facilities. A Plan of Development (POD) for the project was submitted to the BLM by Genesis Solar LLC in September 2009 (Tetra Tech and WorleyParsons, 2009). In addition, Genesis Solar, LLC submitted an Application for Certification (AFC) for the Project to the California Energy Commission (CEC) in August 2009.

This Draft Decommissioning and Closure Plan includes the following components:

- A summary of applicable regulatory requirements and standards;
- A facility description, including major plant features and equipment;
- Conceptual procedures for demolition and removal of equipment and for site reclamation;
- Procedures for management of each material/waste stream, including handling procedures and standard disposition practices (disposal and recycling);
- Procedures for Health, Safety and Environment (HSE) management, including identification and management of hazardous waste substances and use of low impact methods;
- Soil Restoration Plan;
- Drainage Restoration Plan;
- Draft Weed Management Plan, produced by TetraTech and attached as Appendix 1 to this document; and
- Draft Raven Monitoring, Management and Control Plan, produced by TetraTech and attached as Appendix 2 to this document.



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2. SITE CONDITIONS

2.1 Location and Land Use

The Project site is located approximately 25 miles west of Blythe, California and 27 miles east of Desert Center, California. Interstate 10 (I-10) is located about 4 miles south of the southernmost border of the Project site (**Figure 1**). The nearest I-10 interchange is the Wiley's Well exit, which is the site of a California Department of Transportation rest area. Most of the land near the Project site is managed by BLM, but there are some private land holdings in the area. No Project facilities will be developed on state or private land, and Genesis Solar, LLC does not plan to construct any access roads or other encroachments on state land, with the exception of the tie to Wiley's Well location at Interstate 10.

Expansive and primarily undeveloped desert and mountainous areas characterize the site vicinity. The Project is proposed for construction on largely undisturbed desert land managed by the BLM. There are no existing structures within the Project area. The Project site is situated entirely on BLM administered land, between the Palen-McCoy Wilderness and I-10.

Interstate 10 and State Routes 78 (SR-78) and 177 (SR-177) are the primary highways near the Project area. A single four wheel drive road runs north-south through the westernmost portion of the Project area, providing access into the Palen-McCoy Wilderness. Small airports and airstrips are located at Blythe, Desert Center, and Julian Hinds, but there are no regularly scheduled passenger flights into these airports.

The City of Blythe (located east of the project site) also includes two state prisons - Chuckwalla Valley and Ironwood within its incorporated boundaries (though discontinuous with the rest of the area). This dual prison facility is located about 9 miles to the south of the Project.

2.2 Physiography

Physiographically, the Project site is located in the Colorado Desert region of the Sonoran Desert. The Project Site lies on a broad, relatively flat, southward sloping surface dominantly underlain by alluvial deposits derived from the Palen Mountains to the north and the McCoy Mountains to the east. The alluvial deposits have created two distinct landform types and several discernable landform ages. The deposits immediately adjacent to the mountains have formed alluvial fans from multiple identifiable sources, and multiple fan surfaces have coalesced into a single bajada surface that wraps around each of these mountain fronts. Between the bajada surfaces from each mountain chain lies a broad valley-axial drainage that extends southward between the mountains and drains to the Ford Dry Lake playa, located about 1 mile south of the Site. The Site itself is relatively flat and generally slopes from north to



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south with elevations of approximately 400 to 370 feet above mean sea level (amsl). It is occupied by a community of low creosote and bursage scrub vegetation.

The off-site linears extend southeastward from the Project site, skirting ½ to 1 mile northeast of Ford Dry Lake, reach the low point of the valley approximately 1 mile east of Ford Dry Lake, and follow the low point of the valley eastward to near the intersection of I-10 and Wiley's Well Road. The proposed transmission line then crosses I-10 and extends southward, up the lower portions of the southern valley flank, to join the Blythe Energy Transmission Line (currently under construction). The topography crossed by the off-site linears is virtually level, and ranges between 360 and 390 feet amsl. Northeast of Ford Dry Lake, the off-site linears cross an alluvial and aeolian plain that represents the distal portions of the valley axial and bajada surfaces that extend southward from the McCoy Mountains. The ground surface in this area slopes very gently to the southwest, toward Ford Dry Lake, at inclinations of approximately ½ percent. Landforms include alluvial and sand plains, local coppice dunes, and local subdued bar and swale topography associated with sheet flood deposits. East of Ford Dry Lake, the off-site linears cross the distal portions of a valley axial drainage that enters Ford Dry Lake from the east. The ground surface in this area slopes westward at less than ½ percent and the alluvial and the aeolian plain in this area includes similar landforms as described above.

2.3 Geology

The Genesis Solar Energy Project is located in the southeastern portion of California's Mojave Desert Geomorphic Province. Geomorphic provinces are naturally defined geologic areas with a distinct landscape or landform resulting primarily from their predominant underlying geologic structure. The southeast portion of this province, where the Project site is located, is physiographically part of the Sonoran Desert, which includes the lower Colorado River region of southeastern California and extends into southern Arizona. California's Mojave Desert Geomorphic Province. The Mojave Desert Geomorphic Province is a wedge-shaped interior region separated from the Sierra Nevada and Basin and Range Provinces to the northwest by the Garlock Fault and its eastward extensions, and is bounded to the southwest by the Transverse Range and Colorado Desert Provinces, the San Andreas Fault, and its southern extensions. The Mojave Desert Geomorphic Province is characterized by northwest-southeast as well as east-west trending structures and mountain ranges, separated by desert valleys and plains with many enclosed drainages and playas.

The region surrounding the Project site has undergone a complex geologic history that includes sedimentation, volcanic activity, folding, faulting, uplift and erosion. The project area is underlain by Holocene to Miocene basin fill deposits (Stone, 2006). These deposits include younger alluvium, older (Pleistocene) alluvium, the Pliocene Bouse Formation and the Miocene fanglomerate. The uppermost alluvium in the basin consists of Holocene to Pleistocene alluvial fan, valley axial (fluvial), playa (dry lake), and aeolian (wind blown) deposits. Maps showing the locations of known faults and earthquakes



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in the region are presented in section 5.5 of the AFC submitted for the project and additional geologic maps of the off-site linear alignment were included in the Data Adequacy Supplement submitted to CEC in September 2009.

2.4 Climate and Precipitation

The Project is located in an arid desert climate with extreme daily temperature changes, low annual precipitation, strong seasonal winds and mostly clear skies. Evaporation rates are higher than precipitation rates. In this region of California, temperatures are extreme with mild winters accompanied by sporadic rainfall from Pacific frontal storms between November and April, and hot, dry summers with infrequent, but occasionally intense monsoonal thunderstorms mostly in August and September. Precipitation distribution and intensity are often sporadic. Local thunderstorms may contribute the entire average seasonal precipitation at one time, or only a trace of precipitation may be recorded at a particular locale for the entire season. Average annual precipitation ranges from less than three inches in the lower valley to eight inches in the higher elevations of the Little San Bernardino Mountains (RWQCB, 2006).

2.5 Hydrogeology

The Genesis Solar Energy Project is located within the eastern portion of the Chuckwalla Valley Groundwater Basin (Basin No. 7-5), which has a surface area of 940 square miles. (DWR, 2004). The basin is bounded by consolidated rocks of the Chuckwalla, Little Chuckwalla, and Mule mountains on the south; of the Eagle Mountains on the west; of the Mule and McCoy mountains on the east; and Coxcomb, Granite, Palen, and Little Maria mountains on the north (DWR, 2004). Water-bearing units include Miocene to Quaternary age continental deposits divided into Quaternary alluvium, the Pinto Formation, the Bouse Formation and the Fanglomerate. The maximum thickness of these deposits may be up to several thousand feet (Owens-Joyce, 1994) and the average specific yield of the upper 500 feet of unconsolidated sediments is estimated to be 10 percent (DWR, 1979). The recoverable storage capacity of the aquifers in the groundwater basin is estimated to be about 15,000,000 acre-feet of water (DWR 1979). The upper 100 feet of saturated sediments in the basin are estimated to have 900,000 acre-feet of groundwater in storage (DWR 1975). The average well yield in the basin is 1,800 gpm and the maximum well yield is 3,900 gpm (DWR 1975). In general, the water-bearing sediments underlying the western portion of the basin are coarser grained and dominated by alluvium, yield water of higher quality, and contain wells with higher pumping capacities than the eastern portion of the basin, which contains a higher proportion of finer grained sediment and yields water with higher concentrations of total dissolved solids (Eagle Crest, 2009; DWR, 2004).

Based on site-specific investigation, the site is underlain by interbedded silty sand, silt and clay with some gravel in the upper 100 to 200 feet below ground level. First groundwater is encountered



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approximately 60 to 100 feet below ground level and contains relatively elevated concentrations of total dissolved solids, estimated to be in the range of 10,000 parts per million.



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3. PROJECT DESCRIPTION AND FACILITY ARRANGEMENT

The Genesis Solar Energy Project (the Project) will consist of two concentrated solar electric generating facilities (aka power plants or plant) with a nominal net electrical output of 125 megawatts (MW) each, for a total net electrical output of 250 MW. The plants will use well-established parabolic trough solar thermal technology to produce electrical power using steam turbine generators (STG) fed from solar steam generators (SSG). The SSG receives heated heat transfer fluid (HTF) from solar thermal equipment comprised of arrays of parabolic mirrors that collect energy from the sun.

Each plant will use natural gas-fueled auxiliary boilers to reduce start-up time and provide HTF freeze protection. Freeze protection will maintain the HTF at a minimum of 100 degrees Fahrenheit (°F).

The Project proposes to use a wet cooling tower for power plant cooling. Water for cooling tower make-up, process water make-up, and other industrial uses such as mirror washing will be supplied from on-site groundwater wells, which will also be used to supply water for employee use (e.g., drinking, showers, sinks, and toilets). A package water treatment system will be used to treat the water to meet potable standards. A sanitary septic system and on-site leach field will be used to dispose sanitary wastewater.

Project cooling water blowdown will be piped to lined, on-site evaporation ponds. The ponds will be sized to retain approximately seven years' worth of solids and will be cleaned out periodically during the life of the plant to ensure the solids do not reach a depth greater than approximately three feet. Dewatered residues from the ponds will be sent to an appropriate off-site landfill as non-hazardous waste.

The layout of the Project facilities on the plant site will include:

- Overall plant area and facilities footprint
- Power blocks
- Control room and local warehouse locations
- Administration building
- Solar collector field arrangements
- Evaporation ponds
- Bioremediation land treatment unit (LTU)
- Onsite transmission facilities
- Onsite gas pipeline facilities



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- Drainage realignment
- Existing groundwater wells used for water supply
- Access road from I-10

The Project power block and solar arrays will occupy approximately 1,360 acres. Additionally, evaporation ponds, access road, administration buildings and other support facilities, LTU, and some open areas will be fenced for a total of 1,800 acres.



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4. DECOMMISSIONING AND CLOSURE CRITERIA AND PLANNING

The Site is located on land managed by the U.S. Department of the Interior, Bureau of Land Management (BLM), which is responsible to: 1) process right-of-way applications for projects on its land, 2) conduct the federal environmental review under the National Environmental Policy Act (NEPA); and 3) administer resulting requirements and mitigation. Additionally, the CEC reviews all applications to construct and/or operate thermal electric power plants in California that are 50 MW and greater, conducts the state environmental review under the Warren-Alquist Act (which has been deemed to be functionally equivalent to the California Environmental Quality Act (CEQA)) and administers the resulting mitigation measures (Conditions of Certification). In addition, the CEC assures compliance with its Power Plant Site Certification Regulations (March 2007).

All activities will be in compliance with the requirements of the federal right-of-way grant, CEC power plant licensing and associated environmental reviews. Requirements pertinent to this Draft Decommissioning and Closure Plan include the following:

Final Decommissioning and Closure Plan – Because conditions can change during the course of a 30-year project life, a final Decommissioning and Closure Plan will be submitted for BLM and CEC review and approval based on conditions as found at the time of facility closure.

Health and Safety Plan - To comply with regulations set forth by the Occupational Health and Safety Administration (OSHA), a project-specific Health and Safety Plan (HASP) will be prepared that will document health and safety requirements for establishing and maintaining a safe working environment during the implementation of the planned Site decommissioning activities.

Construction Stormwater Pollution Prevention Plan (SWPPP). – The project will comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) through preparation and implementation of a SWPPP and filing of a Notice of Intent (NOI) to comply with the General Construction Stormwater NPDES Permit. The plan will include procedures to be followed during construction to prevent erosion and sedimentation, non-stormwater discharges, and contact between stormwater and potentially polluting substances.

Dust Control – Per the requirements of the Mojave Desert AQMD, standard dust control mitigation measures will be implemented to reduce dust particulate emissions during demolition and grading activities.

Hazardous Materials Business Plan (HMBP) – A closure plan will be filed with the Riverside County Fire Department detailing procedures for closure of the facility's HMBP including removal of hazardous substances from the site, their handling during removal, their ultimate disposition, and any required confirmation soil sampling.



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Spill Prevention Control and Countermeasure Plan (SPCC) - The SPCC Plan for the Site will be amended to include spill prevention and countermeasures procedures to be implemented during the removal of petroleum and hazardous substances from the Site. The Plan will contain several key items, including (but not limited to) a spill record (if applicable), description of facilities, spill response procedures, personnel training and spill prevention.

Surface Impoundment Closure Plan – A plan will be submitted to the California Integrated Water Management Board (CIWMB) and the Regional Water Quality Control Board (RWQCB) for clean closure of the evaporation ponds and land treatment unit through removal of all residue that has accumulated, all liner and containment systems, and any underlying impacted soils, as required.

Construction Fire Prevention Plan – A plan will be prepared that outlines procedures and equipment to be used for fire detection and prevention during decommissioning.

Transportation Plan – A transportation plan for decommissioning will be prepared that outlines approved routes of travel and times and procedures for permit-required loads, as well as procedures to comply with Department of Transportation (DOT) regulations.

County Permits – The required planning and building permits will be obtained from Riverside County.



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5. PLANT DECOMMISSIONING

The procedures described for decommissioning are designed to address public health and safety, environmental protection, and compliance with applicable regulations. It is assumed that decommissioning would begin 30 years after the commercial operation date of the Project. The current plans for decommissioning of the Genesis Solar Energy Project are outlined below.

5.1 Decommissioning Objectives

The project goals for Project decommissioning are as follows:

- Remove all improvements within 3 feet of final grade;
- Restore the lines and grades in the disturbed areas to match the natural gradients outside of the disturbed areas.

The proposed implementation strategy to achieve the goals for Project decommissioning is as follows:

- Use industry standard demolition means and methods to decrease personnel and environmental safety exposures by minimizing time and keeping personnel from close proximity to actual demolition activities to the extent practical;
- Plan each component of the decommissioning project such that personnel and environmental safety are maintained while efficiently executing the work;
- The final decommissioning plan will specify in detail how each major effort will be performed and integrated to achieve the project goals.
- Train field personnel for decommissioning actions to be taken in proportion to the personnel, project or environmental risk for those actions;
- Evaluate the execution of the decommissioning and restoration plan through project oversight and quality assurance;
- Document implementation of the plan and compliance with environmental requirements.

5.2 Decommissioning Strategy

The decommissioning plan for the Site facilities consists of the following major elements:

- Documentation and establishment of health and safety procedures;



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- Conducting pre-decommissioning activities such as final decommissioning and restoration planning that addresses the “as-found” site conditions at the start of the project;
- Demolition of the aboveground structures (dismantling and removal of improvements and materials) in a phased approach while still using some items until close to the end of the project. For instance, the water supply, administrative building and some electrical power components will be modified to be used until very late in the decommissioning project;
- Demolition and removal of belowground facilities (floor slabs, footings, and underground utilities) as needed to meet the decommissioning goals;
- Soils cleanup, if needed, with special attention applied to evaporation ponds, the land treatment unit, the detention ponds and hazardous materials use/storage areas to facilitate clean closure. A soil restoration plan is included in this document;
- Disposal of materials in appropriate facilities for treatment / disposal or recycling; and
- Recontouring of lines and grades to match the natural gradient and function of the alluvial fan and drainages.

Although various types of decommissioning / demolition equipment will be used to dismantle each type of structure or equipment, dismantling will proceed according to the following general staging process. The first stage consists of dismantling and demolition of aboveground structures. The second stage consists of concrete removal as needed to ensure that no concrete structure remains within 3 feet of final grade (i.e., floor slabs, below-ground walls, and footings). The third stage consists of and removal of soils, and final site contouring to return the originally disturbed area of the Site to near original conditions while disturbing as little of the other Site areas as is practical.

5.2.1 Health and Safety Procedures

The health and safety procedures to be established prior to decommissioning are listed below.

- General safety and hazard responsibilities;
- Establishment of an effective hazard communications program;
- Task hazard analysis and control;
- Personal protection equipment (PPE) requirements;
- Occupational and environmental monitoring requirements;
- Medical and other emergency procedures;
- Operational issues;



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- Personnel training;
- Incident reporting; and
- Self audit and compliance procedures.

5.2.2 Pre-Decommissioning Activities

Pre-decommissioning activities consist of preparing the Site area for demolition. These activities include removal of remaining residues (such as in the evaporation ponds, boilers or storage tanks), and products such as HTF, diesel fuel, hydraulic oil, lubricating oil, and mineral oils, and other materials (where feasible) to reduce potential personnel and environmental exposure and to facilitate decommissioning. All operational liquids and chemicals are expected to be removed at this time as well, such as boiler feed / condensate waters, laboratory equipment and chemicals, boiler / condensate addition chemicals as well as any maintenance lubricants, and solvents, etc. Hazardous material and petroleum containers and pipelines will be rinsed clean when feasible and the rinsate collected for offsite disposal. In general, these materials will be placed directly into tanker trucks or other transport vessels and removed from the site at the point of generation to reduce the need for hazardous material and waste storage at the Site.

Terminal operations of the site are assumed to leave electrical power, raw / sanitary water available for limited use by the decommissioning project.

5.2.3 Demolition of Aboveground Structures

Demolition entails breakdown and removal of aboveground structures and facilities, including transmission lines at the offsite linears. Residual materials from these activities will be transported via heavy haul dump truck to a central recycling / staging area where the debris will be processed for transport to an offsite recycler. A project recycle center (either at each power unit as the work progresses or at the central admin area) will be established to:

- Size reduce and stage metals and mirrors for transport to an off site recycler;
- Crush concrete and remove rebar;
- Stockpile concrete for later use at the Site;
- Stage rebar for transport to an off site recycler; and
- Temporarily store and act as a shipping point for any hazardous materials to an approved waste transfer, storage or disposal (TSD) facility.

The strategy for demolition consists of use of mechanized equipment and trained personnel in the safe dismantling and removal of the following aboveground structure:



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- Solar collectors and related equipment using low environmental impact equipment;
- Removal of the turbine generators, condensers and related equipment, transmission lines and towers, and aboveground pipelines using conventional demolition equipment and techniques; and
- Near the very end of the project, the removal of site-related fencing.

5.2.4 Belowground Facilities and Utilities

The belowground facilities to be removed include concrete slabs and footings that would remain within 3 feet of final grade at the end of the project. It is anticipated that most related piping and utilities, including water lines, below ground electric / control / communication lines, and gas lines will be removed to a depth of 3 feet below final grade. These materials will be excavated and transported to the recycling area(s) for processing and ultimate recycling. The resulting trenches will be backfilled with suitable material of similar consistency and permeability as the surrounding native materials and compacted to 85 percent relative compaction.

5.2.5 Soils Cleanup and Excavation

The need for, depth and extent of contaminated soil excavation will be based on observation of conditions and analysis of soil samples after closure and removal of the detention basins, evaporation ponds, land treatment unit, and hazardous materials use and storage areas, and upon closure of the recycling center(s) and waste storage areas used during decommissioning. Additional discussion of soils contamination, treatment and remediation is discussed in Section 7, Soils Rehabilitation Plan.

5.2.6 Demolition Debris Management, Disposal, and Recycling

Demolition debris will be placed in temporary onsite storage area(s) or piled onsite pending processing at the recycling center and transportation/disposal/recycling according to the procedures listed below.

- The demolition debris and removed equipment will be cut or dismantled into pieces that can be safely lifted or carried with the onsite demolition equipment. The vast majority of glass, steel and concrete rubble will be processed at the recycling center but some specific equipment, e.g. boilers, transformers, turbines, etc. may be transported as intact components or size-reduced onsite with cutting torches or similar equipment.
- A front-end loader, backhoe, or equivalent appropriate equipment will be used to crush or compact compressible materials. These materials will be laid out in a staging area or other approved area to facilitate crushing or compacting with equipment pending disposal/recycling.



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- Materials such as steel, glass and other materials will be temporarily stockpiled at or near the processing location pending transport to an appropriate off site recycling facility.
- Concrete foundations will be removed to a depth of at least 3 feet below (final) grade. Upon removal of the rebar material from concrete rubble, the residual crushed concrete will be layered beneath the ground surface but only at locations that will remain greater than 3 feet below the final grade elevation. This will reduce waste volume and transportation.

5.2.7 Recontouring

Recontouring of the Site will be conducted using standard grading equipment to return the land to match within reason to the pre-construction surface conditions and surrounding alluvial fan grade and function. Grading activities will be limited to previously disturbed areas that require recontouring. Efforts will be made to disturb as little of the natural drainage and vegetation as possible. Concrete rubble, crushed to approximately 2-inches in diameter or less in size (2-inch minus), will be placed in the lower portions of fills, at depths at least 3 feet below final grade. Fills will be compacted to approximately 85 percent relative compaction by wheel or track rolling to avoid over-compaction of the soils. To the extent feasible, efforts will be made to place a layer of coarser materials at the ground surface to add stability.



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6. HAZARDOUS WASTE MANAGEMENT

Hazardous materials expected to be handled during the decommissioning process are listed in the table below. These materials include spent HTF lead acid batteries, sulfur hexafluoride, diesel, hydraulic oil, lubricating oil, and mineral oil. Any other operational chemicals listed as hazardous in the AFC will be removed as part of the terminal shutdown of the plant prior to decommissioning activities.

Material	Site Use	Location	D&R Project Strategy
Lead Acid Batteries (Sulfuric Acid and Lead) size of batteries approx 10cm x 5cm x 7cm	Electrical power	Contained within the main electric building	Remove prior to demolition
Sulfur hexafluoride	Switchyard/switchgear devices	Contained within equipment (200 lbs.)	Remove prior to switchgear removal
Heat Transfer Fluid	Heat transfer from solar collectors to solar steam generator	Solar collector assemblies, storage tanks, ullage system	Drain liquid from equipment prior to removal. Triple-rinse tanks and piping prior to processing and recycling. Rinsate fluid will be disposed of offsite.
Diesel No 2	Fuel for pump engine/generators	Near fire pump; (max quantity 9,000 gallons.)	
Hydraulic Oil	Used in turbine starter system, turbine control valve actuators.	Contained within equipment; (max quantity onsite 500 gallons.)	
Lubricating Oil	Used to lubricate rotating equipment.	Contained within equipment; (max quantity onsite 30,000 gallons.)	
Mineral Oil	Used in transformers	Contained within transformers; (max quantity onsite 105,000 gallons)	
Gasoline	Maintenance Vehicles	Located near diesel storage area; (max quantity onsite 2,000 gallons)	



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Fuel, HTF, hydraulic fluids and oils will be transferred directly to a tanker truck from the respective tanks and vessels. Storage tanks/vessels will be rinsed and rinsate will also be transferred to tanker trucks. Other items that are not feasible to remove at the point of generation, such as smaller containers lubricants, paints, thinners, solvents, cleaners, batteries and sealants, will be kept in a locked utility building with integral secondary containment and that meets CUPA and RCRA requirements for hazardous waste storage until removal for proper disposal. It is anticipated that all oils and batteries will be recycled at an appropriate facility. Site personnel involved in handling these materials will be trained in proper handling. Containers used to store hazardous materials will be inspected regularly for any signs of failure or leakage. Additional procedures will be specified in the HMBP closure plan submitted to the CUPA.

Transportation of the removed hazardous materials will comply with regulations for transporting hazardous materials, including those set by the Department of Transportation (DOT), U.S. Environmental Protection Agency (USEPA), California Department of Toxic Substances Control (DTSC), California Highway Patrol (CHP), and California State Fire Marshal. The following table lists the properties and toxicity of hazardous waste materials that will be removed.

Material	Physical Description	Health Hazard	Flammability
Sulfuric Acid	Oily, colorless liquid	Corrosive to skin, eyes, and digestive tract. Respiratory tract irritant.	Non-flammable
Sulfur hexafluoride	Colorless gas, odorless	Hazardous when inhaled	Non-flammable
Diesel No 2	Oily, light liquid	Skin irritant, aspiration hazard	Flammable
Heat Transfer Fluid	Oily, dark liquid	Hazardous if ingested	Combustible
Hydraulic Oil	Oily, dark liquid	Hazardous if ingested	Combustible
Lubricating Oil	Oily, dark liquid	Hazardous if ingested	Combustible
Mineral Oil	Oily, clear liquid	Minor health hazard	Combustible

The SPCC plan for the site will be updated to cover spill prevention and countermeasures for handling of these materials during decommissioning. As previously discussed, a Site-specific Health and Safety Plan (HASp) will document health and safety requirements for establishing and maintaining a safe working environment during the implementation of the planned Site activities. Additional procedures to



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decrease the potential release of contaminants to the environment and contact with stormwater will be specified in the SWPPP.



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7. SOIL REHABILITATION PLAN

7.1 Purpose

This section presents a soil rehabilitation plan. Because the project will not be decommissioned for at least 30 years, conditions that would affect the decommissioning decision and overall goals for soil rehabilitation are uncertain; therefore, they would be reviewed and a final Soil Rehabilitation Plan prepared and included in the final Decommissioning and Closure Plan for the Project when the timing for decommissioning is imminent.

Soil Rehabilitation would be one of the last decommissioning activities. It is assumed that the removal of all equipment and facilities would be required and would be achieved in conformance with all applicable laws, ordinances, regulations and standards (LORS) and local/regional plans. Aboveground structures would be removed through mechanical or other approved methods and trucked offsite. Foundations and subsurface improvements within 3 feet of final grade would be physically removed through excavation, breakup, and pulling. Once all structural elements are removed, soil rehabilitation activities will begin.

The objective of this plan is to provide guidance for rehabilitation of soil impacted with chemical substances to acceptable regulatory thresholds that are protective of groundwater, human health and the environment. As such it requires an understanding of pre-project conditions, project conditions which may lead to potential soil contamination, and soil rehabilitation activities.

7.2 Pre-Project Conditions

The Site covers approximately 1,800 acres of Federal land managed by the Bureau of Land Management (BLM). Land uses surrounding the Site include vacant, open desert land, Interstate 10 (I-10) to the south, the Palen McCoy Wilderness to the north, the Palen Dry Lake Area of Critical Environmental Concern (ACEC) to the west. Most of the land near the Site is managed by BLM and there is no California State Land in the vicinity, but there are some private holdings.

The Site is situated within the Chuckwalla Valley and is relatively flat. The Site generally slopes from north to south with elevations of approximately 400 to 370 feet above mean sea level. The Site is occupied by a community of low creosote and bursage scrub vegetation and includes portions of the Ford Dry Lake and McCoy Spring USGS topographic maps.

A Phase I Environmental Site Assessment was conducted between November 2008 and July 2009 (Tetra Tech, 2009). There was no evidence of any hazardous wastes and substances, storage tanks or solid waste accumulations; therefore pre-existing soil contamination is not expected at the site.



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7.3 Project Conditions

Genesis Solar, LLC is proposing to develop a 250-megawatt (MW) solar thermal power generating project, using concentrated solar power (CSP) technology. There will be two 125 MW units on site to provide 250 MW of power ("Units 1 and 2") (refer Drawing GENI-1-DW-112-726-003).

Each unit contains solar fields, power block and stormwater control facilities. The power block area will include the solar steam generator, cooling towers, water storage and treatment facilities, the HTF tanks, pumps and ullage system, an auxiliary boiler and an oil-water separator. There is an additional area between the two units which will be used for evaporation ponds and a land treatment unit (LTU). The LTU will receive, temporarily store and treat soil that has been impacted by occasional leaks and spills of HTF. In addition, there will be ancillary facilities constructed and operated on site, including an onsite substation, administration and warehouse buildings. A short transmission line will be constructed from the Site south across the I-10 to connect with the 230kV Blythe Transmission Line.

The Site will be graded to create level solar pad elevations with approximate balanced cut and fill; therefore, existing vegetation and debris will be removed. A drainage diversion system consisting of channels and berms will route drainage around the Project site. Some of the soil in the channels will be cement-treated to decrease the potential for erosion. On-Site drainage will be routed to two detention basins.

7.4 General Soil Cleanup and Excavation Activities

The need for, depth and extent of contaminated soil cleanup will be based on observation of conditions and analysis of soil samples collected after closure and removal of the detention basins, evaporation ponds, land treatment unit, and hazardous materials use and storage areas. A review of the operating records, recording any soil cleanup activities occurring over the operating time will also be considered. A sampling and analysis plan will be developed and will be incorporated into the final Soil Rehabilitation Plan. The sampling and analysis plan will be prepared based on facility conditions and records review as well as current regulatory requirements, and will identify areas of potential concern, the chemicals handled in these areas, soil sampling frequency and methods, laboratory analytical methods, and field and laboratory Quality Assurance/Quality Control methods. At this time, soil sampling is proposed to be conducted beneath the evaporation ponds and LTU, as well as regulated hazardous materials and waste storage structures and containments in the power block areas. Additional areas where soil samples may be collected if evidence of a release is identified include the solar fields and detention basins. Soils in these areas will be observed for evidence of potential chemical releases or impact, including residues, staining and odors. Where evidence of a potential release is observed, soil samples will be collected and analyzed for the chemicals and substances handled or used in that area.



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At this time and for the purposes of this preliminary plan, no cleanup or removal of contaminated soil is assumed to be needed. If required, soil cleanup or removal will be conducted to the extent feasible and as required to meet regulatory cleanup criteria for the protection of groundwater and the environment. Appropriate soil cleanup and rehabilitation methods will be selected to meet project objectives and regulatory requirements based on criteria contained in applicable State, Federal and County guidance. Appropriate methods could include removal, bioremediation, stabilization, or other suitable methods that are acceptable that meet these requirements. If contaminated soil removal is required, the resulting excavations would be backfilled with native soil of similar permeability and consistency as the surrounding materials and compacted to 85 percent relative compaction.

A Preliminary Closure and Post-Closure Maintenance Plan for the LTU and evaporation ponds is contained in the Report of Waste Discharge/Joint Technical Document (RoWD/JTD) submitted to the Colorado River Basin 7, Regional Water Quality Control Board (CRBRWQCB) for these impoundments (WorleyParsons, 2009a). A Final Closure and Post-Closure Maintenance Plan for the LTU and evaporation ponds will be submitted to the CRBRWQCB as an amendment to the RoWD/JTD before undergoing complete final closure. These impoundments are assumed to undergo clean closure as verified by soil sampling. Further details on rehabilitation of soils impacted by the LTU and Evaporation Ponds are given in Sections 7.5 and 7.6.

7.5 Land Treatment Unit and Heat Transfer Fluid Impacted Soils

The LTU will be used to treat HTF-impacted soil at various concentrations. HTF (Therminol VP-1 or equivalent) is an oil that consists of a mixture of biphenyl and diphenyl oxide that is solid at temperatures below 54 degrees Fahrenheit, is relatively insoluble in water (solubility of approximately 25 milligrams per liter), combustible, and has relatively low volatility. The components of HTF are reported to biodegrade relatively rapidly in the environment, have slight toxicity to tested terrestrial species, higher toxicity to tested aquatic species, and a potential to bio-accumulate.

The Genesis Solar Energy Project RoWD/JTD (WorleyParsons, 2009a) contains details regarding the management and treatment of the HTF-affected soil during operation of the facility. If necessary, HTF-impacted soil will be removed from the power blocks and solar fields during facility decommissioning and closure, and the LTU will be used for the treatment of these materials in accordance with the methods described in the RoWD/JTD.

Details on closure activities relating to the LTU are also given in the Preliminary Closure and Post-Closure Maintenance Plan for the LTU which is contained in the RoWD/JTD (WorleyParsons, 2009a). A Final Closure and Post-Closure Maintenance Plan will be submitted to the CRBRWQCB as an amendment to the RoWD/JTD before undergoing complete final closure of any portion of the LTU. In the Final Closure and Post-Closure Maintenance Plan, the regulatory requirements applicable at that time will be addressed. After the LTU has been closed, a Certification of Closure will be submitted for



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approval to the CRBRWQCB to verify the LTU has been closed in accordance with the approved Final Closure Maintenance Plan.

The preliminary closure activities for the LTU relating to soils include the following processes described in greater detail below:

- Soil Segregation; then
- LTU Restoration

7.5.1 Soil Segregation

If contaminated soil remains in the LTU when its time to close the LTU, the concentrations of HTF will vary depending on the original concentration of HTF in the soil and the length of time the soil has been in the LTU for treatment. To facilitate proper handling and disposal, representative soil samples will be collected in the LTU to determine HTF concentrations in accordance with Waste Discharge Requirements issued by the CRBRWQCB. Soil will be segregated based on the following criteria:

- For concentrations below 100 milligrams per kilograms (mg/kg) of HTF, the soil will be used as back fill material on site.
- For concentrations of HTF below hazardous waste thresholds (anticipated to be near 10,000 mg/kg) but above 100 mg/kg, the soil will be stored and treated in the LTU until concentrations are below 100 mg/kg of HTF.
- Although not expected, any soil classified as a hazardous waste will be collected and containerized pending disposal at a Class I waste disposal facility.

The LTU soils will continue to be managed, maintained, monitored, and reported as required under the Waste Discharge Requirements (WDRs) from the CRBRWQCB. Once soil concentrations are below 100 mg/kg, the soil will be used as fill material on the property.

7.5.2 LTU Restoration

Sampling will be conducted in the compacted lime-treated native materials on 100-foot by 100-foot grid spacing. Laboratory analysis will include total petroleum hydrocarbons; benzene, toluene, ethylbenzene and xylenes (BTEX); Title 22 metals; biphenyl and diphenyl oxide.

The lime treated soil pad and berms will be broken up, removed, and may be used as backfill in the evaporation ponds (if also undergoing closure) at depths exceeding 3 feet below final grade, if appropriate after the results of the sampling. The LTU will be backfilled with compacted native soil to match the existing surrounding grade and restore drainage function. The upper 6 inches of soil will be decompacted as necessary to prepare the soil for revegetation.



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7.6 Evaporation Pond Closure Soil Rehabilitation Activities

Another area which may require soil rehabilitation is the closure of the evaporation ponds. Information regarding closure of the evaporation ponds is provided in the Draft Evaporation Pond Closure plan, which is a component of the RoWD/JTD (WorleyParsons, 2009a). A Final Closure and Post-Closure Maintenance Plan will be submitted to the CRBRWQCB as an amendment to the RoWD/JTD before undergoing complete final closure of any portion of the evaporation ponds. In the Final Closure and Post-Closure Maintenance Plan, the regulatory requirements applicable at that time will be addressed. After the evaporation ponds have been closed, a Certification of Closure will be submitted for approval to the CRBRWQCB to verify these impoundments have been closed in accordance with the approved Final Closure Maintenance Plan.

The preliminary closure activities for the evaporation ponds include the following processes:

- Removal of Wastewater;
- Removal of Solids / sludge;
- Removal of hard surface / protective layer and granular fill;
- Removal of high density polyethylene (HDPE) liners, drainage layers and leak detection system; then
- Site restoration, including soil rehabilitation as necessary.

Details concerning soil rehabilitation are presented below.

Confirmation sampling will be conducted on the clay layer of the evaporation pond liner system after the removal of the 40 mil HDPE geomembrane secondary liner. If a geosynthetic clay liner (GCL) is used in the final design, the native materials below the GCL will be sampled after the removal of the overlying liner systems. Samples will be collected from each of the former pond footprints on 100-foot by 100-foot grid spacing. Laboratory analysis will include Title 22 metals, biphenyl, diphenyl oxide, and chloride.

The evaporation ponds will be backfilled with native soil to match the existing surrounding grade and restore drainage function. The berm surrounding each evaporation pond will be the primary backfill material. The lime treated soil pad and berms from the onsite Land Treatment Unit (LTU) may also be used as backfill in the evaporation ponds (if the LTU is also undergoing closure), as well as crushed concrete. These materials would be placed at depths exceeding 3 feet below final grade. The upper 6 inches of soil will be decompacted as necessary to prepare the soil for revegetation.



8. DRAINAGE RESTORATION PLAN

8.1 Purpose

This section presents a Drainage Restoration Plan for the proposed Project that focuses on permanent closure and subsequent decommissioning activities to restore the site drainage to conditions that work with the then current off-site drainage conditions. This plan is only a draft and will be reviewed and revised as necessary to produce a Final Drainage Restoration Plan when actual decommissioning activities are imminent.

As used here, "closure" is synonymous with decommissioning and includes removal of the facilities and materials that were used to support the operation of the Genesis Solar Energy Project. Drainage restoration would be one of the last decommissioning activities. It is assumed that the removal of all equipment and facilities would be required and would be achieved in conformance with all applicable laws, ordinances, regulations and standards (LORS) and local/regional plans. Aboveground structures would be removed through mechanical or other approved methods and transported offsite for either disposal or reuse. Foundations would be physically removed through excavation, breakup, and pulling. Once all structural elements are removed, the ground surface would be recontoured to minimize the topographic variability between on-and offsite areas and to ensure that the gradient across the alluvial fans is restored. Pipelines would be either removed or closed off and abandoned in place.

The objective of this draft plan is to provide guidance to return the Site to pre-project conditions upon decommissioning. As such it requires an understanding of pre-project conditions, project conditions and the channel design.

8.2 Project Site Conditions

8.2.2 Pre-Project Conditions

Physiographically, the Site lies near the toe of alluvial fans emanating from the Palen Mountains to the north and the McCoy Mountains to the east, and is bisected by a broad valley-axial drainage that extends southward between these mountains and drains to the Ford Dry Lake playa located a short distance south of the Site. The Site is situated within the Chuckwalla Valley and is relatively flat. The Site generally slopes from north to south with elevations of approximately 400 to 370 feet above mean sea level and is occupied by a community of low creosote and bursage scrub.

The site is located on alluvial sediments within the Chuckwalla Valley Basin. There are no perennial streams in Chuckwalla Valley and a vast majority of the time, the area is dry and devoid of any surface flow anywhere. Water runoff occurs only in response to infrequent intense rain storms. Much of the area is subject to inundation either by sheet flow or flow confined to an expansive network of



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ephemeral washes. There are no named ephemeral washes within the Project site, however, there is evidence that sheet flow and minor ephemeral washes do traverse the site.

The project site is within "RIVERSIDE COUNTY AND INCORPORATED AREAS" as designated by the Federal Emergency Management Agency (FEMA); however there are no flood insurance maps developed for this area, and there are no designated flood plain areas. A review of the 2008 Riverside County General Plan Safety Element (Riverside County, 2008) indicates the site is not located in a county-designated flood hazard area.

Per the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 for the Southern California area, 3.51 inches of rain fall in the 100-year, 24-hour storm event and extreme events in the nearby area have recorded over 10 inches of rain in 24 hours. Average annual evaporation in the Project area, based on published data at the Indio Fire Station, 70 miles west of the site, is 105 inches. Eighty-seven percent of annual evaporation occurs between March and October.

8.2.3 Project Conditions

Genesis Solar, LLC is proposing to develop a 250-megawatt (MW) solar thermal power generating project, using CSP technology. There will be two 125 MW units on site to provide 250 MW of power ("Units 1 and 2") (refer **Drawing GENI-0-SK-111-002-001 Rev D**).

Each unit contains solar fields, power block and stormwater control facilities. There is an additional area between the two units which shall be used for evaporation ponds and a land treatment unit (LTU). In addition, there shall be ancillary facilities constructed and operated on site, including an onsite substation, administration and warehouse buildings. A short transmission line shall be constructed from the Site south across the I-10 to connect with the 230kV Blythe Transmission Line.

The Site shall be graded to create level solar pad elevations with approximate balanced cut and fill, therefore existing vegetation and debris shall be removed.

On-site storm water run off within the solar fields will sheet flow into smaller drainage swales, aligned north to south and located adjacent to the plant interior roads. The swales shall divert flows into a detention basin (one for each unit), situated in the lower elevation areas of each unit. The detention basins will also have emergency spillways to discharge runoff generated due to major rainfall events in excess of the 100 year storm. Emergency spillways will discharge into the proposed peripheral drainage channel, diverting the excessive flow away from the site.

Detention basins are required on-site due to the increase in impervious area with development due to:

- Paved Access Roads (around the Site and connecting to off-site existing roadways);
- Administration Building;
- Warehouse; and



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- Power Block.

It has been assumed that each of the parabolic troughs will freely drain onto the ground. The ground surface may be slightly more impervious in post developed conditions due to the footings of the parabolic trough blocks.

Off-site storm water flows are sourced from a large area to the north of the Site (approximately 91,627 acres) (WorleyParsons, 2009b). Due to the magnitude and type of terrain, a main concern is the presence of storm flushed flood events. In order to address this concern, the runoff originated by the upstream areas will be diverted around Units 1 and 2 using berms and channels capable of conveying flows for a 100 year, 24 hour storm event (refer **Figure 2**):

- Flows from the sub-basin 1 (north-western) will be diverted through a channel on the west side of the west 125 MW module (Channel A)
- Flows from sub-basin 2 (north) will be diverted through a channel between the two 125 MW modules (Channel B, Channel C and Channel B/C); and
- Flows from sub-basin 3 (north-eastern) will be diverted through a channel along the east side of the east 125 MW module (Channel D, Channel E and Channel D/E).

The purpose of the diversion channels are to prevent interaction with off-site stormwater and onsite stormwater which will allow:

- Allow natural groundwater recharge of the off-site stormwater with no contact with the changed flow conditions of the on-site water;
- Protect the Site infrastructure from flash flood events, which have the potential to damage the solar parabolic troughs;
- Control treatment of the on-site flows from the solar collector array (location of heat transfer fluid within the solar parabolic troughs);
- Protect the Site from upstream sediment loading;
- Control on-site flows in detention basin to ensure there is no increase in post developed flow discharging from the site, minimizing the impact on downstream ephemeral drainage features;
- Maximize the developable area within the solar field;
- Maintain a passageway, particularly through the center channel (channel B/C) for animals that may move from north to south; and
- Develop an environment that is not inviting to fossorial animals (burrowing or living underground), to deter them from burrowing within the channel.



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8.2.4 Engineered Channel Design

Typical cross sections of the channels are provided in the Drawings attached to this report. All runoff diversion channels will be designed with a soil/cement mix or similar surface to prevent erosion by providing adequate protection against development of an uncontrolled low-flow thalweg or designed with a low flow channel to control any flow thalweg. The channels are designed with appropriate depth to width ratios and slope erosion control to prevent undercutting and head cutting within the channel.

The channels and diversion berms are sized sufficiently to pass the anticipated 100 year storm event and daylight at the outlet, transitioning back into surface sheet flow. The slopes will be a maximum of 2H to 1V and the exposed slope protection surface will not be uneven (i.e. no exposed rip rap, gabions, etc) and therefore will not be a hazard to desert tortoises. There will be no vegetation within the channel to deter animal access however box culverts and drop structures, if used, will be designed to allow the movement of animals if they do access the channels. The soil/cement mix or similar surface material of the diversion channels will limit fossorial animals ability to borrow.

The channels are to be inspected on a semi-annual basis (spring and fall) by the environmental compliance manager (ECM) for routine maintenance activities and after storm events to sustain their proper function (Worley Parsons 2010).

8.3 Closure and Restoration Strategy

The Final Drainage Restoration Plan will outline in detail how each major task will be performed, however the overall closure strategy shall contain the following major elements:

- Conducting pre-closure activities, such as final closure and restoration planning, that addresses the “as-found” site conditions at the start of the project;
- Documenting and establishing health and safety procedures;
- Use industry standard demolition methods, which shall allow personnel to efficiently undertake demolition activities, minimizing the environmental safety exposures;
- Demolishing the aboveground structures (dismantling and removing of improvements and materials) in a phased approach while still using some items until the end of the project;
- Demolishing and removing of belowground facilities (underground utilities) as needed to meet the closure goals;
- Cleaning up of soils, if needed, to ensure that clean closure is achieved;



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- Disposing of materials in appropriate facilities for treatment/disposal or recycling;
- Re-contouring lines and grades to match the natural gradient and function;
- Evaluate the execution of the decommissioning and restoration plan through project oversight and quality assurance; and
- Document implementation of the plan and compliance with environmental requirements.

8.3.1 Decommissioning

Decommissioning of the channels and restoration of the Site to pre-project grading/drainage conditions will be one of the final steps of the decommissioning process. Prior to this step all aboveground structures must be demolished with removal of all concrete footings and underground utilities. Discussion of other decommissioning activities is provided in the previous sections of the Genesis Solar Energy Project Draft Decommissioning and Closure Plan. Decommissioning of the channels will consist of the following activities:

- Removal of all debris accumulation from the channel (part of regular maintenance plan);
- Removal of accumulated sediment within the channel (part of regular maintenance plan);
- Removal of the cement-soil lined channel (trapezoidal in shape);
- Removal of the berms;
- Removal of in stream structures (i.e. culverts);
- Removal of the surrounding access road / fence / signs;
- Backfill drainage lines with native material (could use material from the berm or native sediment build up) to match the grade of the surrounding areas; and
- Re-vegetate as necessary.

The onsite drainage swales will be backfilled with native material and the land recontoured to match the surrounding decommissioned solar panel field and adjacent lands.

Decommissioning of the detention basin will consist of the following activities:

- Allow stormwater within the detention basin to outlet into the natural system;
- Removal of the berm;
- Removal of the outlet infrastructure;
- Backfill with native material to match the grade of the surrounding areas.



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It is not expected that contaminated soil excavation will be required in relation to closure of the drainage lines; however, the soils will be observed for evidence of contamination. If required, sampling and removal of contaminated soils will be conducted to the extent feasible and as required to meet regulatory cleanup criteria for the protection of groundwater and the environment. The resulting excavations would be backfilled with native soil of similar permeability and consistency as the surrounding materials and compacted to 85 percent relative compaction.

8.3.2 Restoring Drainage

Recontouring of the Site will be conducted using standard grading equipment to return the land to match within reason the previously existing surface and surrounding alluvial fan grade and function. Grading activities will be limited to previously disturbed areas that require recontouring. Efforts will be made to disturb as little of the natural drainage and vegetation as possible. Concrete rubble, crushed to approximately 2-inch minus size will be placed in the lower portions of fills, at depths at least 3 feet below final grade. Fills will be compacted to approximately 85 percent relative compaction by wheel or track rolling to avoid over-compaction of the soils. To the extent feasible, efforts will be made to place a layer of coarser materials at the ground surface to add stability.

Revegetation and habitat restoration and monitoring is discussed in the Genesis Solar Energy Project, Draft Revegetation Plan. Monitoring of the drainage, for signs of erosion and sedimentation will be conducted with the vegetation and habitat monitoring. An updated Construction SWPPP will be prepared and appropriate best management practices (BMPs) will be implemented to provide an effective combination of erosion and sediment control until revegetation efforts have sufficiently stabilized the soil.

The existing (pre-project) drainage pattern across the Site is one of weakly-expressed ephemeral drainages. After the site surface is recontoured to a relatively flat surface, the first few rain events will sheet flow across the area and form natural drainage paths down to Ford Dry Lake that are similar in depth and configuration to the existing drainage pattern.

8.4 Funding Mechanism for Decommissioning, Monitoring and Maintenance

As required by BLM, the Applicant will purchase a performance bond, which will be issued either by an insurance company or a financial institution to guarantee the satisfactory decommissioning and restoration of the project site. The bond will be obtained prior to start of construction and will be structured so the funds will be returned to the project owner upon completion of the decommissioning and restoration activities (with an amount held in reserve until the restoration monitoring is completed). It will also be structured in such a manner that BLM will be able to access those funds to pay for the decommissioning and restoration of the site, in the event that the project owner becomes insolvent, or



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that the duration of a temporary closure continues long enough that the closure is considered permanent.



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GENESIS SOLAR ENERGY PROJECT, RIVERSIDE COUNTY, CALIFORNIA**

9. REFERENCES

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Tetra Tech, Inc., 2009, Phase I Environmental Site Assessment – Genesis Solar Energy Project: prepared for Genesis Solar LLC, August.

Tetra Tech and WorleyParsons, 2009, Plan of Development for Genesis Solar Energy Project, Prepared for Genesis Solar, LLC, September.

WorleyParsons, 2009a, Genesis Solar Energy Project Application for Report of Waste Discharge/Joint Technical Document. August.

WorleyParsons, 2009b, Genesis Solar Energy Project Conceptual Drainage Study, Riverside County, California. August.

WorleyParsons, 2010, Genesis Solar Energy Project Draft Channel Maintenance Plan. January.



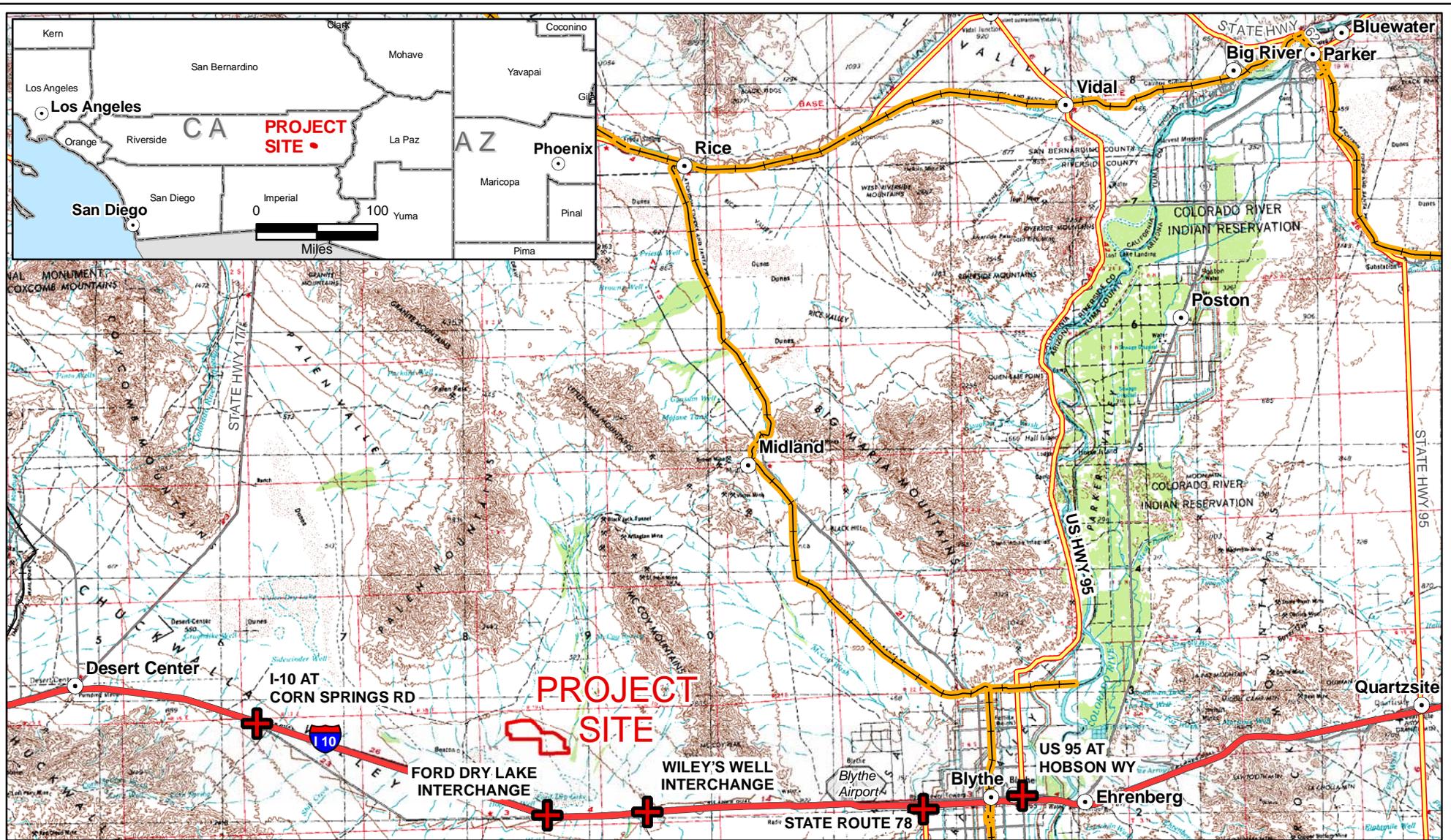
WorleyParsons

resources & energy

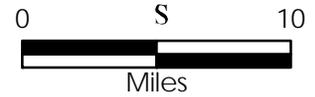
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GENESIS SOLAR ENERGY PROJECT, RIVERSIDE COUNTY, CALIFORNIA

Figures



SOURCE:
 USGS 250K Quad Sheet, Salton Sea, Needles
 ESRI Cities, SDC Major Roads, Tiger Railroad
 All locations approximate



GENESIS SOLAR ENERGY PROJECT



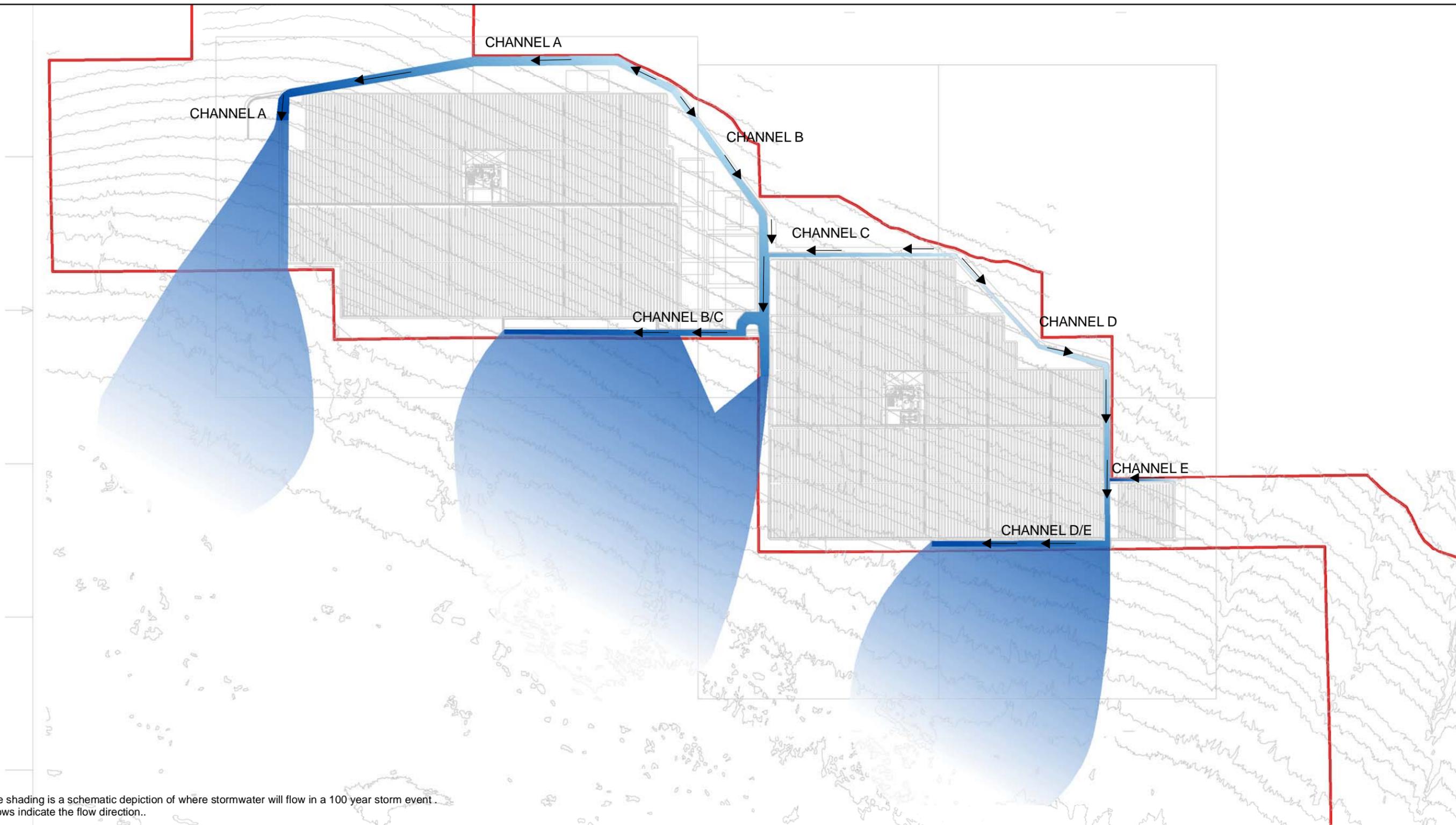
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LOCATION MAP

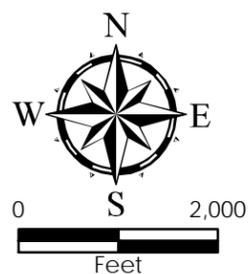
SWL	JM	7/2009
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1



Note: The blue shading is a schematic depiction of where stormwater will flow in a 100 year storm event.
 The black arrows indicate the flow direction..



GENESIS SOLAR ENERGY PROJECT
 GENESIS SOLAR, LLC



**100 YEAR POST
 DEVELOPED FLOW PATTERN**

SWL PM 1/2010

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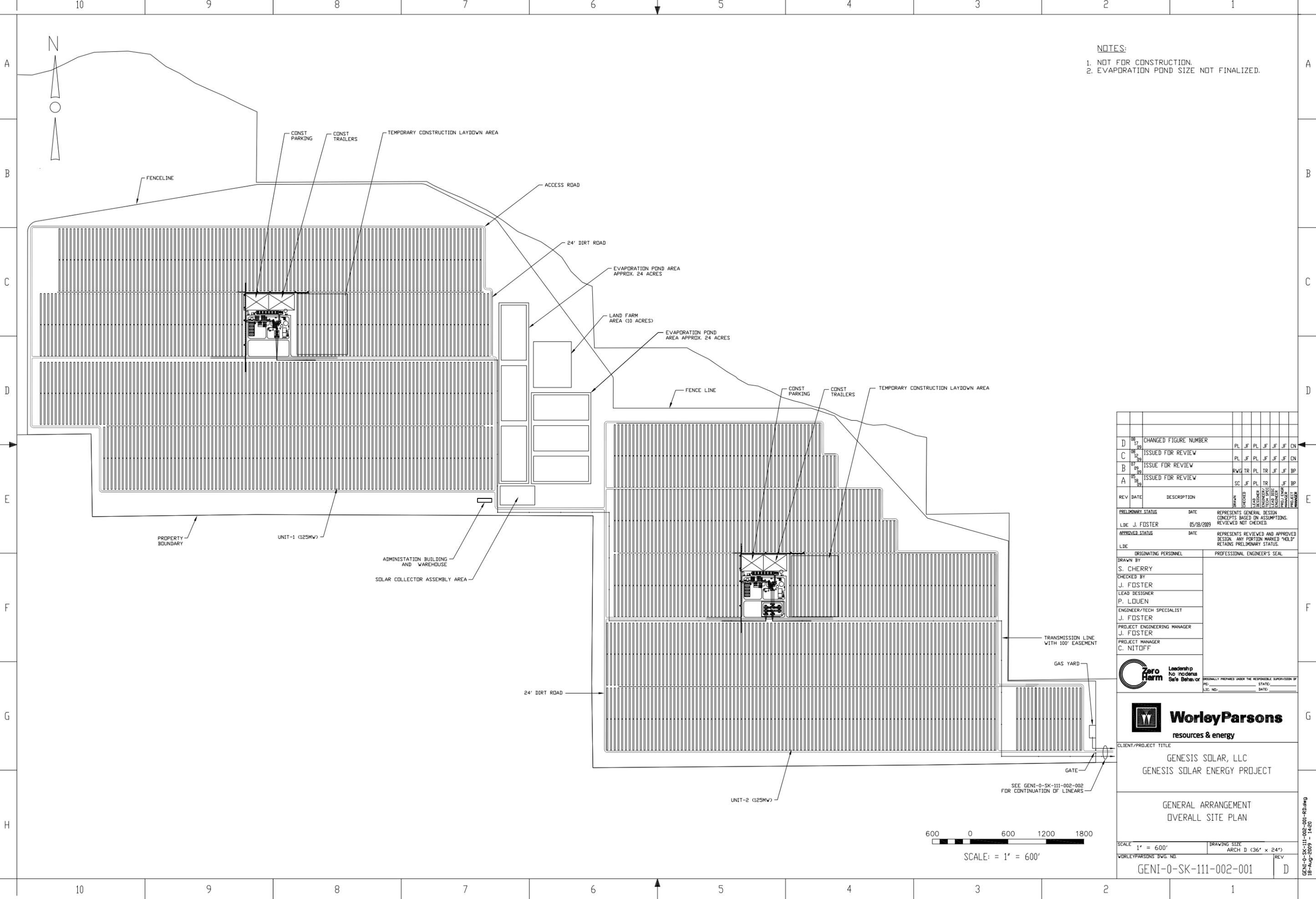
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GENESIS SOLAR ENERGY PROJECT, RIVERSIDE COUNTY, CALIFORNIA

Drawings



NOTES:
 1. NOT FOR CONSTRUCTION.
 2. EVAPORATION POND SIZE NOT FINALIZED.

REV	DATE	DESCRIPTION	BY	CHECKED	DESIGNED	LEAD	TECH	SPCL	CLAS	PLN	TR	JF	BP	CN
D	08/17/09	CHANGED FIGURE NUMBER												
C	08/12/09	ISSUED FOR REVIEW												
B	07/09/09	ISSUE FOR REVIEW												
A	05/18/09	ISSUED FOR REVIEW												

PRELIMINARY STATUS DATE REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
 LDE J. FOSTER 05/18/2009

APPROVED STATUS DATE REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
 LDE

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY S. CHERRY	
CHECKED BY J. FOSTER	
LEAD DESIGNER P. LOUEN	
ENGINEER/TECH SPECIALIST J. FOSTER	
PROJECT ENGINEERING MANAGER J. FOSTER	
PROJECT MANAGER C. NITOFF	

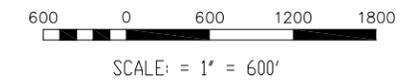
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 PERSONALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
 P.E. NO. STATE DATE



CLIENT/PROJECT TITLE
 GENESIS SOLAR, LLC
 GENESIS SOLAR ENERGY PROJECT

GENERAL ARRANGEMENT
 OVERALL SITE PLAN

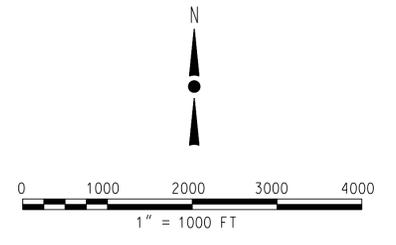
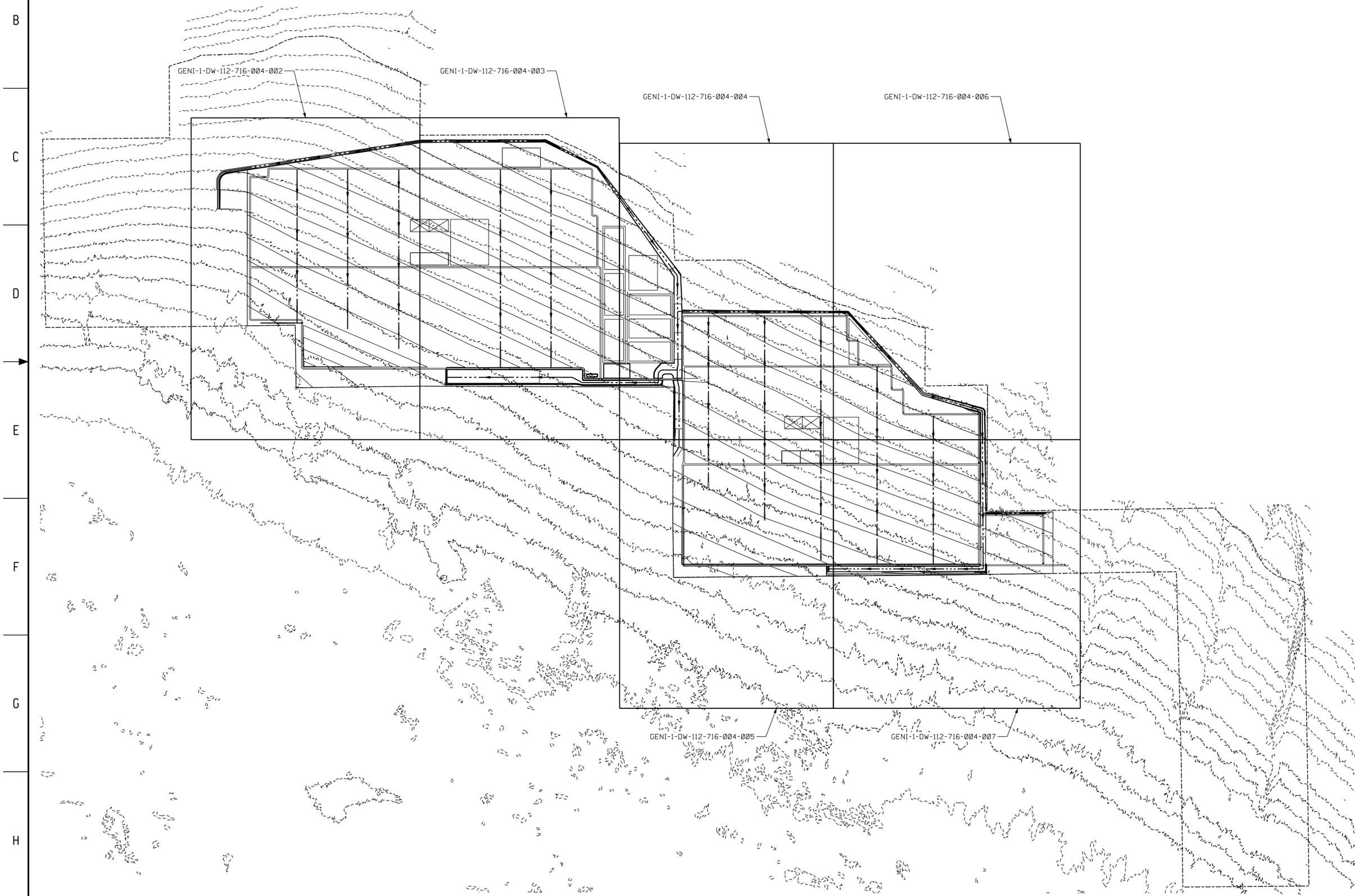
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WORLEYPARSONS DWG. NO. GENI-0-SK-111-002-001	REV D



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REFERENCES:
 GENI-0-SK-111-002-001, GENERAL ARRANGEMENT, OVERALL SITE PLAN, FIGURE 3.4-1
 GENI-1-DW-112-716-004-001, CONCEPTUAL GRADING PLAN, OVERALL PLAN, SHEET 1 OF 7
 GENI-1-DW-112-716-004-002, CONCEPTUAL GRADING PLAN, SHEET 2 OF 7
 GENI-1-DW-112-716-004-003, CONCEPTUAL GRADING PLAN, SHEET 3 OF 7
 GENI-1-DW-112-716-004-004, CONCEPTUAL GRADING PLAN, SHEET 4 OF 7
 GENI-1-DW-112-716-004-005, CONCEPTUAL GRADING PLAN, SHEET 5 OF 7
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 GENI-1-DW-112-726-002-001, CONCEPTUAL GRADING DETAILS AND SECTIONS, SHEET 1 OF 2
 GENI-1-DW-112-726-002-002, CONCEPTUAL GRADING DETAILS AND SECTIONS, SHEET 2 OF 2
 DIVERSION CHANNEL CROSS SECTION SHEETS

NOTES:
 1. COORDINATE SYSTEM BASED ON CALIFORNIA STATE PLANE, ZONE 6, NAD 83.
 2. THE GRADING PLANS ARE BASED ON GENI-0-SK-111-002-001, GENERAL ARRANGEMENT, REVISION D.



1	01/10	ISSUED FOR REVIEW	APEL	JDB	BABA	BABP
REV	DATE	DESCRIPTION	DRAWN	CHECKED	DESIGNED	PROJECT MANAGER

PRELIMINARY STATUS DATE REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
 LDE

APPROVED STATUS DATE REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
 LDE

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY A. PRATT	
CHECKED BY E. LEIBY	
LEAD DESIGNER J. DAHLGREN	
ENGINEER/TECH SPECIALIST B. ANDERS	
PROJECT ENGINEERING MANAGER B. ANDERS	
PROJECT MANAGER B. PIETRUCHA	

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 REG. NO. _____ STATE _____ DATE _____
 LIC. NO. _____

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 resources & energy

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 GENESIS SOLAR LLC
 GENESIS SOLAR ENERGY PROJECT

CONCEPTUAL GRADING PLAN
 OVERALL PLAN

SCALE 1"=200'	DRAWING SIZE ARCH D (36" x 24')
WORLEYPARSONS' DWG. NO. GENI-1-DW-112-716-004-001	REV 1

MATCHLINE SEE SHEET GENI-1-DW-112-716-004-002

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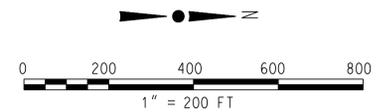
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- GENI-1-DW-112-716-004-002, CONCEPTUAL GRADING PLAN, SHEET 2 OF 7
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- GENI-1-DW-112-716-004-007, CONCEPTUAL GRADING PLAN, SHEET 7 OF 7
- GENI-1-DW-112-726-005-001, CONCEPTUAL GRADING DETAILS AND SECTIONS, SHEET 1 OF 2
- GENI-1-DW-112-726-005-002, CONCEPTUAL GRADING DETAILS AND SECTIONS, SHEET 2 OF 2

LEGEND:

- DRAINAGE CHANNEL CENTERLINE
- PROPOSED CONTOUR
- EXISTING CONTOUR
- PROPERTY BOUNDARY
- DITCH SLOPE
- ROAD ELEVATION
- 24" CULVERT
- 12' CULVERT

NOTES:

- COORDINATE SYSTEM BASED ON CALIFORNIA STATE PLANE, ZONE 6, NAD 83.
- THE GRADING PLANS ARE BASED ON GENI-0-SK-111-002-001, GENERAL ARRANGEMENT, REVISION D.



REV	DATE	DESCRIPTION	DRAWN	CHECKED	DESIGNED	IN CHARGE	APPROVED	PROJECT
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APPROVED STATUS DATE REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY A. PRATT	
CHECKED BY E. LEIBY	
LEAD DESIGNER A. PRATT	
ENGINEER/TECH SPECIALIST B. ANDERS	
PROJECT ENGINEERING MANAGER B. ANDERS	
PROJECT MANAGER B. PIETRUCHA	

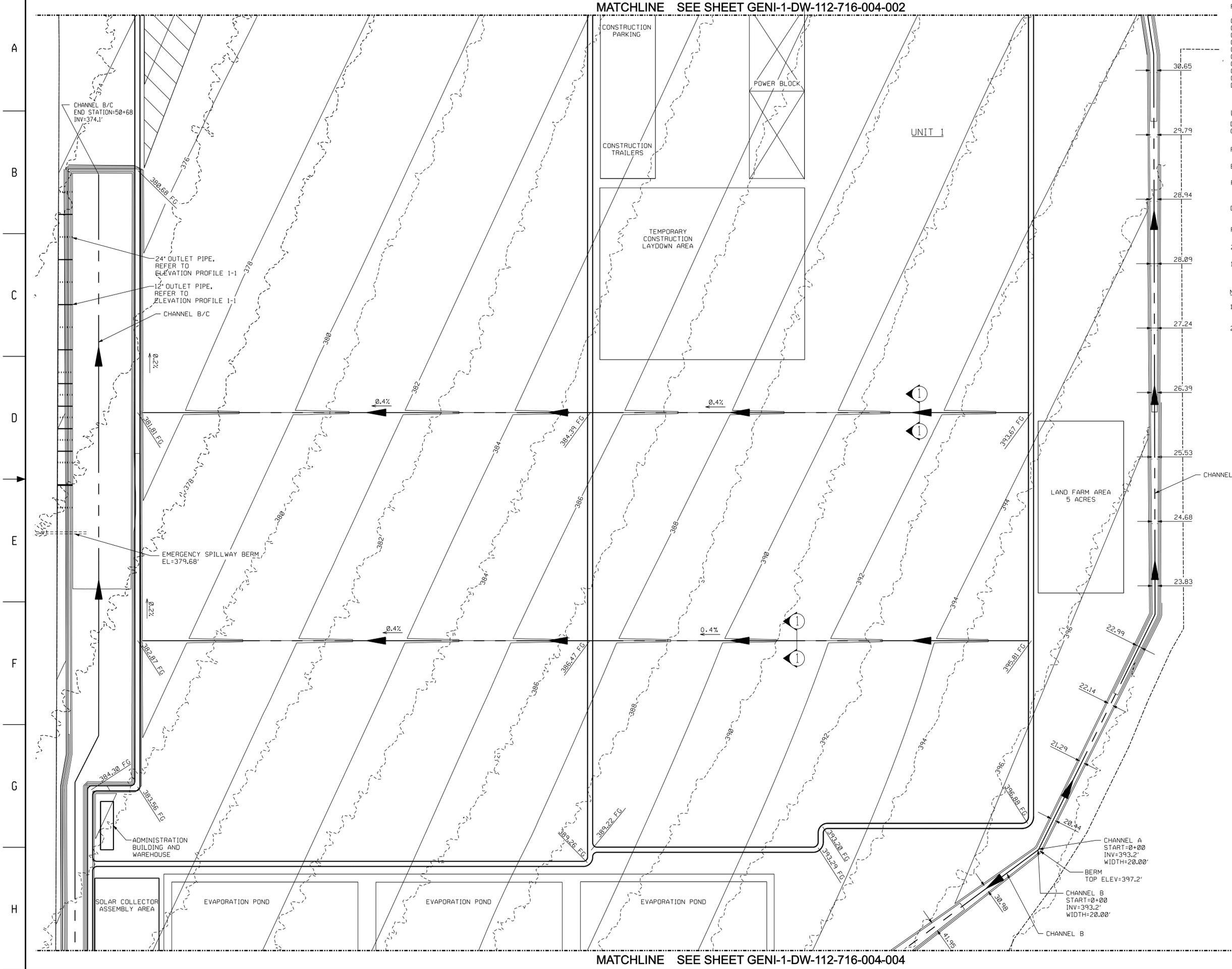


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GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

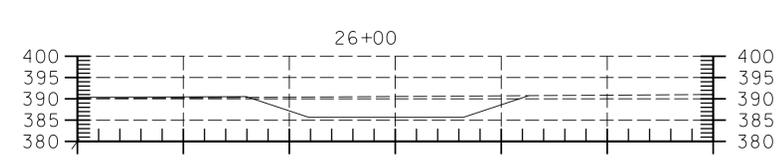
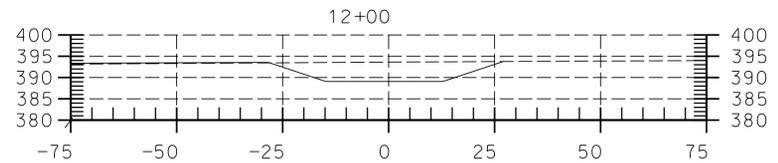
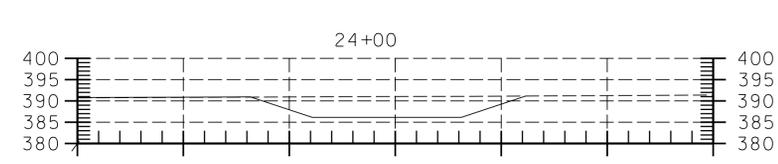
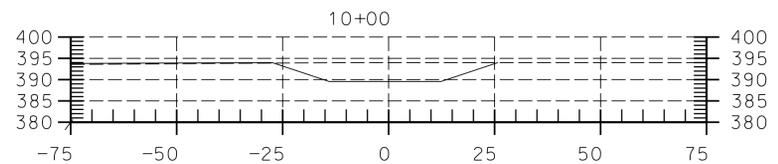
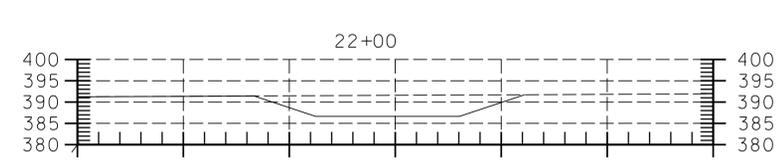
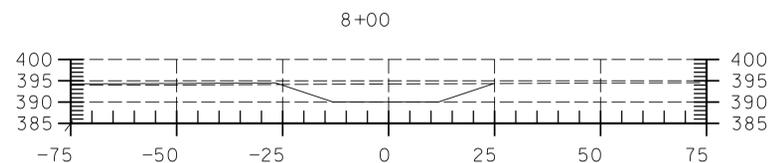
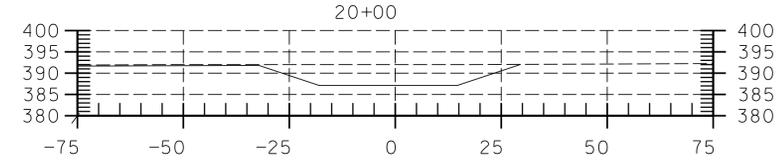
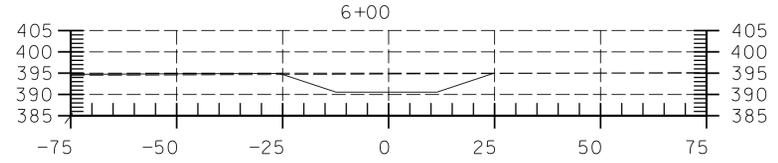
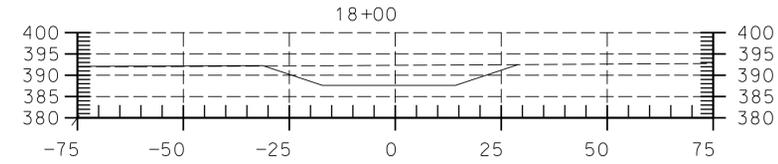
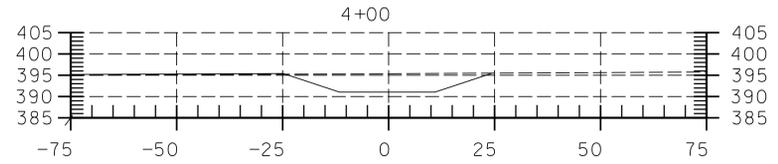
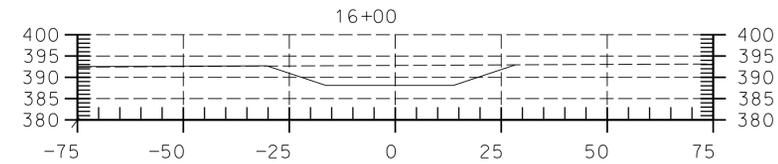
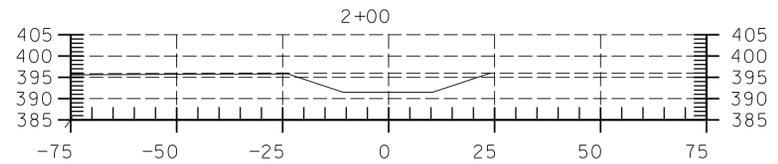
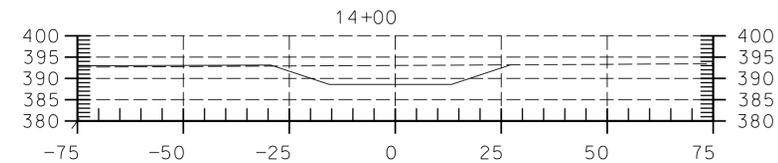
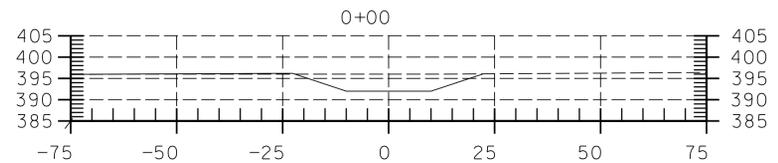
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DRAWING 3 OF 7

SCALE 1"=200'	DRAWING SIZE ARCH D (36" x 24')
WORLEYPARSONS' DWG. NO. GENI-1-DW-112-716-004-003	REV 1

MATCHLINE SEE SHEET GENI-1-DW-112-716-004-004



STA. 0+00 TO STA. 26+00



LEGEND:
 - - - - - EXISTING GRADE
 _____ PROPOSED GRADE

SCALE:
 HORIZ: 1"=20'
 VERT: 1"=20'

REV	DATE	DESCRIPTION	DRAWN	CHECKED	DESIGNED	IN CHARGE	LEAD DESIGNER	ENGINEER	PROJECT MANAGER	PROJECT
1	01/15/10	ISSUED FOR REVIEW	APEL	JD	BABA	BABP				

PRELIMINARY STATUS DATE REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS DATE REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY A. PRATT	
CHECKED BY E. LEIBY	
LEAD DESIGNER J. DAHLGREN	
ENGINEER/TECH SPECIALIST B. ANDERS	
PROJECT ENGINEERING MANAGER B. ANDERS	
PROJECT MANAGER B. PIETRUCHA	

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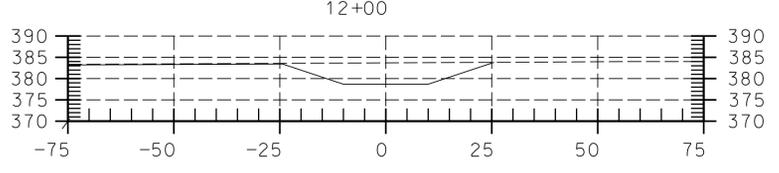
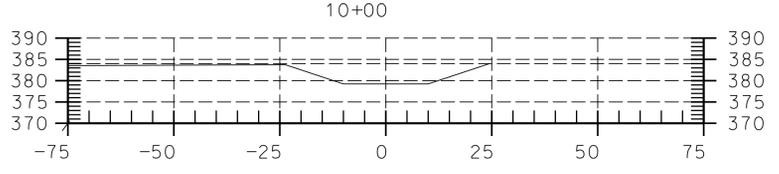
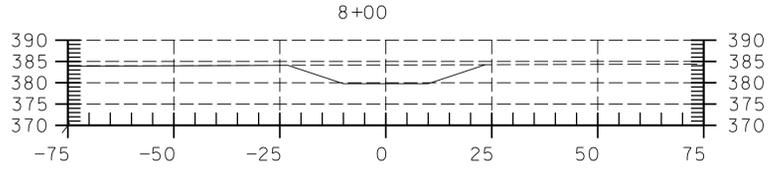
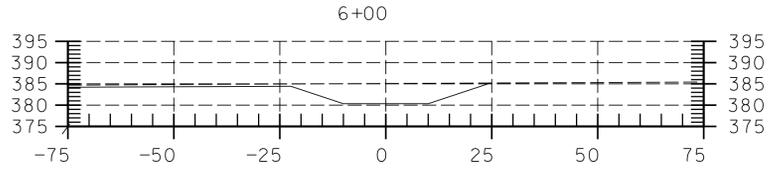
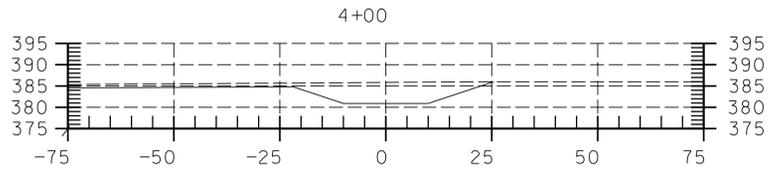
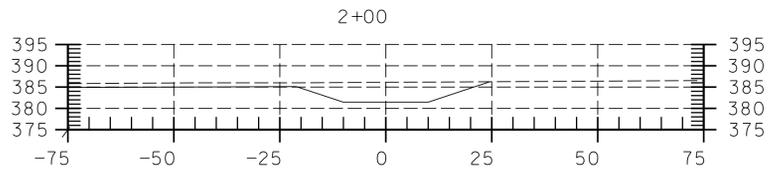
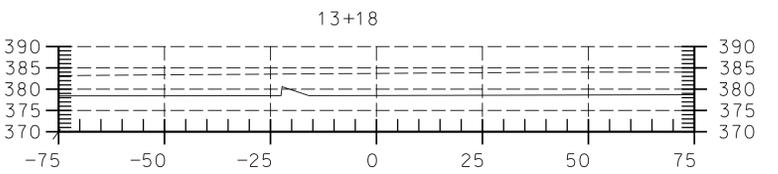
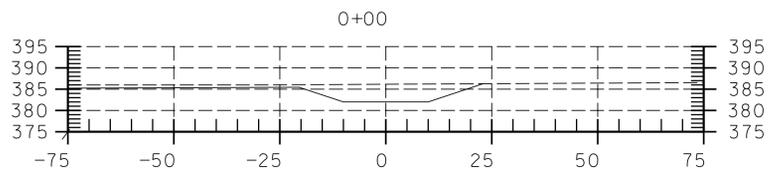


CLIENT/PROJECT TITLE
 GENESIS SOLAR LLC
 GENESIS SOLAR ENERGY PROJECT

CHANNEL C CROSS SECTIONS

SCALE 1"=20'	DRAWING SIZE ARCH D (36" x 24')
WORLDWIDE PARSONS INC. DWG. NO. GENI-1-DW-112-716-004-014	REV 1

STA. 0+00 TO STA. 13+18



LEGEND:
 ----- EXISTING GRADE
 _____ PROPOSED GRADE

SCALE:
 HORIZ: 1"=20'
 VERT: 1"=20'

REV	DATE	DESCRIPTION	DRAWN	CHECKED	DESIGNED	IN CHARGE	APPROVED	PROJECT
1	01/15/10	ISSUED FOR REVIEW	APEL	JDB	BABA	BABP		

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ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY A. PRATT	
CHECKED BY E. LEIBY	
LEAD DESIGNER J. DAHLGREN	
ENGINEER/TECH SPECIALIST B. ANDERS	
PROJECT ENGINEERING MANAGER B. ANDERS	
PROJECT MANAGER B. PIETRUCHA	

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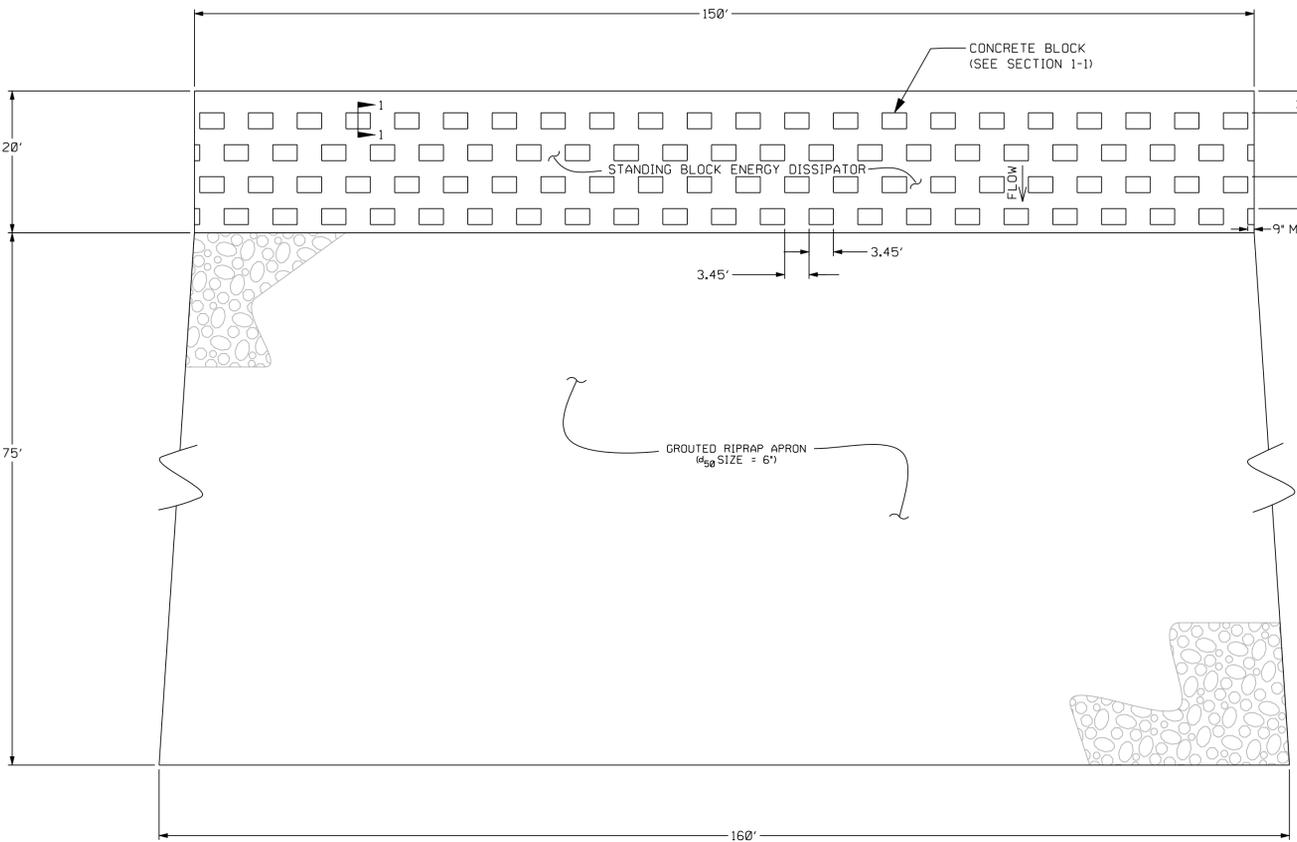
ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
 PEI - STATE _____ DATE _____
 LIC. NO. _____



CLIENT/PROJECT TITLE
 GENESIS SOLAR LLC
 GENESIS SOLAR ENERGY PROJECT

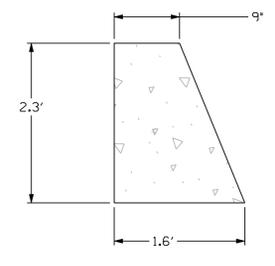
CHANNEL E CROSS SECTIONS

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WORLDWIDE PARSONS DWG. NO. GENI-1-DW-112-716-004-019	REV 1

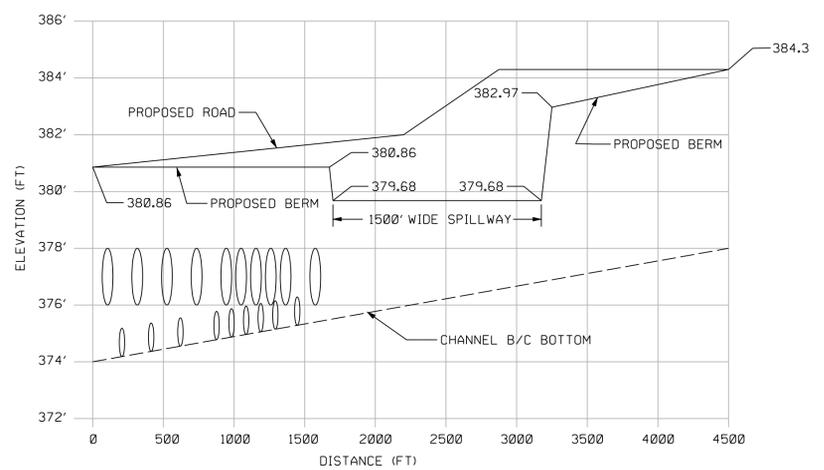


ENERGY DISSIPATOR
DETAIL A
NOT TO SCALE

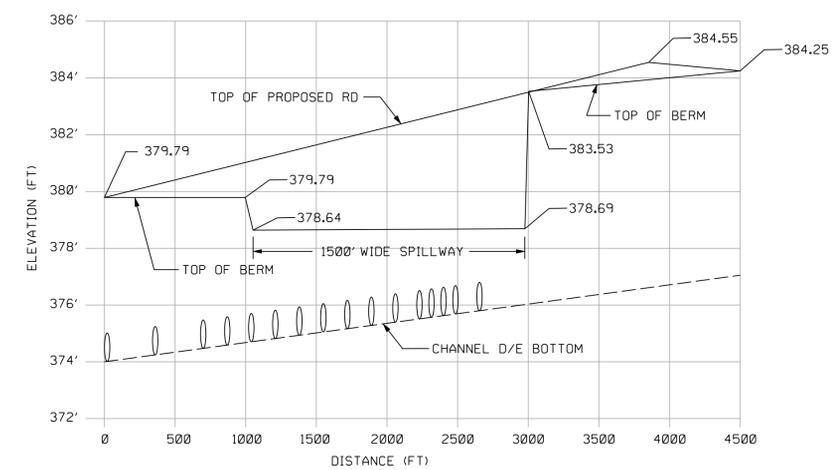
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- GENI-0-SK-111-002-001, GENERAL ARRANGEMENT, OVERALL SITE PLAN, FIGURE 3.4-1
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 - GENI-1-DW-112-726-005-002, CONCEPTUAL GRADING DETAILS AND SECTIONS, SHEET 2 OF 2 DIVERSION CHANNEL CROSS SECTION SHEETS



SECTION 1-1
NOT TO SCALE



CHANNEL B/C
ELEVATION PROFILE 1-1



CHANNEL D/E
ELEVATION PROFILE 2-2

REV	DATE	DESCRIPTION	DRAWN	CHECKED	DESIGNED	IN CHARGE / ENGINEER	LEAD DESIGNER	PROJECT MANAGER	PROJECT
1	15/10	ISSUED FOR REVIEW	A	E	L	J	D	B	A

PRELIMINARY STATUS: DATE REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS: DATE REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: A. PRATT	
CHECKED BY: E. LEIBY	
LEAD DESIGNER: J. DAHLGREN	
ENGINEER/TECH SPECIALIST: B. ANDERS	
PROJECT ENGINEERING MANAGER: B. ANDERS	
PROJECT MANAGER: B. PIETRUCHA	

Zero Harm Leadership No Incidents Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF: _____ STATE: _____ DATE: _____

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE
GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CONCEPTUAL
GRADING PLAN DETAILS AND SECTIONS
DRAWING 1 OF 2

SCALE	DRAWING SIZE
NOT TO SCALE	ARCH D (36" x 24")

WORLDWIDE DWG. NO. GENI-1-DW-112-726-005-001 REV 1



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EcoNomics™

DRAFT DECOMMISSIONING AND CLOSURE PLAN
GENESIS SOLAR ENERGY PROJECT, RIVERSIDE COUNTY, CALIFORNIA

Appendix 1

DRAFT
Weed Management Plan

Genesis Solar Energy Project
Eastern Riverside County, California

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January 2010

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1.0 Introduction

Genesis Solar, LLC (Genesis Solar), is proposing to develop a 250-megawatt (MW) solar thermal power generating facility located in Riverside County, California, between the community of Desert Center and the city of Blythe on land managed by the Bureau of Land Management (BLM) (Figure 1). Genesis Solar has applied for a 4,640-acre right-of-way (ROW) grant from the BLM for Project development; however, once constructed, the facility would occupy approximately 1,800 acres within the requested ROW (Plant Site), plus approximately 90 acres for linear facilities (collectively referred to as the Project Area). Linear facilities include a transmission line, natural gas pipeline, and main access road that would be mostly co-located for approximately 6.5 miles (Figure 2).

1.1 Plan Purpose

The goal of the Plan is to protect the biological resources surrounding the Project Area from the harmful effects of weeds that result from Project activities and avoid unintended harm from weed management techniques. The Plan will be consistent with all applicable Laws, Ordinances, Regulations, and Standards (LORS) (see Section 2.0).

Weed management objectives are consistent with existing and proposed future site conditions, biology of the identified weed species, and environmental context of the project. Weed management objectives for the Project include the following:

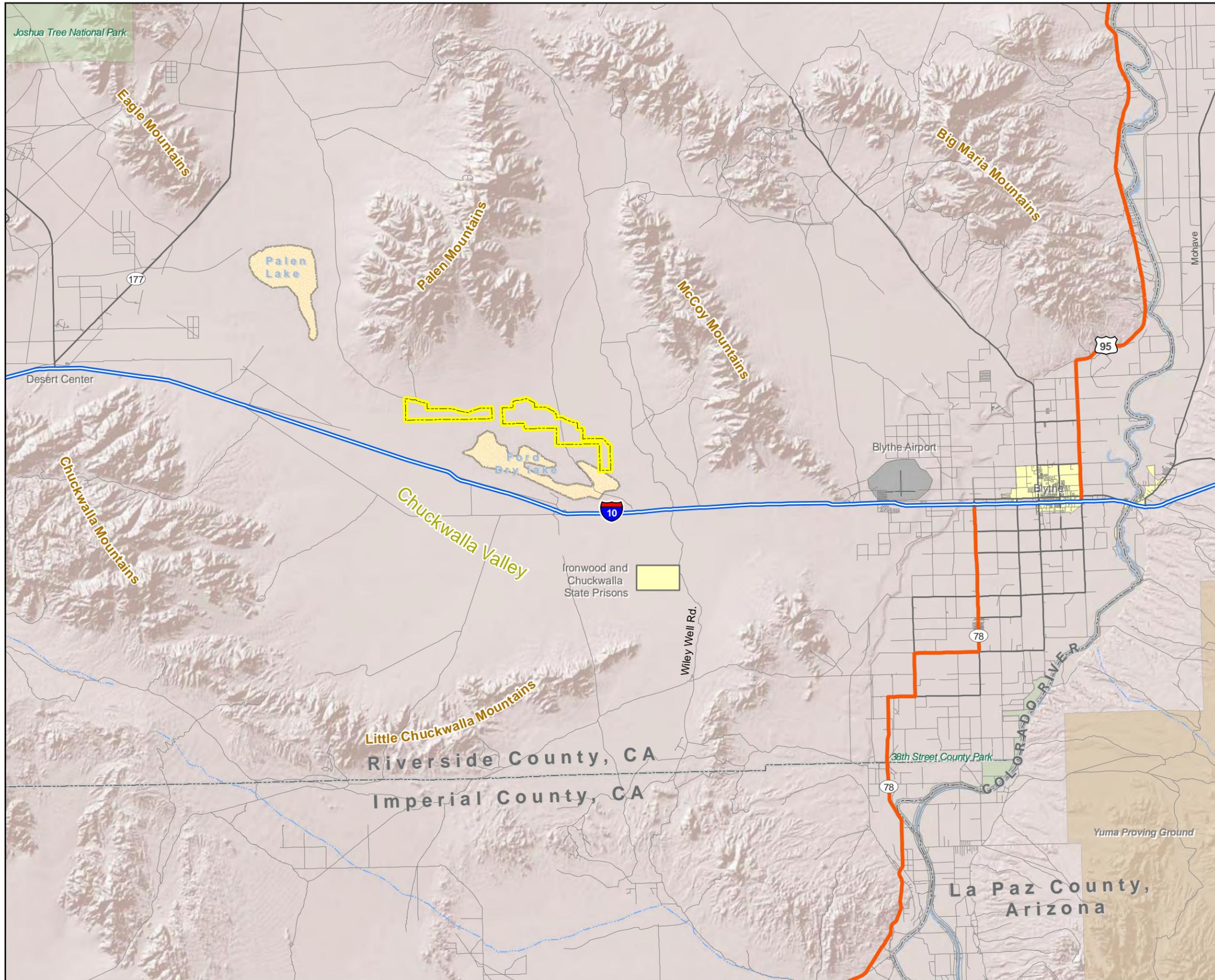
- **Identification and Risk Assessment:** This objective identifies presence, location, and abundance of weed species in the Project Area, both existing conditions and conditions over time.
- **Suppression:** This objective will ensure that populations of existing weed species do not increase due to the Project and, if possible, will be suppressed below current levels.
- **Containment:** This objective will strive to prevent the spread of existing weeds to new areas and prevent the introduction of weed species not currently present in the Project Area.

2.0 Related and Applicable Laws, Ordinances, Regulations, and Standards

2.1 Federal Laws and Regulations

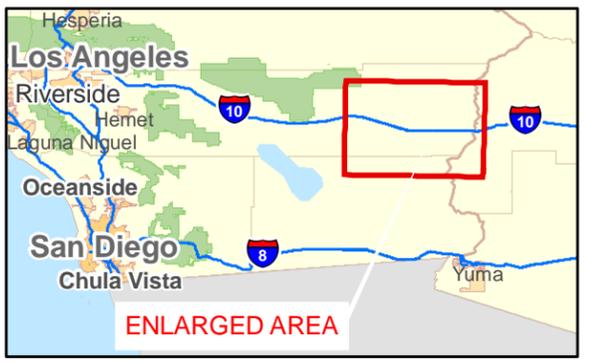
2.1.1 Federal Noxious Weed Act of 1974

The Federal Noxious Weed Act (7 U.S.C. §§ 2801-2814, January 3, 1975, as amended 1988 and 1994) provides for the control and management of non-indigenous weeds that injure, or have the potential to injure, the interests of agriculture and commerce, wildlife resources, or public health. The act gives the Secretary of Agriculture broad powers in regulating transactions in and movement of noxious weeds. It states that no person may import or move any noxious weed identified by regulations of the Secretary of Agriculture into or through the U.S. except in compliance with the regulations, which may require that permits be obtained. The act also requires each federal agency to develop a management program to control undesirable plants



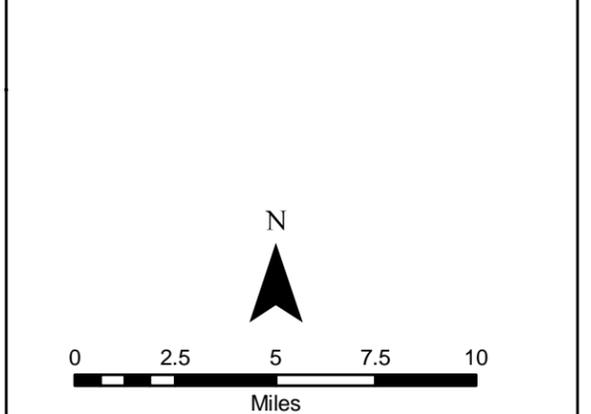
GENESIS SOLAR, LLC

GENESIS SOLAR ENERGY PROJECT
RIVERSIDE COUNTY,
CALIFORNIA



Legend

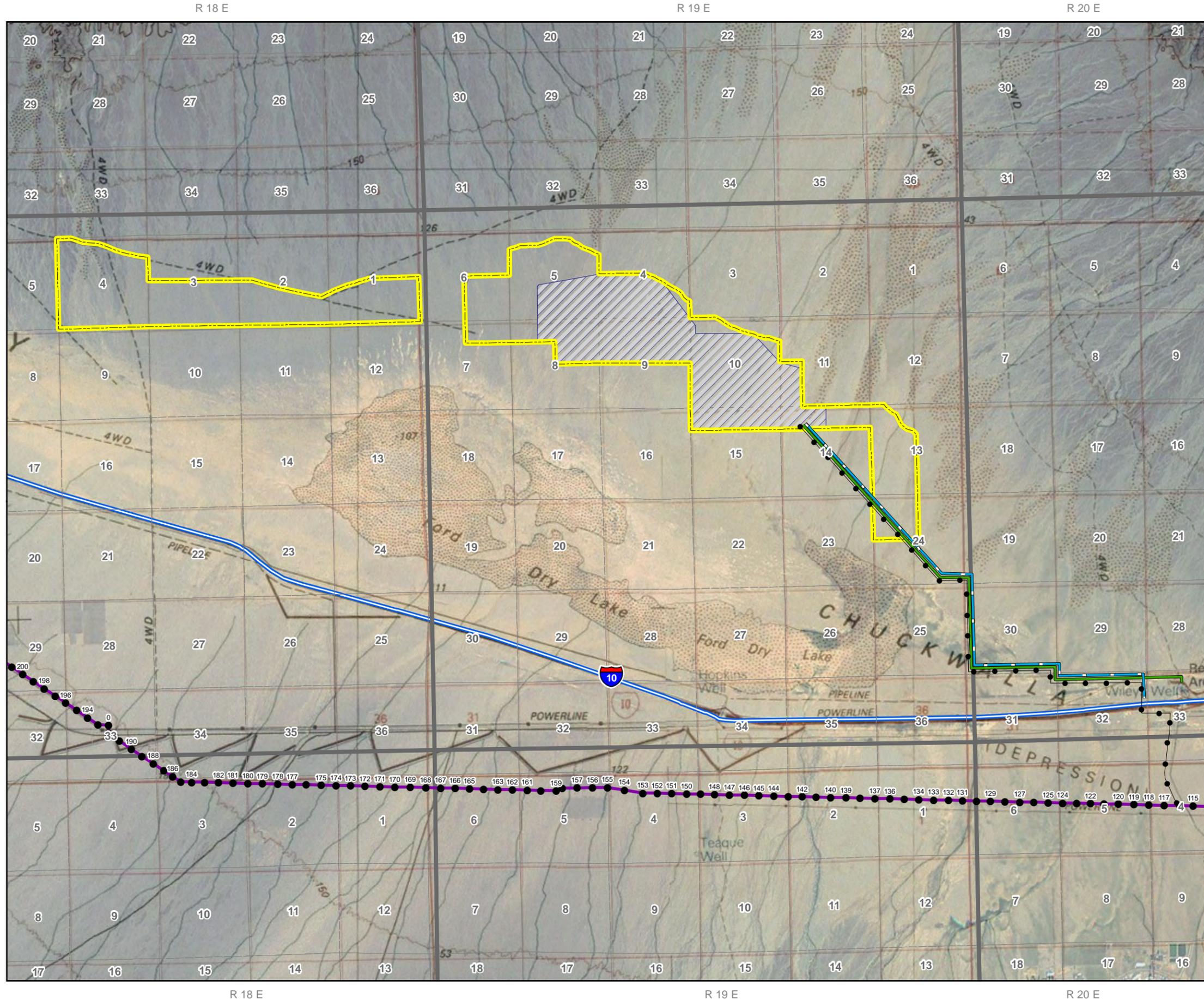
Project Requested ROW	Lake/River
Interstate	Lake Intermittent
Highway	Parks (Regional)
Major Road	Military Installation
Local Road	Urban Areas
Airport Area	
County Boundary	
State Boundary	



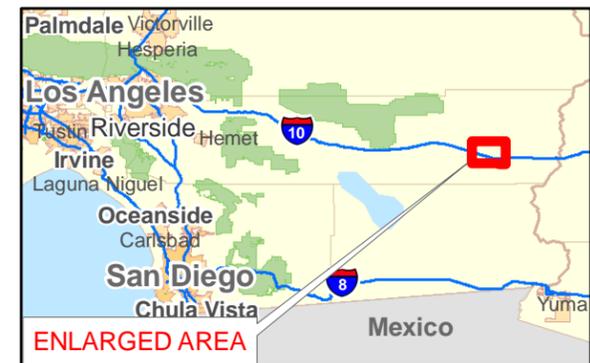
Notes:
 (a) UTM Zone 11, NAD 1983 Projection.
 (b) Source data: ESRI, BLM, TTEC

FIGURE 1
REGIONAL LOCATION MAP

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GENESIS SOLAR, LLC
GENESIS SOLAR ENERGY PROJECT
RIVERSIDE COUNTY,
CALIFORNIA



Legend

- Blythe Transmission Line
- Blythe Transmission Line Structures
- Project Requested ROW
- Plant Site
- Township and Range Lines
- Section Lines

Project Linear Facilities

- Proposed Transmission Interconnect (7.5 Miles)
- Proposed Gas Line (5.9 Miles)
- Proposed Access Road (6.1 Miles)

N

0 0.5 1 1.5 2
Miles

Notes:
 (a) UTM Zone 11, NAD 1983 Projection.
 (b) Source data: ESRI, BLM, TTEC

FIGURE 2
FEATURES AND LOCATION MAP

TETRA TECH EC, INC

on federal lands under the agency's jurisdiction and to establish and adequately fund the program. Some of the provisions of this act were repealed by the Plant Protection Act of 2000 (PPA), including U.S.C. 2802 through 2813. However, Section 1 (findings and policy) and Section 15 (requirements of federal land management agencies to develop management plans) were not repealed (7 U.S.C. 2801 note; 7 U.S.C. 2814).

2.1.2 Plant Protection Act of 2000

The Plant Protection Act (PPA), as amended (7 U.S.C. 7701-7786) states that the detection, control, eradication, suppression, prevention, or retardation of the spread of plant pests or noxious weeds is necessary for the protection of the agriculture, environment, and economy of the U.S. This act defines the term "noxious weed" (7 U.S.C. 7702 § 403) to mean any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the U.S., the public health, or the environment. This act specifies that the Secretary of Agriculture may prohibit or restrict the importation, entry, exportation, or movement in interstate commerce of any noxious weed if it is determined "that the prohibition or restriction is necessary to prevent the introduction into the [U.S.] or the dissemination of a plant pest or noxious weed within the [U.S.]," and authorizes the issuance of implementing regulations. Subsequent regulations implemented by the Noxious Weed Control and Eradication Act of 2004 amended the PPA.

2.2 State and Local Laws and Regulations

2.2.1 California Food and Agricultural Code

The California Food and Agricultural Code contains some detail on noxious weed management. Specifically, Food and Agricultural Code Section 403 states that the Department of Food and Agriculture should prevent the introduction and spread of injurious insect or animal pests, plant diseases, and noxious weeds. Under Sections 7270 through 7224, the California Commissioner of Agriculture is granted the authority to investigate and control noxious weeds, and specifically to provide funding, research, and assistance to weed management entities, including eligible weed management areas or county agricultural commissioners, for the control and abatement of noxious weeds according to an approved integrated weed management plan.

California Food and Agriculture Code Section 5101 and 5205 provide for the certification of weed-free forage, such as hay, straw, and mulch. This portion of the code recognizes that many noxious weeds are spread through forage and ground covers. The code allows for in-field inspection and certification of crops to ensure that live roots, rhizomes, stolons, seeds, or other propagative plant parts of noxious weeds are not present in the crop to be harvested. Certified weed-free forage is required on BLM land, and any mulch or hay bale materials used for erosion control at Genesis Solar will be required to meet this certification.

2.3 Conservation and Management Plans

2.3.1 Bureau of Land Management

To address the use of chemical treatments in noxious weed control, BLM prepared the Programmatic Environmental Impact Statement (PEIS) entitled *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States* (BLM 2007). This document was the result of extensive public involvement and outlined the specific decisions, standard operating procedures, and mitigation measures for use of herbicides on BLM administered lands. The selected alternative of the PEIS identifies the active herbicidal ingredients approved for use on BLM land, and the herbicidal ingredients that are no longer approved for use. The Record of Decision for the PEIS defers the determination of areas that are to be treated through BLM's integrated pest management program to approved land use plans, and makes no land use or resource allocations in this regard. Appendix B of the PEIS, *Herbicide Treatment Standard Operating Procedures*, specifies management of noxious weeds through prevention and application of pesticides on BLM administered land. The procedures listed in this appendix are incorporated as requirements of this plan.

2.3.2 Northern and Eastern Colorado Desert Coordinated Management Plan (NECO Plan)

The NECO Plan (BLM and CDFG 2002) is a landscape-scale, multi-agency planning effort that protects and conserves natural resources while simultaneously balancing human uses of the California portion of the Sonoran Desert ecosystem, in which the Project lies. The 25-million-acre California Desert Conservation Area (CDCA) was designated in 1976 by the Federal Land Policy and Management Act to allow BLM to manage the resources of the California deserts. BLM developed a management plan for the CDCA in 1980 (BLM 1980), but the plan has since been amended and subdivided into four bioregion planning areas. The BLM has completed a regional plan amendment for each bioregion, among them the NECO Plan, which encompasses 5.5 million acres in the southeastern California Desert and the entire Project area.

3.0 Noxious Weed Inventory and Baseline Conditions

3.1 Noxious Weed Definitions

The term "weed" has many different definitions. In the broadest sense, it is any plant growing where it is not wanted. Weeds can be native or non-native, invasive or non invasive, and noxious or not noxious. A noxious weed is any plant designated by a federal, state or county government as injurious to public health, agriculture, recreation, wildlife, or property (Sheley et al. 1999). A noxious weed is "competitive, persistent, and pernicious" (James et al. 1991). Invasive weeds are any non-native plant species that are injurious to the public health, agriculture, recreation, wildlife habitat, or the biodiversity of native habitats.

Many invasive plant species share the trait of being adapted to disturbance and also out-compete some native species in these environments. The California Invasive Plant Council (Cal-IPC) categorizes invasive plants as high, moderate, or limited according to the severity of their ecological impact (Cal-IPC 2006):

High – Invasive plants classified as high consist of species that have severe ecological impacts on physical processes, plant and animal communities and vegetation structure, and have a moderate to high rate of dispersal and establishment.

Moderate – These species consist of species that have substantial and apparent (but not severe) ecological impacts and have a moderate to high rate of dispersal and establishment, although establishment is generally dependent upon a disturbance regime such as soil disruption or fire.

Limited – These consist of species that are invasive, but their ecological impacts are minor on a state-wide level. Dispersal and establishment of species classified as limited are generally low to moderate.

These classifications are based on cumulative state-wide trends and can vary at local scales. As a result, a species classified as limited may be more invasive on a local scale than a species classified as high, depending on local conditions (Cal-IPC 2006). For this reason, all plants Cal-IPC classified invasive, even those classified as limited, can potentially impact a local ecosystem.

3.2 Weed Species of Concern

All invasive plant species were inventoried during the Spring 2009 biological field surveys and concentrations of invasive species were mapped and described. During March and April 2009, biologists conducted comprehensive botanical surveys of the 4,640-acre requested right-of-way (ROW) (Figure 2), plus zones-of-influence (ZOI) surveys up to 1 mile surrounding the project area; two proposed linear facility routes with ZOIs were also surveyed out to 2400 ft. from the route edges (in total, these comprise the Survey Area). The linear facility routes proposed at the time of surveys have since changed and will be surveyed in spring 2010. Lengths of the access road, transmission line, and gas pipeline are those of the currently proposed linear routes, portions of which have not yet been surveyed for biological resources. The 4,640-acre ROW, linear facility routes, and ZOIs comprise what is hereafter referred to as the Survey Area. Because of the intensity of the desert tortoise surveys (100 percent coverage at 30-foot intervals), botanical surveys were conducted concurrently with desert tortoise surveys.

Four non-native species were detected during surveys, including Saharan mustard (*Brassica tournefortii*), tamarisk (*Tamarix ramosissima*), Russian thistle (*Salsola tragus*), and Mediterranean grass (*Schismus* sp.):

- Saharan mustard (*Brassica tournefortii*) was widespread throughout the project Survey Area in Sonoran Creosote Bush Scrub and Stabilized and Partially Stabilized Sand Dunes. There were patches of higher concentrations occurring within runnels, along the existing two-track road on the western side of the ROW, and along the linear facility routes. Cal-IPC considers this plant highly invasive (Cal-IPC 2006). Due to its early flowering and aggressive exploitation of available soil moisture, this plant tends to out-compete native species.

- Tamarisk or saltcedar (*Tamarix* spp.) is rare in the Survey Area – only a single individual was detected in the southern portion of the Project Area near the edge of the dry lake bed. This species tends to be associated with riparian habitats. Cal-IPC has declared this plant highly invasive (Cal-IPC 2006). This species should be eradicated wherever observed on the Project Area.
- Russian thistle (*Salsola tragus*) is common within the Stabilized and Partially Stabilized Sand Dunes, both where they intersect the eastern portion of the Survey Area and along the linear facility route. Cal-IPC has determined that this plant has a limited invasiveness rating in California (Cal-IPC 2006).
- Mediterranean grass (*Schismus* spp.) was observed distributed throughout the project site. Cal-IPC has determined that this plant has a limited invasiveness rating in California (Cal-IPC 2006). BLM and other agencies recognize that because of the widespread distribution and dominance of Mediterranean grass, this species is not considered feasible to control; therefore, weed abatement efforts for Mediterranean grass will not be required.

3.3 Noxious Weed Risk Assessment

Consistent with BLM guidelines for weed management, a weed risk assessment was conducted for each component of the Genesis Solar Energy Project—construction, operation, and closure—that involve soil disturbance activities and/or alteration of site vegetation. The risk assessment format performed for each weed species observed during spring 2009 biological field surveys and was obtained online (<http://www.blm.gov/ca/st/en/prog/weeds/9015.html>) (Table1).

Table 1. Risk Assessment Factors and Rating Risk Assessment Factors

Factor 1: Likelihood of Noxious Weed Species Spreading to Project Area	
None	Noxious weed species not located within or adjacent to the project area. Project activity is not likely to result in the establishment of noxious weed species in the project area.
Low (1)	Noxious weed species present in areas adjacent to but not within the project area. Project activities can be implemented and prevent the spread of noxious Weeds into the project area.
Moderate (5)	Noxious weed species located immediately adjacent to or within the project area. Project activities are likely to result in some areas becoming infested with noxious weed species even when preventative management actions are followed. Control measures are essential to prevent the spread of Noxious weeds within the project area.
High(10)	Heavy infestations of Noxious weeds are located within or immediately adjacent to the project area. Project activities, even with preventative management actions are likely to results in the establishment and spread of noxious weeds on disturbed sites throughout much of the project area.

Table 1. Risk Assessment Factors and Rating Risk Assessment Factors (Cont'd)		
Factor 2: Consequence of Noxious Weed Establishment in Project Area		
Low to Nonexistent (1)	None. No cumulative effects expected.	
Moderate (5)	Possible adverse effects on site and possible expansion of infestation within project area. Cumulative effects on native plant community are likely but limited.	
High (10)	Obvious adverse effects within the project area and probable expansion of noxious weed infestations to areas outside the project area. Adverse cumulative effects on native plant community are probable.	
Risk Rating		
Step 1: Identify level of likelihood and consequence of adverse effects and assign values according to the following: None—0, Low—1, Moderate—5, High—10.		
Step 2 Multiply level of likelihood by consequence.		
Step 3 Use the value resulting in Step 2 to determine Risk Rating and Action as follows:		
Value	Risk Rating	Action
0	None	Proceed as planned.
1–10	Low	Proceed as planned. Initiate control treatment on noxious weed populations that get established in the area.
25	Moderate	Develop preventative management measures for the proposed project to reduce the risk of introduction or spread of noxious weeds into the area. Preventative management measures should include modifying the project to include seeding the area to occupy disturbed sites with desirable species. Monitor area for at least 3 consecutive years and provide for control of newly established populations of noxious weeds and follow-up treatment for previously treated infestations.
50–100	High	Project must be modified to reduce risk level through preventative management measures including seeding with desirable species to occupy disturbed sites and controlling existing infestations of noxious weeds prior to project activity. Project must provide at least 5 consecutive years of monitoring. Projects must also provide for control of newly established populations of noxious weeds and follow-up treatment for previously treated infestations.

Saharan Mustard

Saharan mustard is widespread over the Project Area (moderate). The rating for consequence of spread for Saharan mustard is moderate. The spread of this species may result in a possible expansion of infestation and limited cumulative effects on native plant communities. The overall risk rating for Saharan mustard is moderate (25 pts).

Tamarisk

Tamarisk observations were limited to a single plant located within the Survey Area, but not the Project Area. This yields a likelihood of spread rating of moderate and a consequence of spread rating of low. The overall risk rating for tamarisk is low (5 pts).

Russian Thistle

Russian thistle is common in the dune areas on the east side of the project area and along the linear facilities. It is rated moderate for likelihood of spread and moderate for consequence of spread. The overall risk rating of moderate (25 pts) for Russian thistle.

Mediterranean Grass

Mediterranean grass is found throughout the Project Area. It is rated high for likelihood of spread and moderate for consequence of spread, for an overall risk rating of moderate (50 pts).

Control measures will be essential to prevent the spread of these weed species within the Project Area. BLM Guideline 9015 states that projects with weeds that have a moderate risk rating - on the Project Area this is Saharan mustard and Russian thistle - should develop preventative management measures as listed in the table above. Monitoring should be undertaken for at least three consecutive years and should include weed control and follow-up treatments. Mediterranean grass, while receiving a high rating, is a dominant and widespread annual throughout the Mojave and Colorado Deserts and unlikely to be controlled easily because of its high germination potential, high density of highly mobile seeds, and growth pattern. The latter includes growth of a few to many individuals in close proximity to other species, including perennial grasses, which makes elimination by mechanical or chemical means difficult. Nonetheless, control techniques will be employed, as possible, but monitoring will take place for three, not five years. Sites with weeds that have a low risk rating on the Project Area – tamarisk - may proceed as planned, but would initiate control treatment on relevant noxious weed populations that get established in the area.

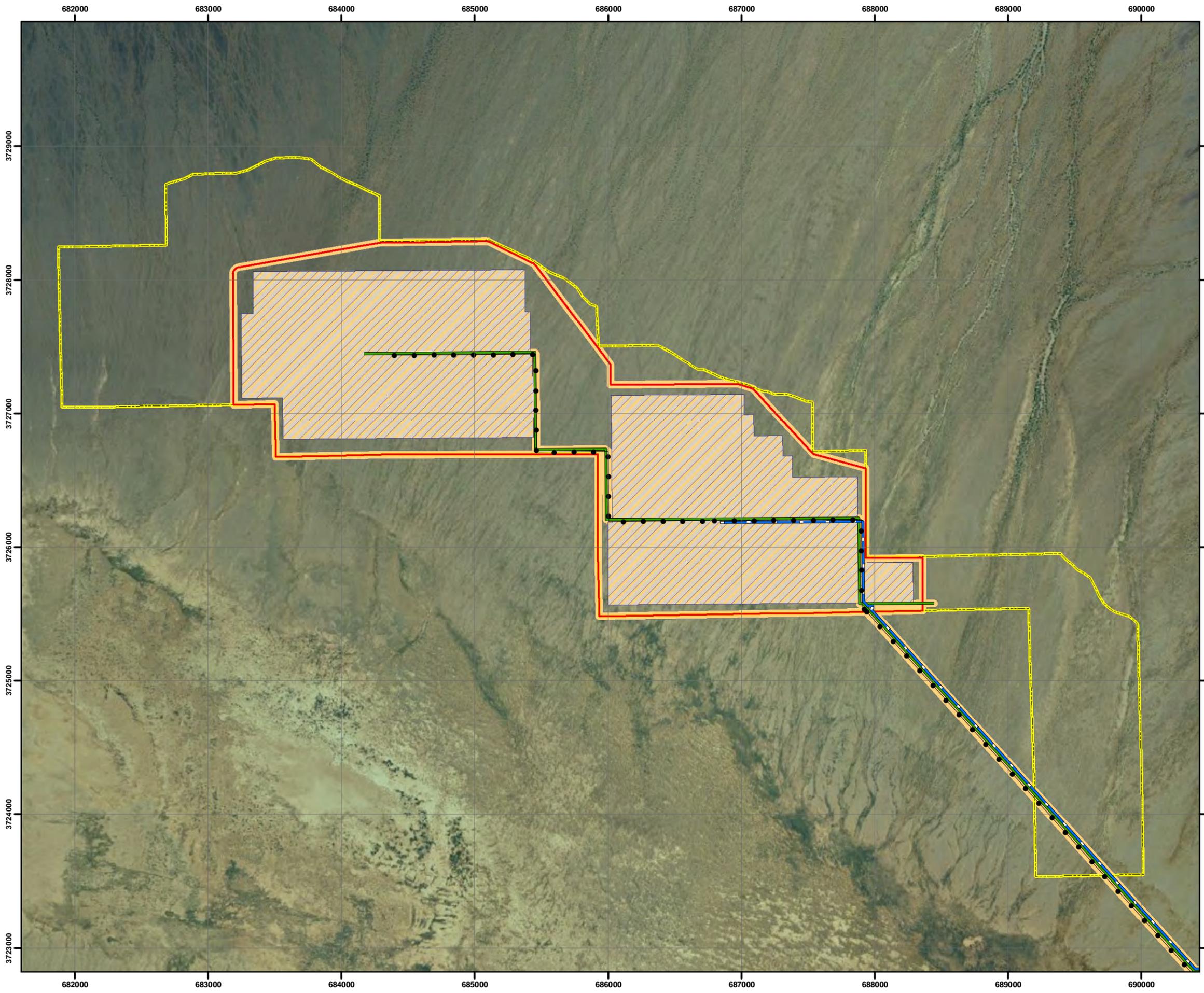
4.0 Weed Management Areas

The weed management area includes the Plant Site (fence line and solar fields), linear facilities, and a buffer area 100 ft out from the boundary of these features; including where the access road is not co-located with the gas and transmission line (Figure 3A and Figure 3B). In actuality, 100 ft may be more or less than the area of effect for some weeds. This Plan includes baseline surveys and monitoring within 100 ft as well as at greater distances to determine if management should extend beyond 100 ft. or be decreased.

Weed management areas were selected based on the presence of weed populations, and the likelihood of spread or increase. The 1,800 acre Plant Site will initially be cleared of all vegetation for construction and the solar fields will be kept clear of all vegetation during operation to reduce the risk of fire. Weed management will focus on areas of temporary surface disturbance, which will be along the edges of the Project Site, along the linear routes, and within the re-routed channels around the Project Site. Areas that will be paved, graveled, or otherwise covered with a non-growing surface are excluded from the weed management area.

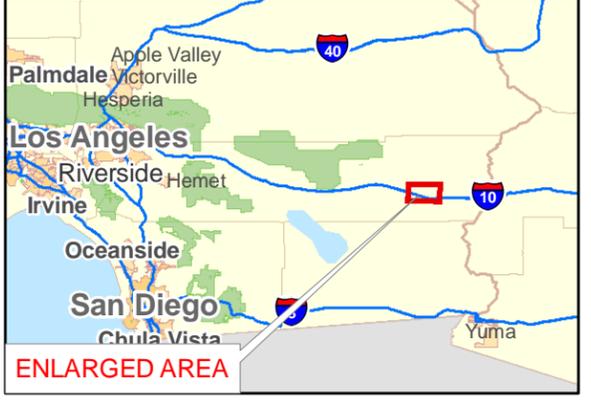
4.1 Surface Disturbance Areas

Soil that will be disturbed during construction will create habitat well suited to disturbance-adapted invasive species. This will occur along the linear facilities and Plant Site fence line. Other areas will be paved, graveled, or covered with a dust palliative (e.g., solar fields) that will not provide substrates suitable to vegetation growth. Hardening materials will also be applied to the re-routed channels but accumulated sediment and temporary water will provide attractive sites for weed establishment. Restored areas also will be prone to weed invasion and establishment. Accordingly, measures to minimize the introduction of new weed species and the

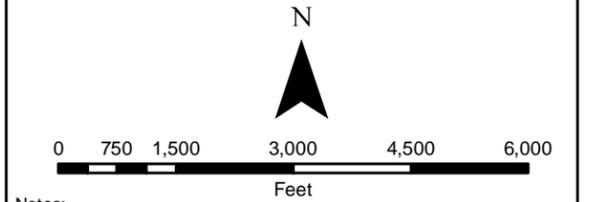


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RIVERSIDE COUNTY,
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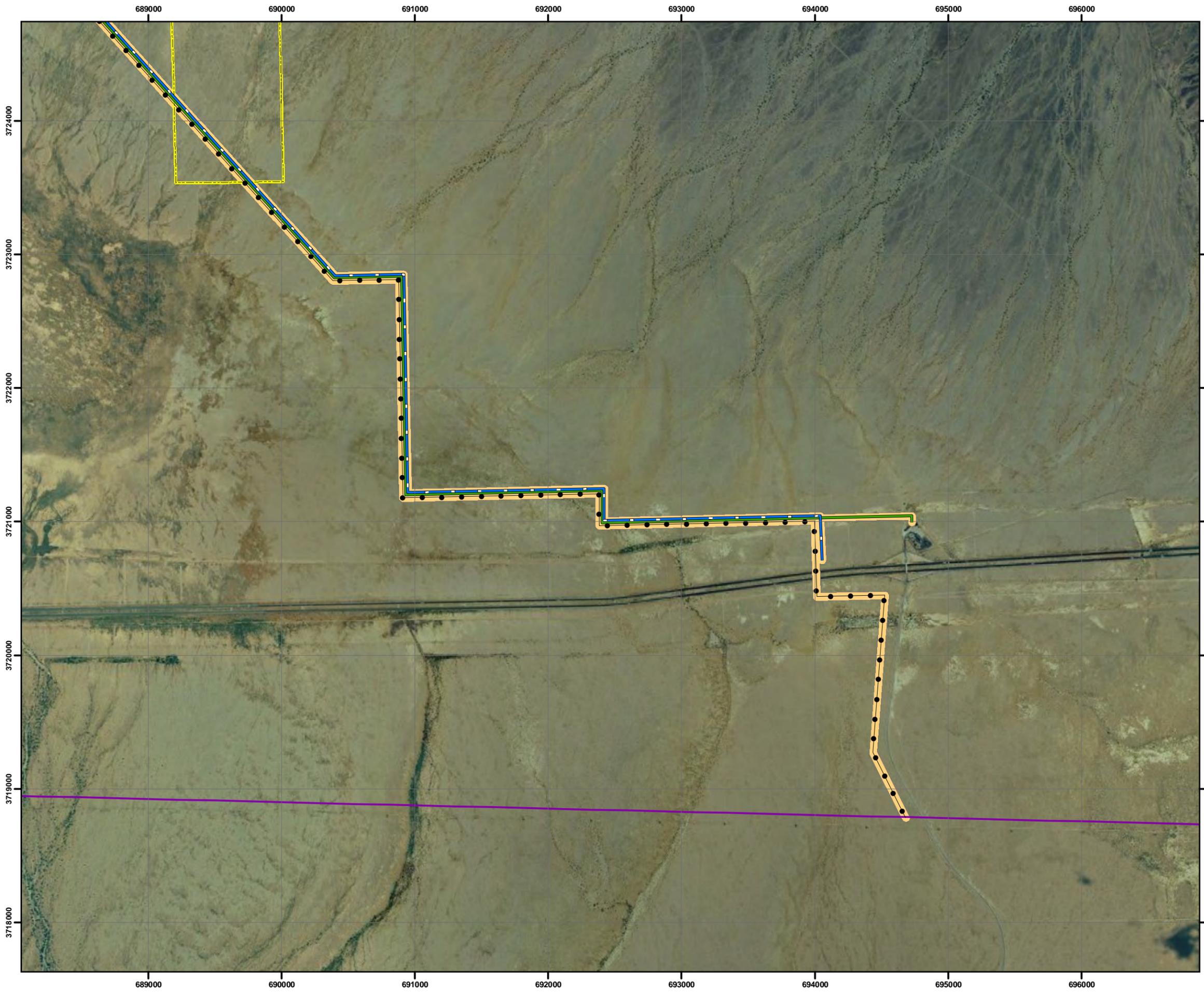


- Legend**
- Requested Project ROW
 - Facility Fence Line
 - Proposed Solar Field
 - Blythe Energy Project Transmission Line
- Project Linear Facilities**
- Proposed Transmission Interconnect (7.5 Miles)
 - Proposed Access Road (6.1 Miles)
 - Proposed Gas Line (5.9 Miles)
- Weed Management Area (1,821 ac.)**
- 100 ft Buffer on Linear/Fence Line



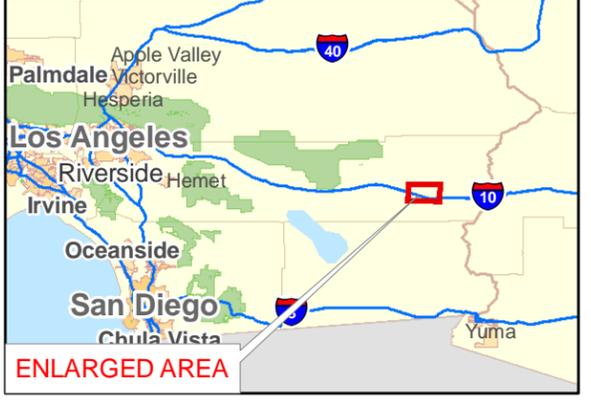
Notes:
 (a) UTM Zone 11, NAD 1983 Projection.
 (b) Source data: ESRI, USDA, TTEC, WP

**FIGURE 3A
WEED MANAGEMENT AREA**



GENESIS SOLAR, LLC

GENESIS SOLAR ENERGY PROJECT
RIVERSIDE COUNTY,
CALIFORNIA



Legend

- Requested Project ROW
- Facility Fence Line
- Proposed Solar Field
- Blythe Energy Project Transmission Line

Project Linear Facilities

- Proposed Transmission Interconnect (7.5 Miles)
- Proposed Access Road (6.1 Miles)
- Proposed Gas Line (5.9 Miles)

Weed Management Area (1,821 ac.)

- 100 ft Buffer on Linear/Fence Line

N

0 750 1,500 3,000 4,500 6,000

Feet

Notes:
 (a) UTM Zone 11, NAD 1983 Projection.
 (b) Source data: ESRI, USDA, TTEC, WP

FIGURE 3B
WEED MANAGEMENT AREA

spread of existing weed populations by Project personnel and equipment will be implemented on all of these areas that may host weed populations.

5.0 Baseline Weed Surveys

Baseline surveys to identify existing weed populations and density will be completed prior to construction when weeds are present and easily identifiable; most likely Spring 2010. Surveys will be conducted of the boundary of the Plant Site and along the linear routes. Each weed will be identified and counted using a stratified random sampling technique. Survey transects will be conducted along 1000 feet of each mile of Project (i.e., total miles of fenceline and linear features, combined). Fifty (50) ft-wide transects will be walked at 100, 200, 300, and 1000 ft from the boundary of the Project facilities. Transect spacing may be modified to keep surveys within the same habitat.

6.0 Noxious Weed Management

6.1 Prevention

General measures to prevent the spread of weed propagules and inhibit their germination include the following:

- Limiting disturbance areas during construction to the minimum required to perform work
- Limiting ingress and egress to defined routes
- Maintaining vehicle wash and inspection stations and closely monitoring the types of materials brought on site to minimize the potential for weed introduction

6.1.1 Construction

6.1.1.1 Equipment Cleaning

To prevent the spread of weed species into new habitats, construction equipment will be cleaned of dirt and mud that could contain weed seeds, roots, or rhizomes. Prior to entering the Project work areas, equipment will be inspected to ensure they are free of any dirt or mud that could contain weed seeds. The tracks, feet, tires, and undercarriage will be carefully washed, and special attention will be paid to axles, frame, cross members, motor mounts, underneath steps, running boards, and front bumper/brush guard assemblies. Other construction vehicles (e.g. pick-up trucks) that will be frequently entering and exiting the site will be inspected and washed on an as-needed basis.

All vehicles will be washed off-site because the work area will be located directly off of I-10 and vehicles will not need to travel off-pavement to reach the work area. However, if necessary, an on-site cleaning station will be set up to clean equipment before they enter the work area. Cleaning stations would use either high pressure water or air to remove dirt and mud from equipment and vehicles and would be located away from any sensitive biological resources.

6.1.1.2 Site Soil Management

Soil will be managed by limiting ground disturbance to the minimum feasible and implementing dust suppressants to minimize the spread of seeds. Cleared vegetation and salvaged topsoil will be stockpiled adjacent to the area from which they are stripped to eliminate the transport of soil-borne noxious weed seeds, roots, or rhizomes. During reclamation of the temporarily cleared areas (excludes Plant Site), the contractor will return topsoil and vegetative material to the areas from which they were stripped. Dust palliatives (e.g. water) will be used during construction to minimize the spread of airborne weed seeds, especially during very windy days, a characteristic of the Project vicinity. As appropriate, temporary drift fences may be installed to help control sand movement during construction. Because sand accumulating along these fences will provide a hospitable microsite for weed seed germination as well as capture higher densities of seeds, concentrated control measures will be implemented along such structures (and any others that trap sand and seeds) to minimize weed population increases.

6.1.1.3 Weed-free Products

The contractor will ensure that any straw or hay bales used for sediment barrier installations are obtained from sources that are certified free of primary noxious weeds. Other products such as gravel, mulch, and soil, may also carry weeds. Such products will be obtained from suppliers who can provide certified weed-free materials. Where feasible, mulch will be generated from native vegetation cleared from the Project Area. Soil will not be imported onto the Project.

6.1.2 Operations

6.1.2.1 Facility Staff Training

Noxious and invasive weed management will be incorporated as a part of mandatory site training for groundskeepers and maintenance personnel. Training will include weed identification and the impacts on agriculture, livestock, wildlife, and fire frequencies. Training will also cover the importance of preventing the spread of noxious weeds and of controlling the proliferation of existing weeds.

6.2 Infestation Containment and Control

Project development may increase the density of existing weed species in areas of soil disturbance. Because Saharan mustard, Russian thistle occur onsite, and tamarisk within the Project vicinity, measures will be implemented to control and suppress current weed populations from spreading and increasing in density.

6.2.1 Mechanical Removal and Herbicides

Genesis Solar LLC will use herbicides or mechanical weed removal techniques depending on the most appropriate method for the weed species and location. Where practical, and based on the effectiveness of weed removal while minimizing effects on native vegetation, mechanical removal will be implemented to control weed populations. Herbicide will be used in the solar field to kill weeds to minimize the fire potential. On disturbance areas (see Section 4.1), mechanical removal and/or herbicides will be used to suppress populations of Saharan mustard and Russian thistle where they have or are expected to have increased density as a result of

the Project. In general, monitoring during construction and operation (see section 7.0) will determine if these species have increased in density or spread as a result of the Project, and thus determine the necessity of the control measures. However, all bladed areas that have received final contouring (e.g., pipeline ROW, road shoulders, transmission tower pads, stub roads) can be expected to support new populations of weeds and pro-active measures (e.g., pre-emergent herbicides) will be implemented to control weed populations there.

Genesis Solar, LLC will utilize BLM-approved pre- and/or post-emergent herbicides. Pre-emergent herbicides are applied to the soil before the weed seed germinates and usually incorporated into the soil with irrigation or rainfall. Post-emergent herbicides are applied directly to plants. Timing is critical for both pre-emergent and post-emergent herbicide application. In the Project vicinity, pre-emergent herbicides would primarily be applied in early fall, prior to fall/early winter rains. Post-emergent herbicides must be applied while the weed is actively growing, most effectively in the early seedling stage, but always prior to seed set. Therefore, all post-emergent treatments will occur between February and early April. Species-specific herbicides are currently being investigated and will be used as appropriate and available, along with other mechanical and chemical means for post-emergent elimination. When possible, selective herbicides will be used to target specific weed species, rather than all plant growth.

6.2.2 Woody Vegetation

The only documented woody noxious weed species on the project site is tamarisk. Based on very low numbers, individuals of this species would be treated by mechanical methods (i.e., pulling). If future surveys document larger individuals of this species on-site (tree-size), then those individuals would be controlled using a cut-and-paint method of removal. If the cut and paint method is necessary, the following procedures should be followed:

- Cut sprouts or woody stems to a height of 12 inches or less above ground and remove all aboveground debris for disposal at a suitable landfill.
- Apply Round-Up™ or Rodeo™ at a 100 percent rate to the cut sprout within 2 minutes of cutting the stem.
- Cover all loads to be trucked off-site using a tarpaulin.
- Continue monitoring cut stems for as long as necessary.

7.0 Monitoring

After baseline surveys are complete, monitoring will take place each year during construction, and annually for 3 years following the completion of construction. The purpose of annual monitoring will be to determine if weed populations identified during baseline surveys have increased in density or spread as a result of Project development. The period of three years following construction is consistent with BLM guidelines (see Table 1, above) and is very likely to span the annual variation in plant growth due to variation in rainfall and temperatures. Methods will be consistent with those of baseline weed surveys (Section 5.0).

7.1 Success Standard Thresholds

Eradication of the existing weed species is not possible due to their current prevalence in the Project Area. However, the Project is committed to ensuring that their activities do not exacerbate the existing condition. Both spatial and temporal controls, as well as replicates for each type of Project feature, have been incorporated into the monitoring program to qualitatively and quantitatively monitor weed densities associated with the Project.

Control methods will be implemented both pro-actively (see Section 6.2.1) and when monitoring identifies the necessity. Statistical weed increases, as well as visually verified increases, will require weed control. This will include even small patches of unusually high density (e.g., concentrations in swales) that are growing as a result of Project activities.

Whereas weed control will be ongoing on the Project Site for the life of the Project, Plan success will be determined after the three years of Operations monitoring. If no weed patches or statistically significant elevated weed densities are detected in the Project Area that can be attributed to Project activities, then the Plan will be considered successful. Continued monitoring and control, with modified techniques as necessary, will be implemented through an adaptive management process if the Plan is not successful after three years.

7.2 General Operations Monitoring

After the three years of operations monitoring is complete, general monitoring of the Project Area will be conducted by designated site personnel monthly during the germinating and early growing season (November through April) to eliminate new weed individuals prior to seed set.. Personnel will be trained to identify weedy and native species and work with the ECM to determine where pre- and post-emergent elimination is necessary.

7.3 New Weeds

Whereas unlikely, weeds not identified by field survey or previously reported for the area could colonize the site or invade site facilities, both during construction as well during operation. During construction, the ECM will be required to regularly update the list of potential noxious and invasive weeds and identify any new potential threats, including developing a management strategy and management methods appropriate to the plant species and the nature of any potential invasion. Similarly, the facility plant manager or appropriate designee during operations will be required to continually update the potential noxious and invasive weed list and provide monitoring and management appropriate to any new species.

8.0 Reporting Requirements

Long-term monitoring reports are required to evaluate monitoring results to determine if success standards are being met, and if not, what control measures should be implemented and why.

8.1 Annual Reports

A report will be prepared for each annual survey as outlined in Section 7.1. Reports will include, at a minimum, the following:

- Survey findings on location, type, spatial extent, and density of noxious weeds. These data will include mapping and photographs, as appropriate, as well as textual and tabular data content to fully describe conditions on the project site.
- Management efforts, including date, location, type of treatment implemented, and results within the Weed Management Area.
- Ongoing evaluation of success of prevention and control measures.
- Which, if any, additional control measures were implemented and rationale for implementation.
- Summary of restoration efforts and status.

8.1.1 Construction Reporting

Daily monitoring records will be kept by the ECM and the monitoring team which will include information relevant to noxious weeds. A single post-construction report will be produced after each phase of construction is completed, with a section summarizing the overall results of noxious weed management and weed status at the site.

8.1.2 Final Monitoring Report

After three years of post-construction monitoring is complete a final monitoring report will be produced to describe the outcome of weed management on the Project. The results of this report will be used to determine if additional monitoring or control measures are necessary.

9.0 References

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DRAFT DECOMMISSIONING AND CLOSURE PLAN
GENESIS SOLAR ENERGY PROJECT, RIVERSIDE COUNTY, CALIFORNIA

Appendix 2

**DRAFT
COMMON RAVEN MONITORING, MANAGEMENT,
AND CONTROL PLAN**

for the

Genesis Solar Energy Project

Docket No. 09-AFC-8

Prepared for:

Genesis Solar, LLC

Prepared by:

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ABBREVIATIONS AND ACRONYMS

BLM	Bureau of Land Management
CDFG	California Department of Fish and Game
CEC	California Energy Commission
CPM	Compliance Project Manager
DB	Designated Biologist
ECM	Environmental Compliance Manager
Genesis Solar	Genesis Solar, LLC,
GRAS	generally recognized as safe
MA	Methyl anthranilate
MW	megawatt
PDFs	Project Design Features
Plan	Common Raven Monitoring, Management, and Control Plan
Project	Genesis Solar Energy Project
USFWS	U.S. Fish and Wildlife Service
UTM	Universal Transverse Mercator

1.0 INTRODUCTION

Genesis Solar, LLC, (Genesis Solar) proposes to develop a 250 megawatt (MW) solar power project, the Genesis Solar Energy Project (Project), near the city of Blythe in Riverside County, California. This section introduces the project background, purpose, objectives, and conditions of concern related to raven monitoring, management, and control.

1.1 Background

The proposed Project is located approximately 25 miles west of the city of Blythe, in an undeveloped area of the Sonoran Desert, on lands managed by the Bureau of Land Management (BLM). 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 (a dry lakebed) to the south. Interstate-10 is located to the south of the Project facility. The Chuckwalla Mountains and Little Chuckwalla Mountains Wilderness Areas are also located to the south-southwest of the Project (Figure 1). While currently undisturbed, the area on and around the Project has been used for grazing and off-highway vehicle recreation in the past. Ford Dry Lake was formerly open to the public for off-highway vehicle use, but has since been closed. Access to the Project facility is poor, and limited to 4-wheel-drive tracks located on the western end of the Project area.

The Project includes two independent solar electric generating facilities, each of which would have a nominal net electrical output of 125 MW, for a total net electrical output of 250 MW. Electrical power would be produced using steam turbine generators fed from solar steam generators. The solar steam generators receive heated transfer fluid from solar thermal equipment comprised of arrays of parabolic mirrors that collect energy from the sun.

The Project proposes to use a wet cooling tower for power plant cooling. Water for cooling tower makeup, process water makeup, and other industrial uses such as mirror washing would be supplied from onsite groundwater wells. Project cooling water blowdown would be piped to lined, onsite evaporation ponds.

A transmission line, access road, and natural gas pipeline will be co-located in one linear corridor to serve the main Project facility. This corridor would exit the facility to the south and would be approximately 6.5 miles long. The tie-line would cross Interstate-10, connecting to the Blythe Energy Project Transmission Line. This tie-line would use the existing pole structures of the Blythe Energy Transmission Line to interconnect with the proposed Colorado River Substation located to the east of the Project.

Without the implementation of monitoring, mitigation, and control measures, the proposed Project has the potential to indirectly impact populations of the Mojave fringed-toed lizard (*Uma scoparia*) and burrowing owl (*Athene cunicularia*) by increasing the attraction of common ravens (*Corvus corax*) into the area, thereby increasing the potential for depredation by ravens. The Mojave fringed-toed lizard and burrowing owl were observed during Spring 2009 field surveys and are BLM sensitive species as well as California Species of Special Concern; therefore, impacts to these species are of concern. In addition, although no live desert tortoises (*Gopherus agassizii*; a state- and federally listed threatened species) or signs of recent tortoise presence were found within the Project footprint during Spring 2009 surveys, signs of possible tortoise presence were found within 0.5 miles of the Project to the north. Therefore, the potential of attracting ravens to the Project could also have an indirect impact on any desert tortoises present in the adjacent area.

Figure 1 Site Location

11x17

1.2 Purpose and Objectives

The purpose of the Common Raven Monitoring, Management, and Control Plan (Plan) is to ensure that the construction, operation, maintenance, and decommissioning of the Project does not attract ravens (*Corvus corax*) to the Project area by creating food or water subsidies, perch sites, roost sites, or nest sites, and to identify the conditions of concern specific to the Project that may attract ravens to the Project area. The Plan includes monitoring, management, and control measures that will 1) monitor raven activity and 2) specify management and control measures that will avoid, minimize, or mitigate impacts. The monitoring effort is intended to provide qualitative data that can be interpreted by the Designated Biologist (DB; see Section 3.2) to determine if Project Design Features (PDFs) are effective, or if additional management and control measures are needed to meet the objective.

Specific plan objectives include:

1. Identify the conditions of concern specific to the Project that may attract ravens to the area.
2. Identify how the Project would utilize PDFs and other measures to manage the conditions of concern.
3. Document the effectiveness of PDFs and specific raven management and control measures implemented by the Project.
4. Specify how, when, and what other measures would be selected and implemented if the monitoring suggests the need for additional controls.
5. Define triggers for modification of management and control measures using adaptive management principles.

The Plan will work in concert with the U.S. Fish and Wildlife Service's (USFWS') rangewide raven monitoring and control program (see Section 2.0). Genesis Solar is supportive of contributing to the USFWS' program in lieu of a comprehensive onsite raven monitoring and control program. As such, the Plan presented here will comprise a subset of a more comprehensive program.

1.3 Conditions of Concern

The conditions of concern are those Project features or activities that, when not properly managed, provide new subsidies that may result in changes in raven population or behavior that could potentially adversely affect populations of prey species such as the Mojave fringed-toed lizard, burrowing owl, or desert tortoise. Five basic conditions of concern have been identified for the Project and have been considered in developing this Plan:

1. Availability of water from evaporation ponds;
2. Creation of new perching/roosting/nesting sites for ravens;
3. Temporary water ponding potential from dust suppression;
4. Raven food sources from soil disturbance (e.g., rodents, insects, etc.); and
5. Human food and waste management.

The study design for raven monitoring, as well as measures for raven management and control, is dependent upon the accuracy of defining these conditions. Each of these conditions of concern is defined in more detail below.

Evaporation Ponds

The proposed Project includes evaporation ponds that will collect blowdown water from the cooling towers. The addition of a new water source to an area where water sources are sparse may result in the attraction of ravens to the Project area. Ravens will travel up to 40.4 miles from their roosts for subsidies, including water (Boarman 2003). However, much shorter distances to point subsidies are more common – distances of zero to four miles (Engel and Young 1992, Mahringer 1970 [in Boarman and Heinrich 1999], Kristan and Boarman 2003). Kristan and Boarman (2003) observed that raven densities declined with increasing distance from point subsidies.

Raven Perching, Roosting, and Nesting Sites

The majority of raven predation on prey species is thought to take place during the spring, most likely by breeding birds that have been shown to spend most of their time foraging within 1,300 feet of their nests (Kristan and Boarman, 2003). Therefore, structures that facilitate nesting in areas where ravens could not otherwise nest may pose a danger to nearby prey populations. Project components, such as tower structures, transmission poles and lines, and support structures will provide new types of nesting and perching sites in the Project area that have the potential to increase raven use of the area.

Ponding Water

During construction, water will be applied to graded areas, construction rights-of-way, dirt roads, trenches, spoil piles, and other areas of ground disturbance to minimize dust emissions and topsoil erosion. Ponding water, resulting from these dust suppression activities, has the potential to attract ravens, thereby potentially resulting in increased predation on raven prey species. During operations, deionized water will be used to wash mirrors; however, the amount of water used will be minimal and is not anticipated to result in ponded water on site.

Raven Food Sources from Soil Disturbance

During construction, decommissioning, and restoration, disturbance of the soil and/or vegetation would occur from heavy equipment operation. This disturbance would result in the “unearthing” and exposure of natural food sources for ravens such as rodents and insects. Ravens could be attracted to the soil disturbance areas to prey upon unearthed, injured, and dead animals.

Human Food and Waste Management

Ravens are considered scavengers that obtain a high percentage of their diet from human subsidies such as food brought onsite by employees, landfills, dumpsters behind restaurants and grocery stores, open garbage drums and plastic bags placed on the curb for garbage pickup, and road kills. The construction, operation, decommissioning, and restoration phases of the Project would result in increased food and waste generation; therefore, improper waste management could attract ravens to the Project area.

2.0 REGION-WIDE RAVEN MANAGEMENT AND MONITORING PROGRAM

On January 29, 2009, the USFWS sent a letter to the California Energy Commission (CEC) describing a regional raven management and monitoring program that would include agreements with state and local governments, as well as private project applicants (USFWS 2009). Pursuant to this program, Genesis Solar would contribute to the region-wide effort in an amount related to the anticipated level of the Project's adverse impacts to desert tortoise populations from predation by ravens. The amount that Genesis Solar would contribute to the fund would be determined during consultation with the CEC and USFWS.

3.0 ROLES AND RESPONSIBILITIES

3.1 Environmental Compliance Manager

Genesis Solar shall assign an Environmental Compliance Manager (ECM) to the Project. The ECM will be responsible for implementation of the environmental conditions outlined in this document. Typical ECM duties will involve managing, supervising, and/or providing advice on work affecting air quality, water/streambed permits, and biological resources environmental compliance programs. The contact information for any ECM named to oversee the Project will be incorporated into the final Biological Resources Mitigation, Implementation, and Monitoring Plan. The ECM will have experience in the implementation of general environmental compliance measures and have been specifically trained by the DB to conduct biological monitoring activities specified in this Plan.

3.2 Designated Biologist

Genesis Solar shall assign a DB to the Project. The DB will be the same as the Project Authorized Biologist discussed in the Application for Certification. Genesis Solar shall submit the resume of the proposed DB, with at least three references and contact information to the CEC Compliance Project Manager (CPM), California Department of Fish and Game (CDFG), and USFWS for approval.

The DB will have at least the following background and training:

- A bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field; and three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society; and
- At least one year of field experience with biological resources found in or near the Project.

In lieu of the above requirements, the DB's resume shall demonstrate to the satisfaction of the CPM, in consultation with the CDFG and USFWS, that the applicant has the appropriate training and background to effectively implement the Plan. Genesis Solar shall ensure that the DB performs the activities specified in the Plan. Genesis Solar shall also designate an alternate biologist with the same qualifications as the DB, outlined above.

4.0 MANAGEMENT PRACTICES

This section specifies management practices or PDFs that Genesis Solar proposes to implement in order to accomplish the goals of this Plan, as identified in Section 1.2. The PDFs are those project features that are built into the project's physical design and proposed operations to prevent the increased use of the Project area by ravens. The five basic conditions of concern identified in Section 1.3 have been grouped into construction and operation phase conditions, as appropriate for the Project. Construction phase conditions are considered temporary and will likely be avoided or minimized through the implementation of management measures as defined in Section 4.1. Operation conditions (considered long-term) will include management measures to minimize potential impacts, and may require additional control measures based on the results of the monitoring program (Section 4.2). If these PDFs or management practices are not effective in accomplishing the goals of this Plan, modifications to these practices and/or additional measures will be implemented, and monitored to ensure the Plan's goals are satisfied.

4.1 Construction

Construction phase impacts are considered more temporary in nature than operational impacts and therefore require temporary management practices in order to avoid or minimize the potential of attracting ravens to the Project area. Construction phase impacts will also occur during the decommissioning and restoration phases of the Project.

4.1.1 Evaporation Ponds

Evaporation ponds may collect rainwater during the construction phase, which could serve as an attractant to ravens. Monitoring (see section 5.0) will evaluate the presence of ravens during construction. If ravens are identified in the evaporation ponds, hazing will be employed to discourage use (discussed in section 6.3.1).

4.1.2 Raven Perching, Roosting, and Nesting Sites

Construction activities may create temporary perch or roost sites (and rarely, nest sites) for ravens by introducing equipment or materials to the landscape that provide suitable sites for ravens. Monitoring will evaluate the presence of ravens during construction. If ravens are regularly observed perching, roosting, or nesting on building materials, equipment, waste piles, or other construction debris, measures will be taken to change the quality or location of these materials, including hazing to discourage their use.

4.1.3 Ponding Water

The application rates of water for dust suppression activities will be set at a limit in order to minimize excessive application and ponding. The application rate should consider soil infiltration and evaporation rates. The ECM will patrol areas to ensure water does not puddle for long periods (more than 1 hour) and make recommendations for reduced water application rates where necessary as discussed in Section 6.0 (Adaptive Management). The fill station will be designed to adequately drain water to prevent ponding.

4.1.4 Raven Food Sources from Soil Disturbance

During construction activities, specifically grading, there is a potential for animals to be unearthed, providing a food subsidy for scavengers and thereby potentially attracting ravens. However, this will be a very temporary food resource, primarily occurring during initial site grubbing and grading. Road kills that may attract ravens could also occur on the access road from Interstate 10. However, enforced speed limits of 15 mph will minimize road kills.

4.1.5 Human Food and Waste Management

A trash abatement program will be established during the construction phase of the Project. Trash and food items will be contained in closed, secured containers on the Plant Site and removed daily to reduce the attractiveness to opportunistic predators such as ravens. In addition, the Worker Environmental Awareness Program will assist in ensuring that no trash or road kill is available that might attract ravens to the Project area.

4.2 Operations

Operational impacts are considered ongoing and require PDFs and ongoing management practices to avoid or minimize the potential to attract ravens to the Project area. No soil disturbance is anticipated to occur during operation or maintenance that could result in raven food sources becoming exposed; therefore this condition of concern is not addressed.

4.2.1 Evaporation Ponds

Because the ponds need to remain uncovered to maximize evaporation rates, completely covering the ponds is not a preferred option. However, a series of avian deterrence measures are being incorporated into the design and operation of the evaporation ponds in order to discourage access to the ponds by ravens. The operational design of the ponds includes a minimum depth of 2 feet and a minimum freeboard of 2 feet. If water needs to be rerouted to specific ponds in order to maintain a 2-foot minimum depth, the remaining ponds would be pumped dry. In addition, the interior sides of the ponds would be relatively steep at a 33 percent slope (3:1, horizontal: vertical).

Netting of the ponds may also be implemented if other design measures do not prove to be effective. Other options for preventing use of these ponds by ravens include the use of anti-perching devices placed at strategic locations along the perimeter of the ponds in order to exclude ravens and other birds from accessing the edge of the ponds.

The DB would be responsible for making qualitative observations on the relative success of the deterrent(s) at each pond, and providing recommendations for future improvements in monthly reports, including adapting the current configuration of the anti-perching devices to maximize efficiency as needed.

4.2.2 Raven Perching, Roosting, and Nesting Sites

PDFs that would be considered to reduce raven perching, roosting, and nesting include the use of physical bird deterrents such as bird spikes and auditory and visual deterrents. In addition, nest removal would occur in conjunction with monitoring, as discussed below in Section 5.3.

4.2.3 Ponding Water

To minimize the occurrence of ponding water during construction, the application rates of water for dust suppression activities will be set at a limit in order to minimize excessive application. The application rate will consider soil infiltration and evaporation rates. The ECM will patrol the Project area to ensure that water does not puddle for long periods, and make recommendations for reduced water application rates where necessary. During operations, deionized water will be used to wash mirrors; however, the amount of water used will be minimal, and is not anticipated to result in ponding of water. If water ponding is found to be a concern, changes will be made through adaptive management.

4.2.4 Human Food and Waste Management

The trash abatement program, developed for the construction phase, will also include operational measures that would be implemented for the life of the Project. These will include items such as requiring that trash and food items be contained in closed, secured containers and removed daily to reduce the attractiveness to opportunistic predators such as ravens. The ECM will continue to ensure that these practices are enforced and make recommendations for improvements where applicable as discussed in Section 6.0.

5.0 MONITORING PRACTICES

Semi quantitative and qualitative monitoring will be implemented to assess the effectiveness of PDFs and management measures, and to determine the need for implementing additional control measures. These monitoring practices will evaluate the potential impacts that construction and operation have had on raven activity and populations, and is designed as an observational reconnaissance level study aimed at monitoring the effectiveness of the PDFs and management measures. Raven monitoring will be implemented in the construction and operation phases of the Project.

5.1 Construction Phase

To identify potential increases in raven activity, the ECM will conduct at least weekly reconnaissance-level surveys in all Project construction zones and disturbed areas (more surveys would be conducted if determined necessary). Surveys will focus on all potential attractant areas, including waste disposal areas, erected structures, staging areas where large equipment or material may be stored, evaporation ponds, and any area where water is applied to control dust and erosion or where there are recent surface disturbances.

Data will be recorded for each raven observed, including activity (categorized as flying, perched, or on the ground); type of perch (if applicable); and the general location of the bird within the Project. In addition, any nesting locations will be recorded and unoccupied nests will be reported to the DB for removal (see Section 5.3 for a discussion on nest removal). Data sheets will be developed and submitted to the agencies prior to implementation of this Plan. Initially and periodically, the DB will assist the ECM to ensure that monitoring objectives are being achieved.

5.2 Operation Phase

To identify potential increases in raven activity during operation and maintenance of the Project, the ECM (in coordination with the DB as appropriate) will conduct biweekly (every 2 weeks)

reconnaissance level monitoring for the life of the Project, in addition to annual breeding season raven monitoring, as discussed below.

5.2.1 Ongoing Biweekly Raven Monitoring

The ECM will conduct biweekly surveys for raven activity at pre-designated locations throughout the Project area for the first 3 years of Project operation. This monitoring will begin once the Project becomes operational. After the first 3 years of Project operation, surveys will be conducted biweekly for one year, every 3 years for the next 12 years, then once per 8 years unless results indicate more frequent or less frequent monitoring is necessary. The ECM will be accompanied by the DB during the first four surveys, in order to ensure appropriate data collection is conducted. The DB will also periodically look at data sheets and discuss the monitoring with the ECM to ensure that monitoring objectives are being achieved.

Survey locations will be identified by the DB and will focus on Project components that may influence raven abundance, activity, and behavior by potentially allowing perching, roosting, and nesting opportunities or by providing supplemental resources such as food and water. These Project components include tower structures, transmission poles and lines, and support structures, as well as evaporation ponds and waste disposal facilities. The survey locations may also include areas immediately adjacent to the Project in areas where ravens are likely to roost or nest.

A five-minute sampling session observing and listening for ravens will occur at each survey location. The surveyor will record the number of ravens and will document the behavior of the raven (e.g., perched, flying, on the ground, nesting), perch type (if applicable), and distance and direction from the survey location. Additional data collected will include the survey start/stop time, and weather (including temperature, average wind speed, and percent cloud cover). To aid the ECM and ensure consistency throughout the duration of the Project's life, a data sheet will be prepared in advance, outlining the required data to be collected.

As part of the biweekly surveys, the ECM will document any evidence of nests where predation of desert tortoises, Mojave fringe-toed lizards, or burrowing owls (Boarman 2002, 2003) is evident. A Universal Transverse Mercator (UTM) coordinate, as well as nesting substrate and current breeding status (if detectable) will be recorded for each nest located. Once data have been collected, the DB will determine if the nest is unoccupied (i.e., no eggs in the nest or nestlings have fledged), in which case the nest will be removed by the DB or the ECM (see description of nest removal below). The DB will search a 30-meter radius surrounding each nest or perch site for evidence of desert tortoise, Mojave fringe-toed lizard, or burrowing owl predation. Any evidence of predation will be photographed, and a UTM coordinate collected. In addition, all evidence of predation will be marked to avoid duplication of data recording on subsequent surveys. If occupied nests are detected during surveys, Genesis Solar will notify the Raven Management Workgroup for assistance with control measures.

Descriptions of nesting behavior and predation will be semi-quantitative and qualitative, and will produce data that is valuable for assessing raven behavior and documenting potential problem individuals for management actions. In addition, an increase in the number of raven nests in the Project area may suggest the potential need for revisions to PDFs or additional control measures (as described in Section 6.0).

5.3 Nest Removal

The majority of raven predation on raven prey species, such as the desert tortoise, most likely occurs in the spring, from April to May, when tortoises are most active and ravens are feeding their young (Boarman and Heinrich 1999). The removal of unoccupied raven nests would be utilized to control predation. Genesis Solar would consult with the USFWS and CDFG regarding whether nest removal can be part of the Project-specific raven management efforts. Preliminarily, Genesis Solar proposes that nests be removed by the DBs only from within the Genesis Solar-controlled lands and the transmission line right-of-way. If nests are observed on adjacent lands, the resource agencies will be notified. The removal of unoccupied nests will occur simultaneously with the breeding season raven surveys, which will take place from mid-February to the end of June. Just prior to the initiation of the breeding season for ravens, extra effort should be taken to remove any inactive nests to prevent these nests from becoming active. Removing raven nests outside of the breeding season may have a smaller effect on the raven population, as they may readily rebuild the following season. However, evidence suggests that birds with no nests in their territory at the beginning of the breeding season were less likely to commence nesting than those who already had intact nests (Kristan and Boarman, 2003). If an unoccupied raven nest is detected outside of the breeding window during biweekly surveys, it would also be removed by the DB.

5.4 Decommissioning and Restoration Phase

To identify potential increases in raven activity, the ECM will conduct at least weekly reconnaissance-level surveys on the Project during ground disturbance activities associated with decommissioning and grading associated with restoration. These surveys will mirror those for the construction phase (see Section 5.1, above). Surveys will focus on all potential areas of raven attraction, including waste disposal areas, erected structures, staging areas where large equipment or material may be stored, evaporation ponds, and any area where water is applied to control dust and erosion or there are recent surface disturbances.

Data will be recorded for each raven observed, including activity, categorized as flying, perched, or on the ground (likely scavenging); type of perch (if applicable); and the general location of the bird within the Project area. In addition, any nesting locations will be recorded and unoccupied nests will be removed (see Section 5.3 for a discussion on nest removal). Data sheets will be developed and submitted to the agencies prior to implementation of this Plan, after final Project design is complete.

6.0 ADAPTIVE MANAGEMENT

This section defines how adaptive management principles will be applied to this Plan, specifically in reference to PDF and control/mitigation measure implementation. This section defines potential changes to the mitigation and any conditions that may trigger these changes.

6.1 Definition

Adaptive management is typically used in environmental management efforts to facilitate more effective management of resources to achieve desired objectives. Adaptive management can be defined as an iterative and structured optimal decision-making process intended to reduce uncertainty through system monitoring. The decision-making process simultaneously maximizes

one or more resource objectives and accrues information needed to improve future management, either actively or passively. Using current knowledge, passive adaptive management involves the use of conceptual modeling to guide management actions. The model is adjusted as new knowledge is obtained and management decisions are subsequently modified. Active adaptive management involves testing alternative hypotheses through system manipulation employing management strategies. Thus, passive adaptive management is based on information gained from observational studies, whereas active adaptive management is based on information gained from experimental manipulation (Holling 1978). This Plan will focus on passive adaptive management but may ultimately apply both passive and active adaptive management.

6.2 Adaptive Management Triggers

To facilitate meeting Plan objectives, it may be necessary to make changes to the PDFs or initiate the implementation of additional control measures. Implementation of adaptive management measures (described below in Section 6.3) would occur if both of the following conditions are met:

- a. The results of the biweekly and/or annual breeding season raven monitoring events suggest that current PDFs are ineffective at controlling substantial and (at least seasonally) sustained increases in raven occurrences in the Project area, thereby increasing the potential for depredation on sensitive prey species.
- b. Genesis Solar has made every attempt to adjust PDFs to control raven occurrences and avoid the need for additional control measures, and has contacted and worked with the DB and the resource agencies to identify other sources of ravens and/or management measures; however, increased raven occurrences continue to occur.

6.3 Adaptive Management Measures

If the results of the monitoring efforts suggest that there is a substantial and sustained (i.e., consecutive years) increase in raven activity that may result in predation on desert tortoises, even with the implementation of Project PDFs, then Genesis Solar may need to implement additional measures to further control ravens in the Project area. Adaptive management measures will be identified during implementation of the monitoring program and will be discussed by Genesis Solar, the DB, CEC, USFWS, and the CDFG before any decisions are made. Adaptive management measures may include modifications to PDFs, or implementation of additional control measures. Potential control measures are discussed in more detail below. If new control measures do not accomplish appropriate raven management objectives, additional control measures will be reassessed for potential implementation.

6.3.1 Control Practices

Road Kill Removal

Ravens are well known for eating animals that have been killed along roads and highways, which are often abundant in the desert region (Boarman and Heinrich 1999). Road kill provides a food source for ravens, which facilitates increased raven nesting near roads and highways in areas that might otherwise offer little food (Kristan et al. 2004). For the Genesis Project, there is only one access road, on which the speed limit during operations will be 25 mph for Project employees. This low speed limit, and the fact that the solar field and operations area will be

fenced, makes it unlikely that a sufficient quantity of road kills would occur to generate a raven increase. However, the ECM will document the occurrence of road kills during the biweekly raven monitoring surveys. Operations staff will also report road kills on a daily basis, if observed. If road kills occur frequently and ravens are commonly noted feeding on road kills, then Genesis Solar may implement a road kill removal program. Details of a road kill removal program would be designed by the ECM in coordination with the DB and CEC.

Hazing

Hazing techniques employ visual and/or auditory devices designed to scare birds and reduce the attractiveness of an area. Some common methods include air or gas cannons, human flushing, bioacoustic deterrents, and/or flags and streamers to create an integrated system of negative stimuli. Because many birds, especially ravens, quickly become habituated to a static program, the type, timing, and location of hazing techniques must be changed frequently. If deemed appropriate, a hazing program would be designed by the DB, in coordination with the ECM and CEC. Permission may also be required from the local police or municipality, as there may be local ordinances that prohibit the creation of loud noises.

Methyl Anthranilate

Methyl anthranilate (MA) is a naturally occurring GRAS (Generally Recognized As Safe) listed compound used as a food flavoring and fragrance additive. Chemical formulations containing MA have been found to be effective bird aversion agents, because MA acts as a chemosensory repellent, irritating pain receptors associated with taste and smell (Umeda and Sullivan 2001). When applied as a spray, MA has been found to be effective in repelling birds from feeding on crops such as cherries, blueberries, and table grapes. In addition, MA is used as a repellent for Canadian geese on lawns and in small pools of water. To date MA is thought to have limitations for topical application as it is considered highly volatile and breaks down readily under exposure to ultraviolet light. Repeat topical application would be necessary due to the breakdown of the chemical, but it may still prove useful as a short-term deterrent. After removing a current season unoccupied nest, the ECM could apply MA topically to the nest site to deter nest rebuilding in that location. Prior to the use of MA, research into the most current application of MA to deter raven activity should be conducted by the DB and methods approved in coordination with the ECM and CEC.

Lethal Removal (Depredation)

If ravens are still attracted to the Project area after the implementation of PDFs, modification to PDFs, and implementation of control measures, it may be necessary to consider lethal removal. There is no evidence that lethal removal will have a long-lasting effect on raven population levels, raven foraging behavior, or survival of raven prey species. Additionally, identifying, targeting, and successfully removing problem individuals, is also considered time consuming. However, this method is often used in management plans when specific raven pairs are determined to be responsible for taking relatively large numbers of desert tortoises (Boarman 2002). These individuals can often be identified by the presence of juvenile desert tortoise shells beneath their nests, which are often used for consecutive years by the same pair of breeding ravens (Boarman and Heinrich 1999). For this project, any evidence of a raven depredating burrowing owls or Mojave fringe-toed lizards would also result in a consideration for lethal removal. By removing those birds known to prey on desert tortoise, survival of juvenile desert tortoises in the vicinity may increase. However, it should be noted that it is very difficult to

identify the target bird(s) with absolute certainty, much less locate and lethally remove both members of a pair.

Under this control method, targeted ravens would be shot by rifle or shotgun. If shooting is not possible (e.g., on power lines) or has been unsuccessful, ravens could be trapped and humanely euthanized. Young ravens found in nests of removed adults would be euthanized humanely if they can be captured safely.

7.0 REPORTING

The ECM will prepare monthly monitoring reports during construction and the first year of operation summarizing the results of the biweekly and breeding season monitoring events as well as observations reported by operations staff and describing any noted raven activity in the Project area. Following the first year of operation, a report will be submitted every six months during years when monitoring occurs. These reports will summarize the survey results, discuss the success or failure of PDFs, and make recommendations for modification of PDFs or implementation of control measures as necessary. These monitoring reports will be submitted to Genesis Solar and the DB for review. Genesis Solar then will forward these reports to the CEC, USFWS, and CDFG.

8.0 REFERENCES

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