DR-VIS-232

Information Required:

Please establish a new KOP in the McCoy Mountains to the west of the Project site in the vicinity of coordinates - Latitude: 33° 39' 48.29" N, Longitude: 114° 48' 52.31" W, viewing to the east-northeast and provide a new KOP analysis and visual simulation (see Attachment DR-VIS 232 for perspective view guidance).

Response:

The KOP analysis and simulations are in progress and will be provided by January 13, 2010.

DR-VIS-233

Information Required:

Please establish a new KOP in the McCoy Mountains to the west of the Project site in the vicinity of coordinates - Latitude: 33° 39' 51.74" N, Longitude: 114° 49' 48.46" W, viewing to the east-northeast and provide a new KOP analysis and visual simulation (see Attachment DR-VIS-233 for perspective view guidance).

Response:

The KOP analysis and simulations are in progress and will be provided by January 13, 2010.

DR-VIS-234

Information Required:

In order to present simulations that more accurately capture the actual viewing experiences from the new McCoy Mountains KOPs, please present the existing view photographs and visual simulations as 11" x 17" images at a "life-size scale" when the images are held approximately 18 inches from the eye, so that the landscape and built features in the images match the actual scale of the features in the landscape (when the paper images are viewed at a distance of approximately 18 inches from the eye).

Response:

Visual simulations are in progress and will be provided by January 13, 2010.

DR-VIS-235

Information Required:

Please establish a new KOP on Black Creek Road, south of the Project site in the vicinity of coordinates - Latitude: 33° 38' 19.05" N, Longitude: 114° 45' 11.41" W, viewing to the

north and provide a new KOP analysis and visual simulation (see DR-VIS-235 for perspective view guidance).

Response:

The KOP analysis and simulations are in progress and will be provided by January 13, 2010.

DR-VIS-236

Information Required:

In order to present a simulation that more accurately captures the actual viewing experience from the new Black Creek Road KOP, please present the existing view photograph and visual simulation as 11" x 17" images at a "life-size scale" when the images are held approximately 18 inches from the eye, so that the landscape and built features in the images match the actual scale of the features in the landscape (when the paper images are viewed at a distance of approximately 18 inches from the eye).

Response:

Visual simulations are in progress and will be provided by January 13, 2010.

DR-VIS-237

Information Required:

Please establish a new KOP on the four-wheel drive track, south of the Project site in the vicinity of coordinates - Latitude: 33° 38' 48.37" N, Longitude: 114° 46' 23.27" W, viewing to the north and provide a new KOP analysis and visual simulation (see DR-VIS-237 for perspective view guidance).

Response:

The KOP analysis and simulations are in progress and will be provided by January 13, 2010.

DR-VIS-238

Information Required:

In order to present a simulation that more accurately captures the actual viewing experience from the wind fence KOP, please present the existing view photograph and visual simulation as 11" x 17" images at a "life-size scale" when the image is held approximately 18 inches from the eye, so that the landscape and built features in the images match the actual scale of the features in the landscape (when the paper image is viewed at a distance of approximately 18 inches from the eye).

Response:

Visual simulations are in progress and will be provided by January 13, 2010.

DR-VIS-239

Information Required:

Please provide a detailed description and diagram of the wind fence including the fence color.

Response:

The wind fences will be installed to protect the solar arrays from high wind loads. The wind fences will be 30 feet tall and will be placed along the east and west boundaries of each solar field. The wind fences will be made of steel A-frames and a wire mesh, tan in color, much like that used to screen tennis courts. The wind load affects the wind fence in horizontal direction and the dead load only in vertical direction. The fence posts are spaced 4-meters apart, which is the span of the A-frames supporting the wire mesh. The wire mesh is fixed on horizontal steel ropes.

Figure DR-VIS-239-1 illustrates the framing of the wind fence prior to installation of the horizontal steel ropes and wire mesh. The photograph and diagram that follow (DR-VIS-239-2 and DR-VIS-239-3, respectively) further illustrate the look of the wind fence.

DR-VIS-240

Information Required:

Please provide a site plan at a scale that clearly identifies the location of the various project components including the wind fences.

Response:

Please see Figure DR-VIS-240 for a site plan that identifies the location of the Project components for a representation of the location of the wind fences on the BSPP.

DR-VIS-241

Information Required:

Please identify which project components listed in Table 5.15-3 will have non-reflective surface treatments and neutral colors and please specify what those treatments and colors will be.

Response:

Project components are painted either during the manufacturing process or in the field. Project components to be painted include:

- Cooling towers (Bureau of Land Management [BLM] Standard Environmental Color: Covert Green 18-0617 TPX (RGB #7D745E) RGB: 125,116,94 – CMYK: 0,7,25,51);
- Buildings and tanks within the power block (i.e., buildings and tanks – except piping and vessels) (BLM Standard Environmental Color: Covert Green 18-0617 TPX (RGB #7D745E) RGB: 125,116,94 – CMYK: 0,7,25,51);
- Wind fences (black netting); and
- Transmission monopoles (standard, non-specular grey).

Project components that cannot be painted include:

- Electrical substation equipment (standard non-specular grey);
- Transmission lattice structures (standard, nonspecular grey);
- Piping and vessels within the power block (galvanized steel – grey);
- Pedestals of parabolic troughs (galvanized steel - grey);
- The backs of parabolic troughs (white); and
- HTF insulation wrap (galvanized cladding - grey).

DR-VIS-242

Information Required:

Please provide a color pallet of the anticipated colors.

Response:

Cooling towers, buildings and tanks will be painted, as follows: BLM Standard Environmental Color: Covert Green 18-0617 TPX (RGB #7D745E) RGB: 125,116,94 – CMYK: 0,7,25,51

The backs of parabolic troughs will be white.

All other equipment will have standard manufacturer's colors (specular and non-specular galvanized steel grey).

DR-VIS-243

Information Required:

In all new simulations requested above, please be sure to show facilities with the proposed surface treatments including appropriate color and texture.

Response:

Facilities' surface treatments will be shown in the simulations to be provided at completion of generation.

DR-VIS-244

Information Required:

Although the precise route of the transmission line is not yet known, please add the anticipated linear length of the transmission line, as presently shown, to Table 5.15-3.

Response:

The anticipated linear length of the transmission line as presently proposed is 32,365 feet from the Project central switchyard to the proposed Colorado River substation and this information has been added to Table 5.15-3 as requested.

Table Error! No text of specified style in document.**-1** **Equipment Dimensions**

Legend / Name	Dimensions (LxWxH) (Feet)/Capacity	Footprint (square feet)
Switch Yard	13 x 92	1,200
Overflow Vessel And Expansion Vessel	124 x 154	19,000 Ea
Ullage Coolers And Vessel	79 x 20	1,000
Nitrogen System	Incidental	800
Heat Transfer Fluid Heater	50 x 22 x 80 Stack	1,100
Steam Generators	90 x 10 x 24 Ea	900
Weather Station Building	68 x 68 x 24 (Two Level Bldg)	4,600
Parking	18 x 60	1,080
Balance Of Plant Electrical Building	67 x 67 x 24 (Two Level Bldg)	4,500
Reheaters	32 x 10 Ea	320
MCC Cooling Tower	33 x 40 x 32 High	1,320
Steam Turbine	111 x 50 x 40 High	5,500
Deaerator	125 x 57	7,100
Vacuum System	19 x 35 x 24 High	665
Compressed Air System	25 x 25 x 24 High	625
Generator Circuit Breaker	20 x 30 x 20	600
Warehouse	68 x 146 x 30	10,000
Chemical Injection Skid	46 x 47 x 24	2,000

Table Error! No text of specified style in document.**-1** **Equipment Dimensions**

Legend / Name	Dimensions (LxWxH) (Feet)/Capacity	Footprint (square feet)
Generator Step-Up Transformers	48 x 32 x 24	1,500
Emergency Diesel Generator	40 x 10 x 20	800
Cooling Tower	33 x 40 x 32 High	1,300
Water Tank (Ro Concentrate) (Ps1 Only)	45 Dia x 24 High / 250,000 Gal	1,590
Service Water Pumps	23' x 12' x 16'	275
Take Off Tower	30' x 35' x 50'	1,000
Blowdown Tanks	28' Dia Ea	570
Auxiliary Boiler	40' x 73' x 32'	2,900
Air Cooled Condenser	245' x 296' 120' High	73,000
Sample Panel & Lab Building	84' x 48' x 24' High	1,100
Demineralized Water Tank	16' Dia x 24' High	200
Water Treatment Area	192 x 148	28,000
Administration Building	60 x 60 x 24 High	3,600
Control Building	68 x 68 x 24 High	3,900
High Voltage Line	4 Dia x 140 High Poles	
Pipe Rack	40 High Misc.	
Treated Water Tank (Also Firewater Storage)	91 Dia x 24 High / 1 Million Gal	6,500
Transmission Line	32, 365 linear feet	
Wind Fence (East and West)	98,200 linear feet	

DR-VIS-245

Information Required:

Please add the anticipated linear length of the 30-foot tall wind fence to Table 5.15-3.

Response:

The anticipated linear length of the wind fence that is proposed along the east and west boundary of the facility is 98,200 linear feet and has been added to Table 5.15-3 above, as requested. Please see Figure VIS-240 for a representation of the location of the wind fences on the project attached at the end of this section.

DR-VIS-246

Information Required:

Please identify the amount of time that lights are expected to be on at the plant site.

Response:

Security lighting in the BSPP power block and solar fields would operate during non-operating, non-sunlight hours. This ends up to be about 3,600 hours per year, with the following monthly profile.

January	373
February	301
March	310
April	251
May	253
June	241
July	255
August	272
September	281
October	332
November	343
December	392

DR-VIS-247

Information Required:

Please provide close-up photographs of SCAs of the type proposed for the SM Palen Project. Please include photographs showing fronts, backs and mounting structures for the SCAs. If SCAs in the photographs differ in detail from those proposed under the SM Palen Project, please describe the differences.

Response:

Figures DR-VIS-247-1 and DR-VIS-247-2 are of the same type of SCAs to be installed on the California projects; therefore, there are no differences to describe.

DR-VIS-248

Information Required:

Please characterize the maximum potential brightness (luminance) of diffuse and spread reflection from mirrors in candela per square meter.

Response:

The diffuse light and spread reflection coming off the parabolic mirrors from most visible angles during most hours of the day will simply reflect the global irradiation of the sky; clouds will also be visible in these reflections. This leads to a lower intensity of light with respect to the sun itself. The intensity of these reflections would be less than that of the instantaneous global diffuse radiation at the respective moment of measure. It can be foreseen that the diffuse reflections could vary from 200,000 candela per square meter in the morning and afternoon to as much as 700,000 depending on scattering due to cloud patterns. This would be in all cases less intense then staring it to the sky (not at the sun).

It is possible that the back reflected light or light not absorbed by both the envelope and steel annulus of Heat Collecting Element (HCE) can be seen in the reflection of the parabolic mirror at certain angles above the horizon, i.e. not viewable to someone on the ground. The intensity 11 feet or farther from the front of the vertex of the collector will be fully diverged direct (not diffuse) incidence luminance of the sun, but with a worst-case intensity approximately 20 percent less than the direct luminance of the sun; this would be similar to viewing a body of water from the sky.

DR-VIS-249

Information Required:

> Please describe the hours in which the mirror surface of a trough could be visible to an off-site viewer on the ground, and the proportion of surface visible in the course of the day.

Response:

At the Blythe Power Plant, a 30-foot tall wind fence runs along the entire eastern and western perimeter of the plant. Consequently, anywhere along the eastern or western border, the wind fence will always block the view of the mirror surface for a person standing off site on the ground. However, a portion of the mirror surface is visible to an off-site viewer on the ground along the north or south perimeter. The distance from the collector to a person standing outside the perimeter fence is approximately 30 feet. The collector has an aperture of 22 feet and sits atop a 13-foot pylon. Depending on where a person is standing and the time of day, different quantities of mirror area are visible. During the start up until approximately 9:00 AM, the majority of the mirror surface is visible to viewers positioning themselves to see down the length of a row of collectors. As the collector continues to track the sun throughout the day, less and less of the mirror surface becomes visible. Between 11:00 AM to 1:00 PM, approximately only 20 percent (Note: The angle of the collector with respect to local time will change throughout the year, thus these are best estimations) of the mirror surface is visible. As the sun continues to the west, more of the mirror surface becomes visible.

DR-VIS-250

Information Required:

> Please provide any available anecdotal information on glare effects of the Kramer Junction and existing SEGS projects, including photographs of off-site diffuse or spread glare, and images of the heated HCEs, as seen from public roads/viewpoints.

Response:

Photo 1 shows glare that is a result of the spread reflection of the envelope of the HCE tube itself. In the Blythe project, a wind fence would be located on the east and west sides of the solar field effectively blocking this view of the collector. The view shown in Photo 2 is a viewing angle that would be possible at the Blythe project from public area, i.e. looking North or South down the rows of collectors through the security fence. Spread reflection can be seen from the HCE tubes and metal holders and other metal parts. The collector that is planned to be utilized in Blythe will be much taller with larger mirrors making it difficult to see most of the HCE during the time of the day shown here from this proximity. From a farther distance, more of the HCE would be visible, but as a viewer moves away from the collector, the intensity of any reflections would be diminished.

Photo 1: HCE Glare, view from area outside perimeter fence, looking east.


Photo 2: HCE Glare, view from area outside perimeter fence, looking northwest.

DR-VIS-251

Information Required:

Please describe whether any portion of the HCEs would be visible to viewers on the ground, either on- or off-site. Please characterize the maximum potential brightness (luminance) of heated HCEs in candela per square meter.

Response:

As with the visibility of the mirror surface or front of the collector discussed in DR-VIS-249, the amount of the HCE tube that is visible to a viewer on the ground changes throughout the day as the collector tilts to follow the sun. The HCE tubes will be most visible during mornings and afternoon to a viewer looking down the length of a row of solar collectors, while during the hours approaching, at and directly after solar noon, only the ends of the tubes will be visible from the ground off or on site. The metal annulus of the HCE does not glow when heated, reflections off of and within the glass envelope surrounding it makes the HCE appear as such when tracking the sun. Most of the reflection off of the HCE is facing the mirror surface making it difficult for a viewer on the ground to see. It is possible for an on-site viewer to get close enough to the collector to experience the reflection at the end of the collector. At this proximity, one could theoretically be exposed to a maximum back reflectance of HCE envelope. This worst-case intensity could be 93 percent of the sun's direct incidence radiation concentrated with respect to the HCE envelope (42 times) and not transmitted through the envelope (4 percent). During highest radiation levels around 1,200 watts per square meter, this leads to a back reflectance of 1,875 watts per square meter or 1.28 million candela per square meter. While this is deemed not eye damaging, maintenance workers and visitors to the site who plan to be in this proximity of the HCE will be required to where polarized sunglasses. Viewers standing outside the perimeter fence (at least 30 feet away) could only be exposed to a maximum of $1/10^{th}$ of this luminance when uniform diffuse scatter is assumed at this distance.

DR-VIS-252

Information Required:

Please explain whether any portion of the directly reflected solar radiation could pass by the HCEs (the steel tube annulus) due to the total divergence factor of the reflectors. If so, how much? Is this amount sufficient to cause any potential retinal damage or flash blindness? Are there measures that would prevent such inadvertent off-site reflection (such as shielding of the HCEs, etc.)?

Response:

During morning and evening movement of the collector from the stow position to tracking position, it is possible that some amount of sunlight diverges from the collector focal point to a point farther in the distance. This could also occur in the event the drive pylon malfunctions, essentially freezing in place. Depending on the time of day and time of year and the distance from the face of the collector, the level of the divergence or the intensity of luminance can vary greatly. It has been calculated in previous

submittals[1] that beam intensity reaches levels which pose a threat of retinal damage within distances of 100 feet of a collector facing east or west. At the Blythe project, a 30-foot wind fence will be erected along the east and west perimeter of the solar field. The wind fence effectively acts as large privacy fence blocking the view into the field.

[1] San Joaquin Solar 1 & 2 – Application for Certification Volume 2, Appendix L, "Glint and Glare Study," http://www.energy.ca.gov/sitingcases/sjsolar/documents/applicant/afc/AFC_volume_02/

Visual Resources Figures

Figure DR-VIS-239-1
Framing of the Wind Fence Prior to Installation of the Horizontal Steel Ropes and Wire Mesh

Figure DR-VIS-239-2
DR-VIS-239-2 Close up of Wind Fence

Figure DR-VIS-239-3
DR-VIS-239-3 Diagram of Wind Fence

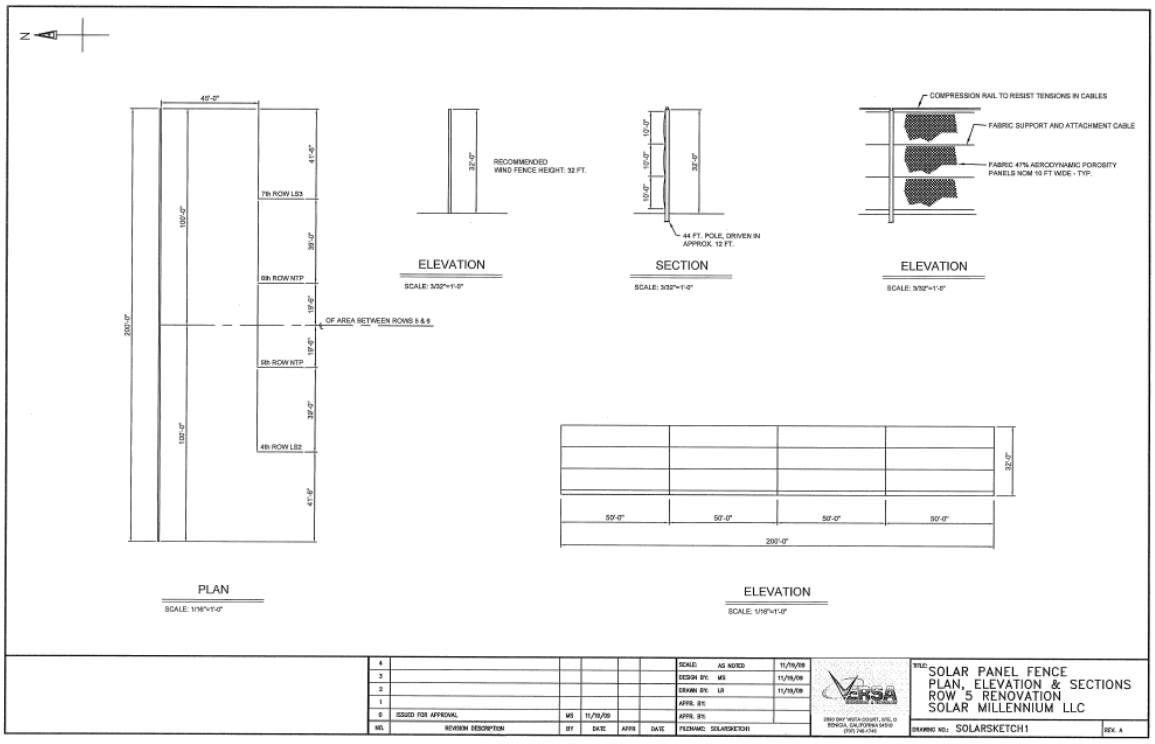
DR-VIS-240
Supporting Figures
Preliminary Site Plan (Location of Wind Fences)
Preliminary Grading Plan Unit #1
Preliminary Grading Plan Unit #2
Preliminary Grading Plan Unit #3
Preliminary Grading Plan Unit #4
Typical Power Block

Figure DR-VIS-247-1
DR-VIS-247-1 Same SCA to be Installed (View from Front)

Figure DR-VIS-247-2
DR-VIS-247-2 Same SCA to be Installed (View from Below)

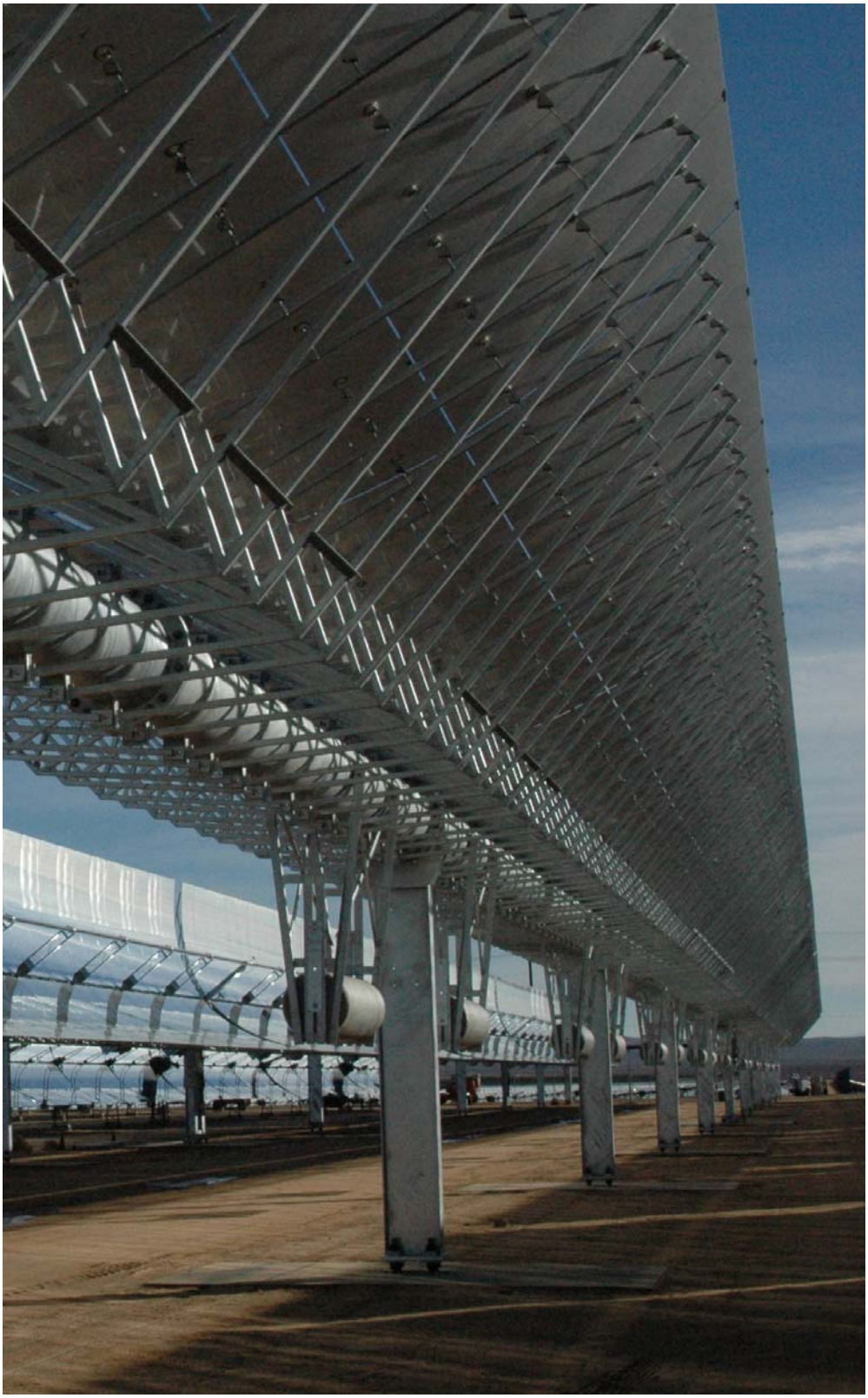
DR-VIS-239-1 Framing of the Wind Fence Prior to Installation of the Horizontal Steel Ropes and Wire Mesh

DR-VIS-239-2 Close up of Wind Fence



DR-VIS-239-3 Diagram of Wind Fence

DR-VIS-247-1 Same SCA to be Installed (View from Front)

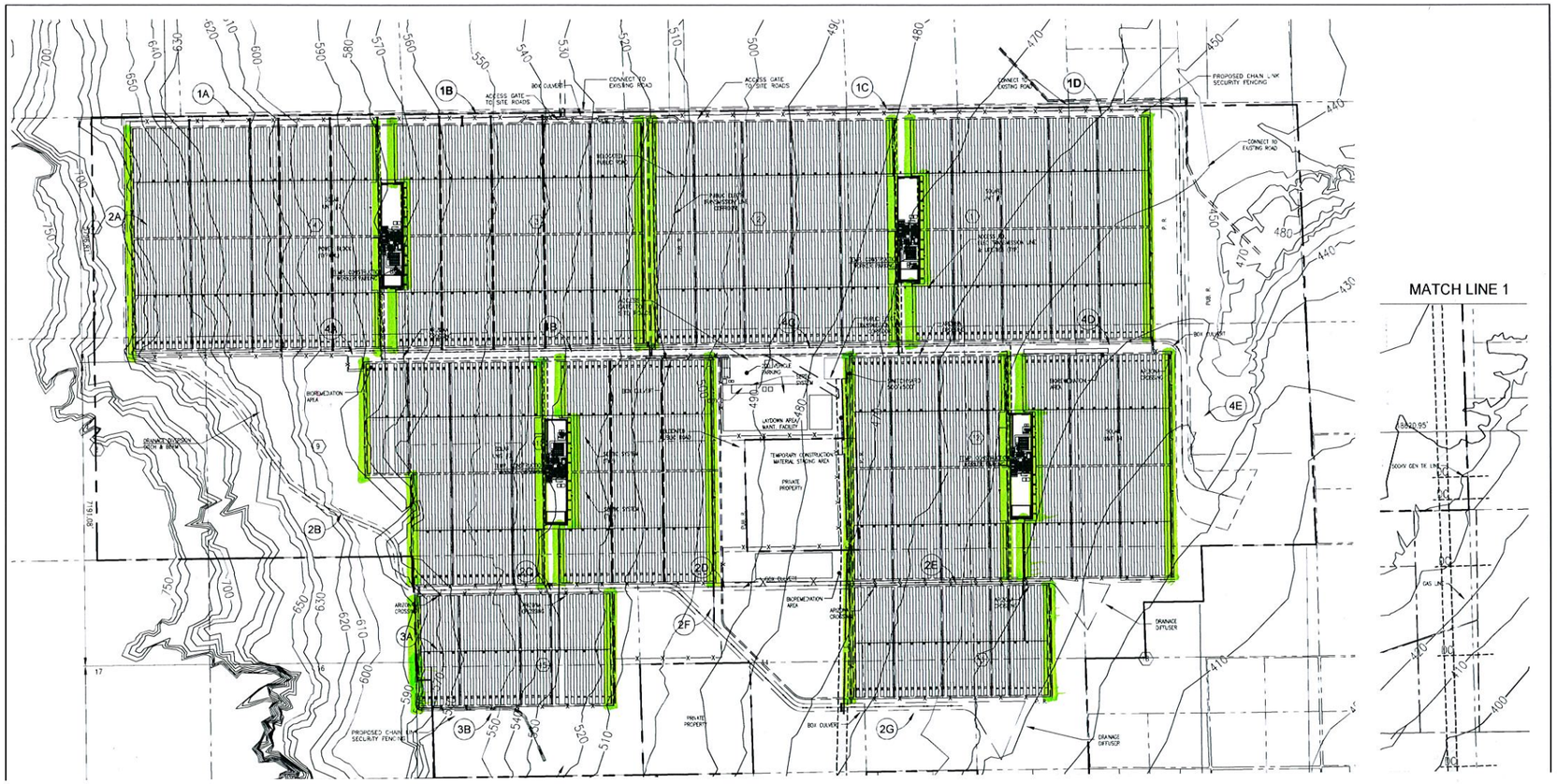


DR-VIS-247-2 Same SCA to be Installed (View from Below)

DR-VIS-240

Supporting Figures

Preliminary Site Plan
Preliminary Grading Plan Unit #1
Preliminary Grading Plan Unit #2
Preliminary Grading Plan Unit #3
Preliminary Grading Plan Unit #4
Typical Power Block



TOTAL LENGTH OF WIND FENCE
98,200 LF
WIND FENCE HIGHLIGHTED IN GREEN

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Solar Millennium LLC

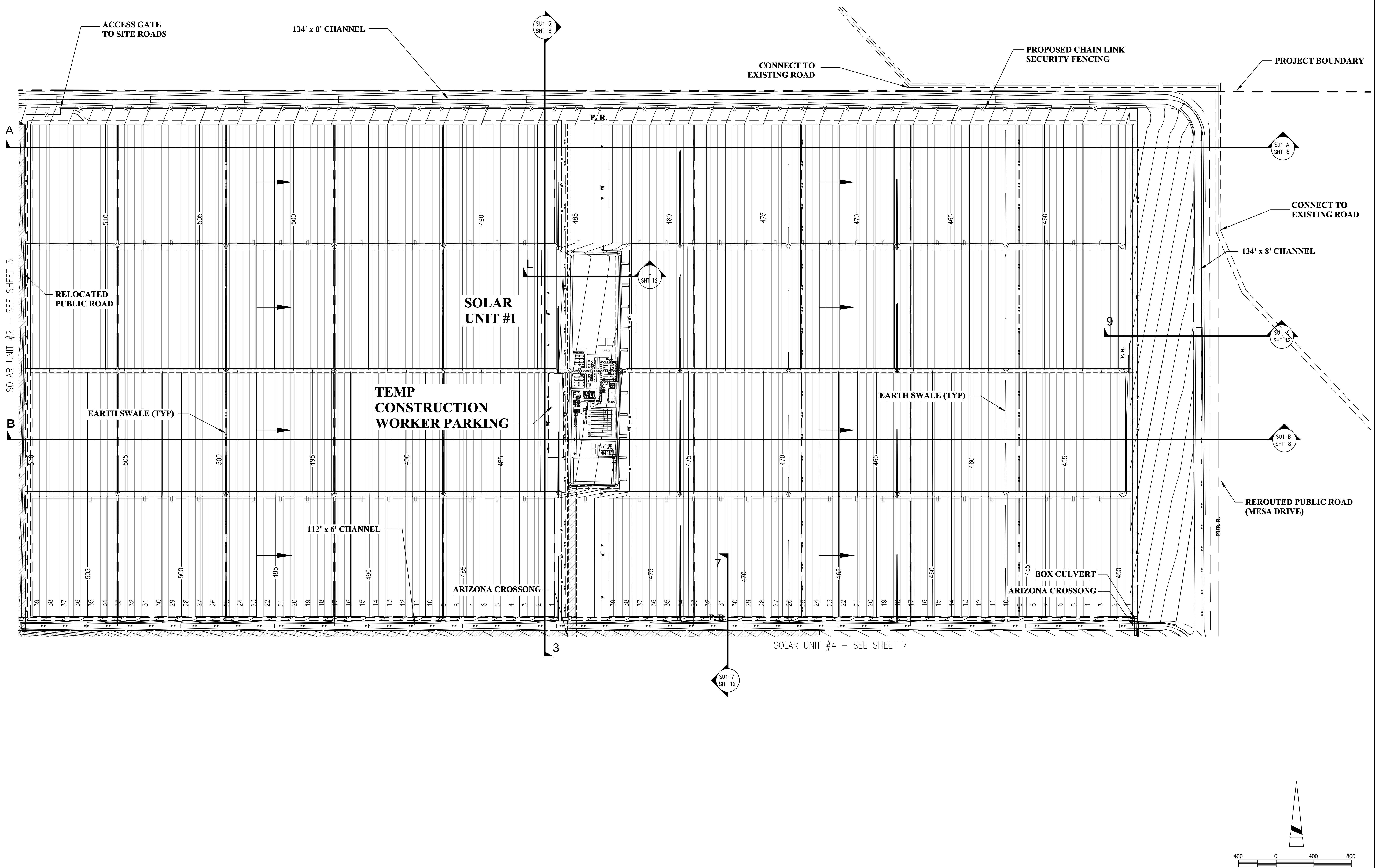
LEGEND:
- SOLAR BLOCK LOCATION
- BALANCE OF PLANT FACILITIES
- PROPOSED ACCESS ROAD (PAVED)
- PROPOSED ACCESS ROAD (GRAVEL)
- PROPOSED SILT FENCE
- PROPOSED FIBER ROLLS
- PROPOSED EARTH BERM
- PROPOSED GAS PIPELINE
- PROPOSED 500kV GEN TIE LINE
- PROPOSED TELEPHONE LINE
- PROPOSED FENCE
- PROPOSED WIND FENCE
- PROPOSED CONTOURS
- PROPOSED STREAM LINE
- PROPOSED FLOOD CONTROL
- EXISTING PAVED ROAD
- EXISTING GRAVEL ROAD
- EXISTING CONTOURS
- EXISTING STREAM LINE
- SITE BOUNDARY
- PUB. R. PUBLIC ROAD
- P.R. PRIVATE ROAD
- DC DRANAGE CULVERT

Blythe Solar Power Project

Riverside County, California

Preliminary Site Plan

Date: 8/07/09
Sheet: 3 OF 18



EARTHWORK		
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8,300,000	8,300,000	0

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REGISTERED PROFESSIONAL ENGINEER
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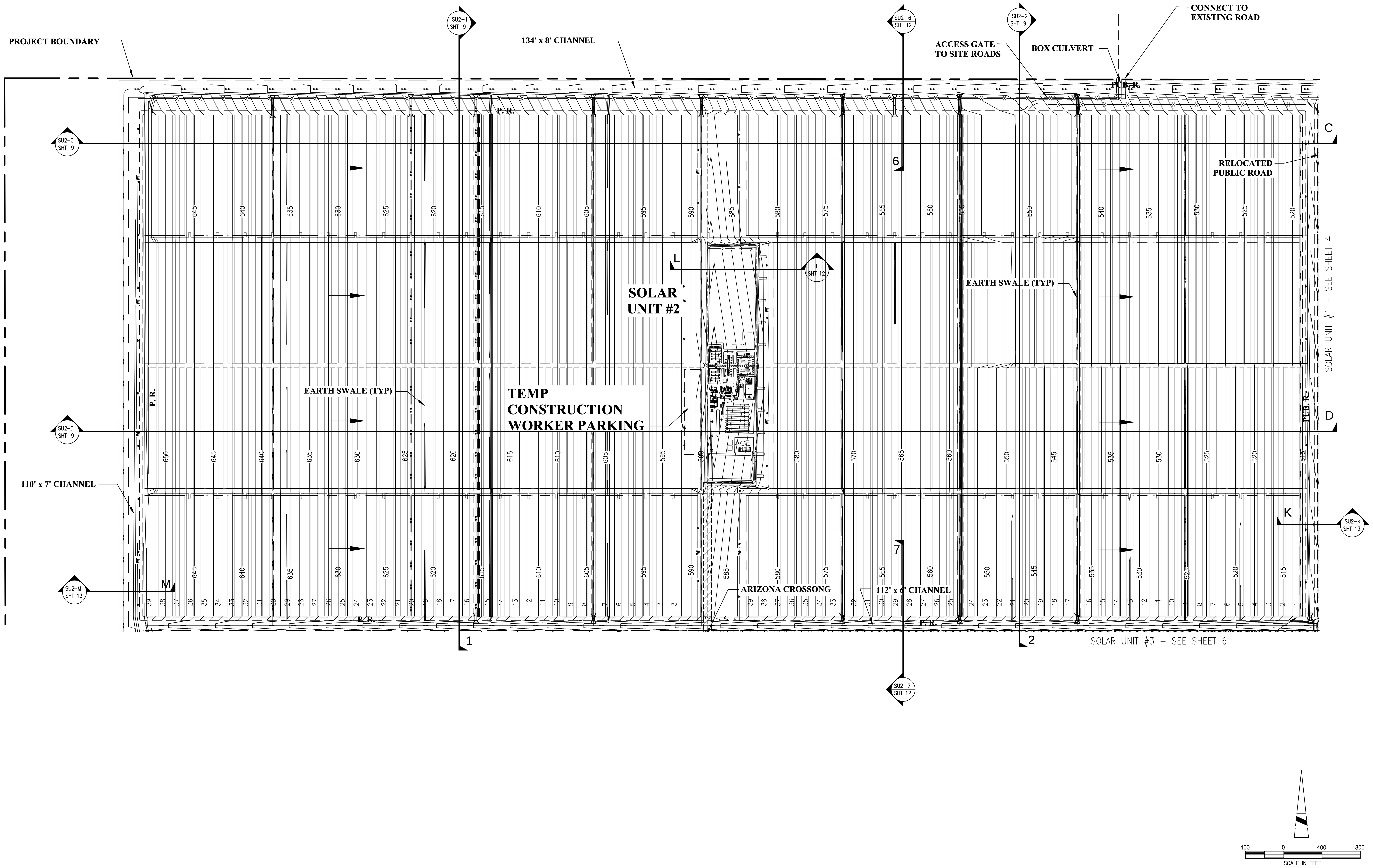
- P.R. PRIVATE ROAD

Blythe Solar Power Project

Riverside County, California

Preliminary Grading Plan Unit #1

Date: 8/07/09
Sheet: 4 OF 18



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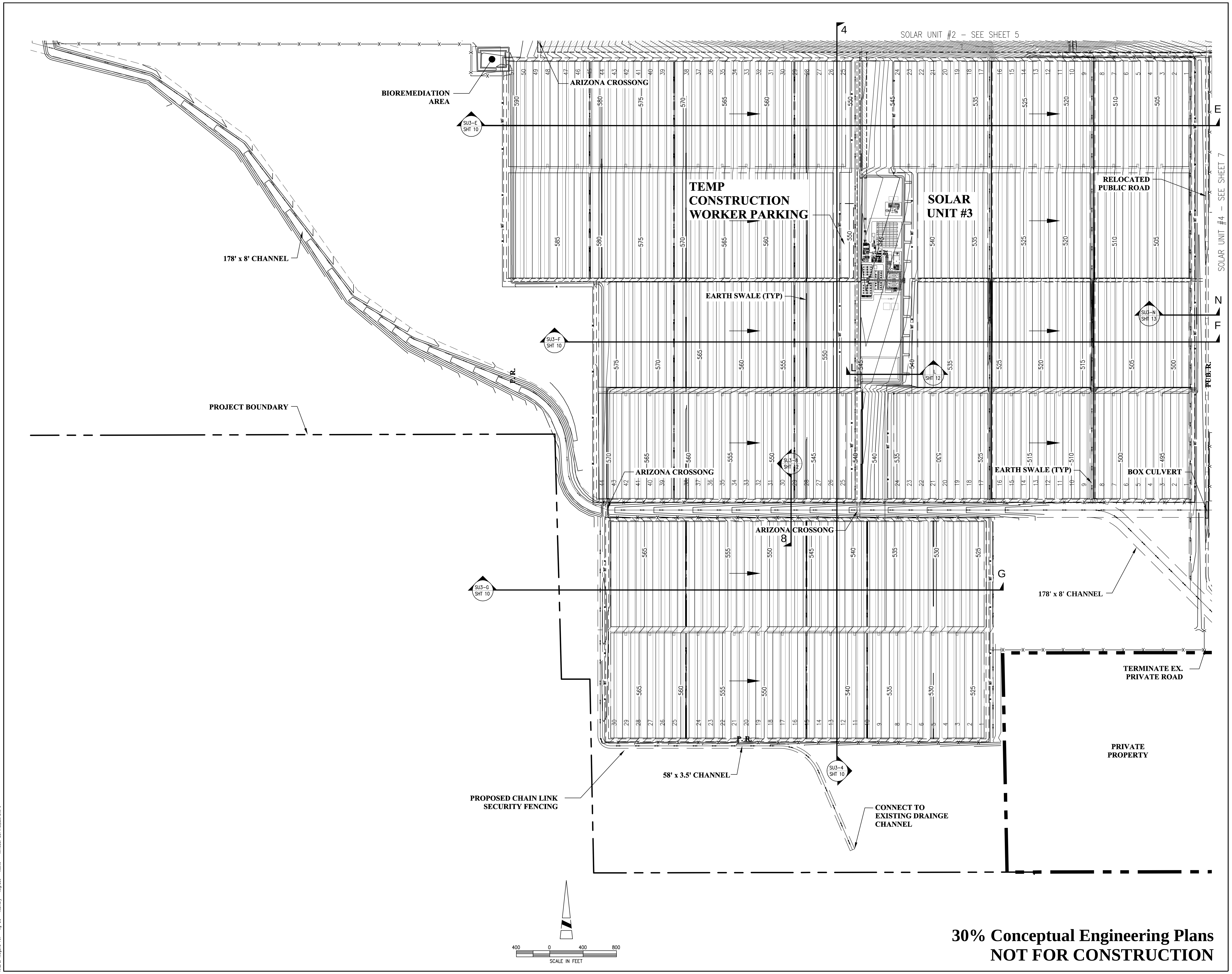
- P.R. PRIVATE ROAD

Blythe Solar Power Project

Riverside County, California

Preliminary Grading Plan Unit #2

Date: 8/07/09
Sheet: 5 OF 18



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Solar Millennium LLC

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- EB PROPOSED EARTH BERM
- PROPOSED GAS PIPELINE
- PROPOSED 500kV GEN TIE LINE
- PROPOSED TELEPHONE LINE
- PROPOSED FENCE
- PROPOSED WIND FENCE
- 980 PROPOSED CONTOURS
- PROPOSED STREAM LINE
- PROPOSED FLOOD CONTROL
- EXISTING PAVED ROAD
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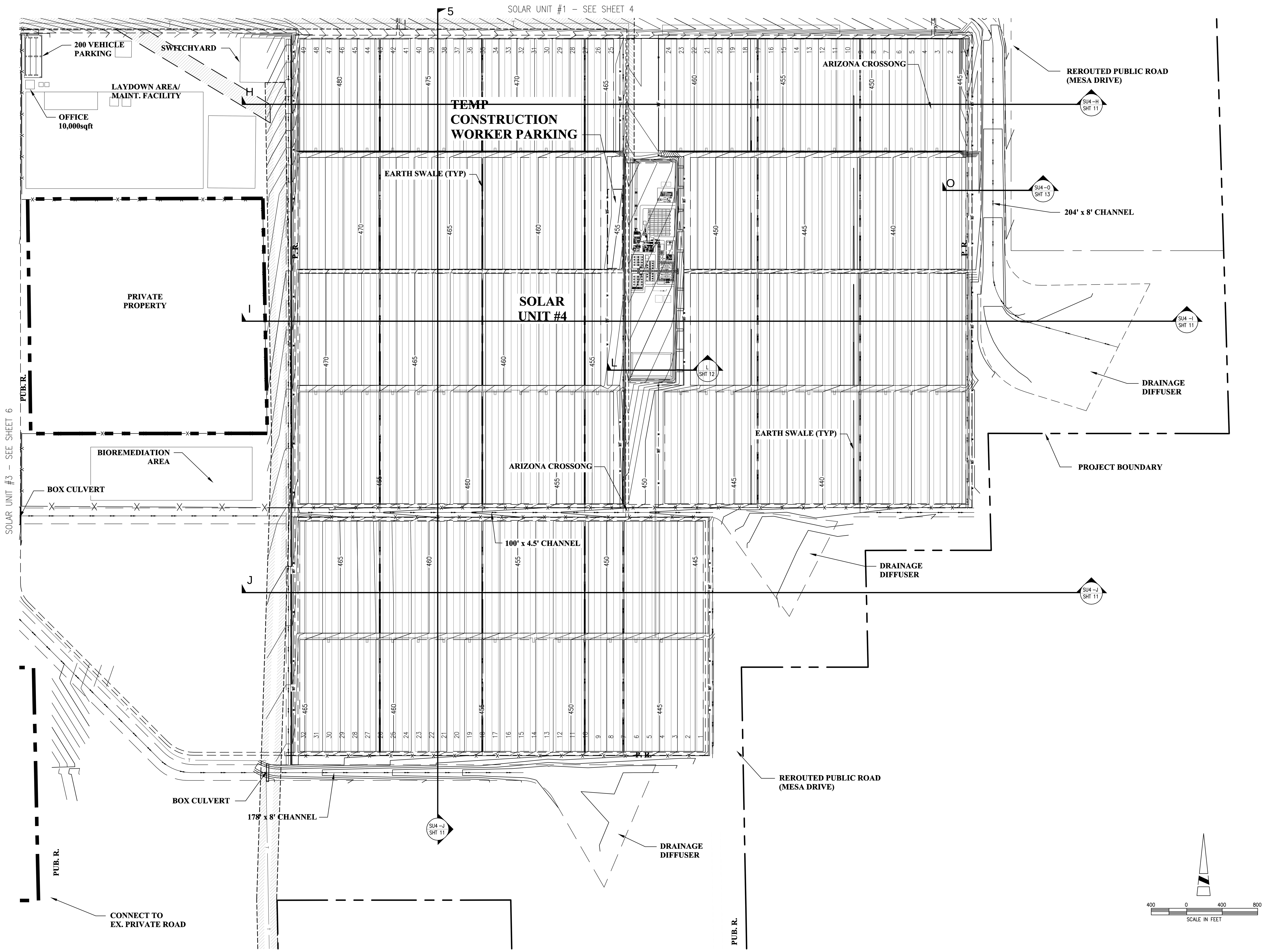
- 980 EXISTING CONTOURS
- EXISTING STREAM LINE
- SITE BOUNDARY
- PUB. R. PUBLIC ROAD
- P.R. PRIVATE ROAD

Blythe Solar Power Project

Riverside County, California

Preliminary Grading Plan Unit #3

Date: 8/07/09
Sheet: 6 OF 18



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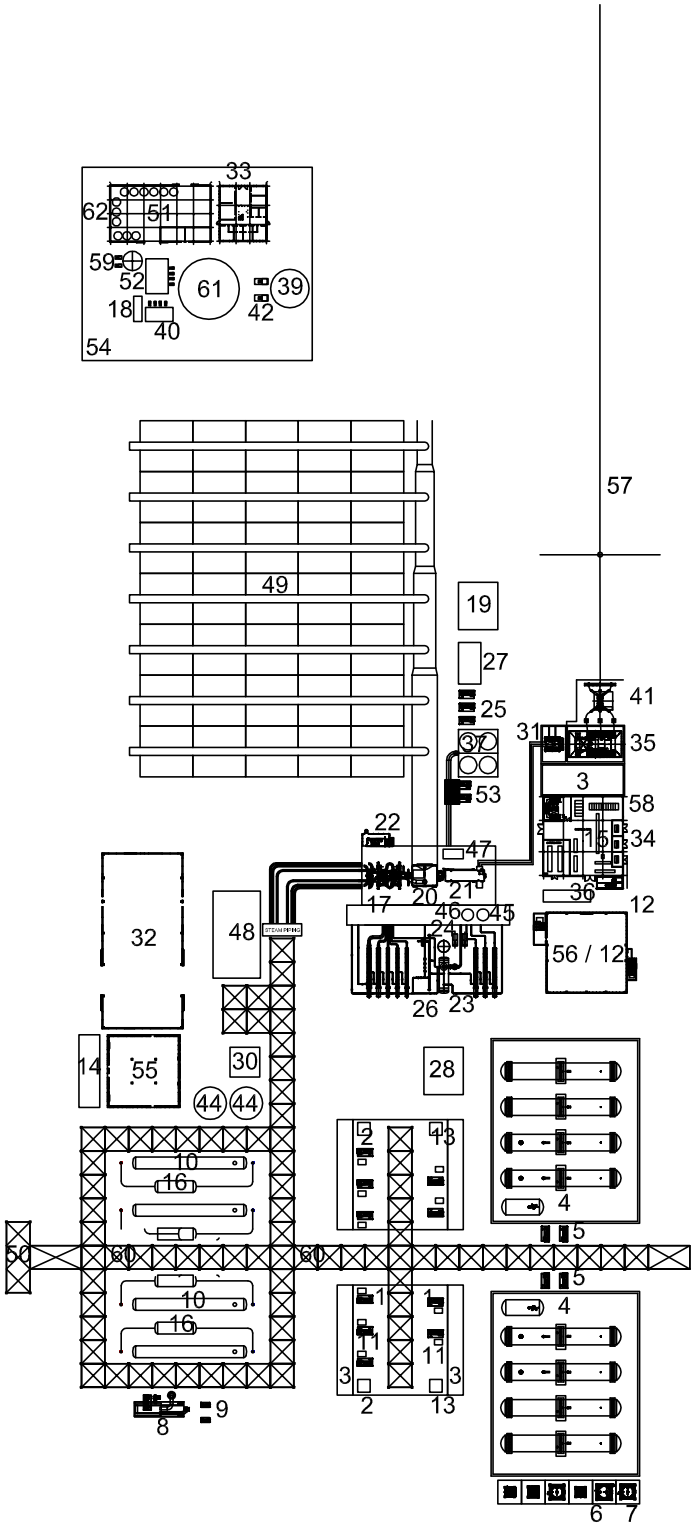
- EXISTING STREAM LINE
- SITE BOUNDARY
- PUB. R. PUBLIC ROAD
- P.R. PRIVATE ROAD

Blythe Solar Power Project

Riverside County, California

Preliminary Grading Plan Unit #4

Date: 8/07/09
Sheet: 7 OF 18



#	LEGEND / NAME	DIMENSIONS (LxWxH) / CAPACITY	FTPRINT (S
1	HTF MAIN PUMPS	INCIDENTAL	
2	HTF PUMPS SEAL OIL UNIT	INCIDENTAL	
3	SWITCH YARD	13' X 92'	1200SF
4	OVERFLOW VESSEL AND EXPANSION VESSEL	124' X 154'	19KSF EA
5	OVERFLOW RETURN PUMPS	INCIDENTAL	
6	ULLAGE COOLERS AND VESSEL	59' X 20'	1200SF
7	NITROGEN SYSTEM	INCIDENTAL	800SF
8	HTF HEATER	50' X 22' X 80' STACK	1100SF
9	FREEZE PROTECTION PUMPS	INCIDENTAL	
10	STEAM GENERATORS	90' X 10' X 24' EA	900SF
11	VARIABLE FREQUENCY DRIVE SYSTEM	INCIDENTAL	
12	WEATHER STATION BUILDING	68' X 68' X 24' (TWO LEVEL BLDG)	4600SF
13	HTF PUMPS LUBE OIL UNIT	INCIDENTAL	
14	NOT USED		
15	BALANCE OF PLANT ELECTRICAL BUILDING	67' X 67' X 24' (TWO LEVEL BLDG)	4500SF
16	REHEATERS	32' X 10' EA	320SF
17	EXCITATION TRANSFORMER	NOT FOUND	
18	WATER TREATMENT MCCS	INCIDENTAL	
19	MCC COOLING TOWER	33' X 40' X 32' HIGH	1320
20	STEAM TURBINE	111' X 50' X 40' HIGH	5500SF
21	GLAND CONDENSER	INCIDENTAL	
22	LUBE OIL CONSOLE	INCIDENTAL	
23	DEAERATOR	125' X 57'	7100SF
24	FEEDWATER PUMPS	INCIDENTAL	
25	CONDENSATE PUMPS	INCIDENTAL	
26	LP/HP PRE-HEATERS	INCIDENTAL	
27	VACUUM SYSTEM	19' X 35' X 24' HIGH	665
28	DIRTY WASTE WATER SUMP, OIL WATER SEPARATOR	INCIDENTAL	
29	FREE FOR USE		
30	COMPRESSED AIR SYSTEM	25' X 25' X 24' HIGH	625 SF
31	GENERATOR CIRCUIT BREAKER	20' X 30' X 20'	600 SF
32	WAREHOUSE	68' X 146' X 30'	10K SF
33	CHEMICAL INJECTION SKID	46' X47' X 24'	2K SF
34	MAIN AUXILIARY TRANSFORMERS	INCIDENTAL	
35	GENERATOR STEP-UP TRANSFORMERS	48' X 32' X 24'	1,500 SF
36	EMERGENCY DIESEL GENERATOR	40' X 10' X 20'	400 SF
37	COOLING TOWER	33' X 40' X 32' HIGH	1,300 SF
38	FREE FOR USE		
39	WATER TANK (RO CONCENTRATE) (BSP1 & 3 ONLY)	50' DIA X 24' HIGH / 300,000 GAL	1,600 SF
40	SERVICE WATER PUMPS	23' X 12' X 16'	275 SF
41	TAKE OFF TOWER	30' X 35' X 50'	1,000 SF
42	FIRE PROTECTION PUMPS	INCIDENTAL	
43	FREE FOR USE		
44	BLOWDOWN TANKS	28' DIA EA	570 SF
45	TURBINE DRAINS TANK	INCIDENTAL	
46	CONDENSATE TANK	INCIDENTAL	
47	STG PACKAGED ELECTRONIC AND ELECTRICAL CONTROL COMPARTMENT	INCIDENTAL	
48	AUXILIARY BOILER	40' X 73' X 32'	2900 SF
49	AIR COOLED CONDENSER	245' X 296' 150' HIGH	73K SF
50	HTF PIPING CONNECTION TO SOLAR FIELD	INCIDENTAL	
51	SAMPLE PANEL & LAB BUILDING	84' X 48' X 24' HIGH	4,000 SF
52	DEMINERALIZED WATER TANK	16' DIA X 24' HIGH	200 SF
53	AUXILIARY COOLING WATER PUMPS	INCIDENTAL	
54	WATER TREATMENT AREA	192' X 148'	28K SF
55	ADMINISTRATION BUILDING	60' X 60' 24' HIGH	3,600 SF
56	CONTROL BUILDING	68' X 68' 24' HIGH	4,600 SF
57	HIGH VOLTAGE LINE	4' DIA 145' HIGH POLES	
58	SUS TRANSFORMER & 480 V BUS	INCIDENTAL	
59	DEMINERALIZED WATER PUMPS	INCIDENTAL	
60	PIPE RACK	40' HIGH MISC.	
61	TREATED WATER TANK (also FIREWATER STORAGE)	91' DIA X 24' HIGH / 1 MILLION GAL	6,500 SF
62	CHEMICAL FEED CANOPY	NOT FOUND	
63	NOT USED		
64	NOT USED		
65	NOT USED		
66	NOT USED		
70	NOT USED		
71	NOT USED		

TYPICAL
BLYTHE POWER BLOCK

DR-VIS-250

Letter regarding Parabolic Trough Mirror Design
Letter regarding Parabolic Trough Mirror Array

650 Town Center Drive, 20th Floor
Costa Mesa, California 92626-1925
Tel: (714) 540-1235 Fax: (714) 755-8290
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LATHAM & WATKINS LLP

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File No. 039610-0001

October 9, 2007

VIA FEDEX

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 07-AFC-1
1516 Ninth Street, MS-4
Sacramento, California 95814-5512

Re: Victorville 2 Hybrid Power Project: Docket No. 07-AFC-1

Dear Sir/Madam:

Pursuant to California Code of Regulations, title 20, sections 1209, 1209.5, and 1210, enclosed herewith for filing please find a document entitled, "Parabolic Trough Mirror Design Prevents Escape of Reflected Incident Rays."

Please note that the enclosed submittal was filed today via electronic mail to your attention and to all parties on the CEC's current electronic proof of service list.

Very truly yours,

Paul E. Kihm
Senior Paralegal

Enclosure

cc: CEC 07-AFC-1 Proof of Service List (w/encl. via e-mail)
Michael J. Carroll, Esq. (w/encl.)

Parabolic Trough Mirror Design

Prevents Escape of Reflected Incident Rays

The design of VV2's single axis solar collector essentially prevents the escape of incident rays that directly strike the surface of the mirror. This is accomplished by the fundamental physics of the parabolic reflector as shown at Figure A in EXHIBIT 1 (attached). All rays entering the parabolic reflector are concentrated at single point (the focal point), located ½ the distance of the arc's radius, shown as Fp in Figure A. A Parabolic Trough Mirror type solar array is engineered so as to place the Heat Collection Element (HCE) precisely at the Fp (see also Figure B, on the attached EXHIBIT 1).

The solar array will track the East to West movement of the sun with an accuracy of 0.1 degrees. The concentrated area of the sun's reflected incident rays will be magnitudes smaller than the 70MM diameter of the HCE. The HCE positioned in this direct line of sight with the sun will block or absorb all entering direct incident or reflected incident rays. As a result, aircraft flying over the array will generally not be exposed to reflected incident rays of sunlight -- in other words, the sun itself (or any portions thereof) will not appear to pilots as a reflection in a mirror.

It is important to note that the HCE is encased in glass and will be a minor source of reflection as described below (this is generally what accounts for the "glittering" effect of parabolic trough solar arrays, often described as similar to flying over a body of water):

1) The HCE is designed to absorb and collect incident rays reflecting off the parabolic mirror but, of course, some incident rays will strike the HCE directly as it is located in front of the mirror. As a result, there will be some reflections from the glass coating the HCE; however, these reflections will be minor as the HCEs are designed to absorb sunlight, not reflect it.

2) The reflected incident rays of the sun will generally be directed to the lower portion of the HCE glass encasement by design and will produce a glow from the reflected scattered beams as they enter the collector. If an aircraft were positioned at exactly the right angle above the array, this "glow" phenomenon could be visible along the entire length of the collector element for an individual row of mirrors. However, there are no reflected incident rays of sunlight associated with this glow and the brilliance/intensity of the light is much less by comparison to reflected sunlight.

In summary

Based on practical experience and the laws of physics, solar arrays using the parabolic trough mirror design do not produce significant glare or reflection that would pose a distraction to aviation. The fundamental reason for this conclusioncan be found in the design of the parabolic trough mirror. The focal point created by the parabolic mirror will not allow any concentrated rays to escape the solar field. As a result, descriptions by pilots over flying a solar thermal facility (SEGS) indicate that, with regard to reflective glare, the general appearance of the array from the air is similar to flying over a body of water (see for example, the attached e-mail from Peter Soderquist of SCLA describing a recent overflight of the existing SEGS plants).

EXHIBIT 1: Parabolic reflectivity

Fp = Focal Point = A point located ½ the distance of the arc's radius

C = Center of Arc

Incident Ray = Separate and continuous bombardment of sunlight

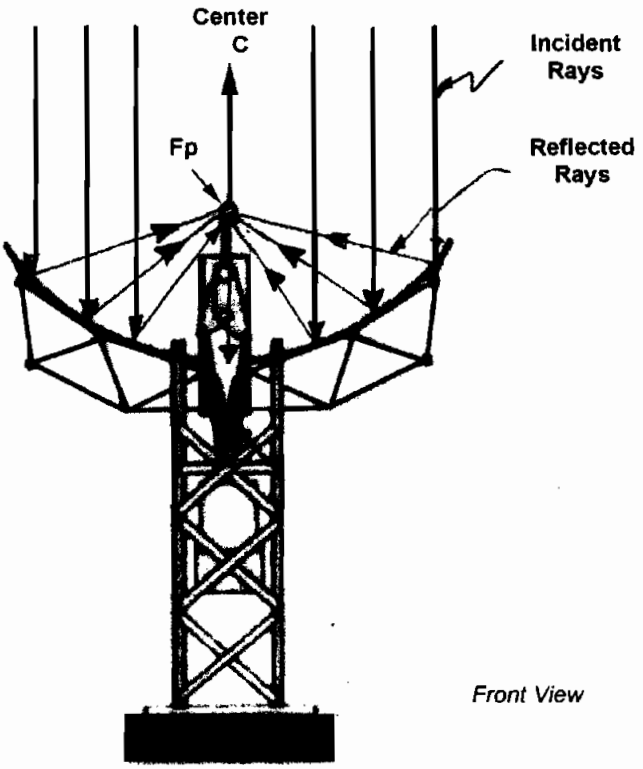

Figure A

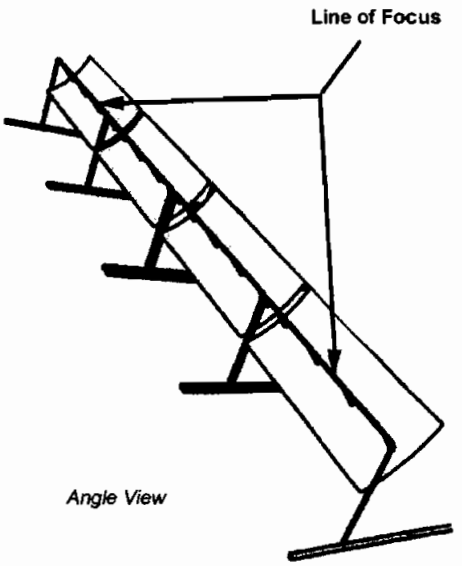

Figure B

A parabolic reflective surface (Figure A) will precisely direct an Incident Ray of light (Ir) to a focal point (Fp) ½ the distance from the center (C) of the arc. There is a "line of focus" (Figure B) created by the parabolic trough that will travel the full length of the mirror.

STATE OF CALIFORNIA
ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

In the Matter of:	)	Docket No. 07-AFC-1
	)	
Application for Certification,	)	**ELECTRONIC PROOF OF SERVICE**
for the VICTORVILLE 2	)	**LIST**
HYBRID POWER PROJECT	)	
by the City of Victorville	)	**(revised August 22, 2007)**
	)	
	)	

☒ Transmission via electronic mail and by depositing one original signed document with FedEx overnight mail delivery service at Costa Mesa, California with delivery fees thereon fully prepaid and addressed to the following:

DOCKET UNIT

CALIFORNIA ENERGY COMMISSION
Attn: DOCKET NO. 07-AFC-1
1516 Ninth Street, MS-4
Sacramento, California 95814-5512
docket@energy.state.ca.us

☒ Transmission via electronic mail addressed to the following:

APPLICANT

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City Manager
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14343 Civic Drive
P.O. Box 5001
Victorville, CA 92393-5001
JRoberts@ci.victorville.ca.us

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esaltmarsh@eob.ca.gov

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DECLARATION OF SERVICE

I, Paul Kihm, declare that on October 9, 2007, I deposited a copy of the attached:

PARABOLIC TROUGH MIRROR DESIGN PREVENTS ESCAPE OF REFLECTED INCIDENT RAYS

with FedEx overnight mail delivery service at Costa Mesa, California with delivery fees thereon fully prepaid and addressed to the California Energy Commission. I further declare that transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210. All electronic copies were sent to all those identified on the Proof of Service List above.

I declare under penalty of perjury that the foregoing is true and correct. Executed on October 9, 2007, at Costa Mesa, California.

Paul Kihm

ABENGOA SOLAR INC
13911 Park Avenue, Suite 206, Victorville, California 92392

Jan. 24, 2008

Mr. Thomas Barnett
Inland Energy, Inc.
3501 Jamboree Road
Newport Beach, CA 92660

Dear Mr. Barnett:

At the CEC Workshop held on December 11, 2007 in Victorville, Mr. Jim Adams of the CEC raised some issues relating to photographs describing what was categorized as "glare" from the parabolic trough mirror array at the CSP generating plant(s) at Kramer Junction. As the former COO of KJC Operating Company, the company that owned and operated those SEGS for more than 14 years, I was requested to provide some further clarification to the comments I made at the Workshop. My comments follow, referencing the photos that are attached designated: **Photo A:** *"Back" of KJ Solar Field – Ground Level*; **Photo B**: *Ground Level Shot of KJ Array*, and; **Photo C**: *Aerial Shot of KJ Array*.

Photo A shows the back of several rows of mirrors in the left hand portion of the shot – the backs of the mirrors are not reflective. The reflections visible in the middle of the photo are from mirrors that are generally facing the photographer (I.e., the fronts). These reflections are from the glass-encased metal receiver tubes containing the heat transfer fluid (Receiver tubes) and not the mirrored surfaces themselves. As such the reflections are greatly diminished in intensity from those that would be associated with a reflection of the sun in a mirror. These reflections are similar to the reflections one would observe from a body of water with waves on it – if the viewer is in the right spot, incident rays from the sun will reflect directly off the curved glass surface of the receiver tube where the vertex of the incidental and reflected rays hits the tiny spot that is momentarily exactly perpendicular to the viewer's eye. In the photo, the three apparent areas of glare bursts or concentrations are the result of the metal receiver tube joint assemblies creating additional reflective surfaces which augment the glare. Again, in this case, no direct reflection of the sun from a mirror is involved.

This phenomenon is further demonstrated in Photo B: If you look to the left hand side of the photo (where the building provides a backdrop), you can see that the position of the mirror is nearly straight up (i.e., such as might be expected at mid-day when tracking the sun) – this is indicated by the fact that the receiver tube is plainly visible above the edges of the mirrors. Then, if you look to the

source of the reflected light in the photo, it is easy to see that it results entirely from the receiver tube and does not involve the mirrors at all.

With regard to the glare shown in Photo C, this phenomenon is what we refer to as Columnar Illumination (CI); it too is related to reflections from the receiver tube and not reflections of direct incident rays of the sun. The glass envelope covering the receiver tube glows as direct incident and reflected rays of sunlight strike it and are diffused and refracted by the numerous curved glass and metal surfaces of the tube apparatus; this glowing tube acts somewhat like the filament in a car headlight, and a portion of the glowing light strikes the mirrored surface of the parabolic mirror and is reflected back out into space, like an elongated headlight. Since the mirrors are in long rows, an elongated rectangle of light generated from the glowing receiver tube is produced in columns so that if (and only if) the observer passes through one of the columns (i.e., if the mirrors are pointed at the observer – the sun would therefore be more or less directly behind the viewer), it will be visible. If the observer passes overhead in a parallel direction, the illumination will remain visible for the length of the row; if the direction of the observer is perpendicular to the alignment of mirrors, the rows will illuminate one by one as they are traversed. As with a group of side by side headlights, the light from more than one row of mirrors at a time can be seen from a given vantage point, but the intensity will diminish the further the row is from the one that the observer is directly in the path of. Again, this light is <u>not</u> from direct reflection of the sun, but from the greatly diminished reflected light from the illuminated receiver tube.

In summary, just as the CEC representative observed himself when flying over the Kramer Junction facility, the glare is not a distraction to pilots; this fact has been verified over the nearly 20 years the Kramer Junction and Harper Lake facilities have been in operation. As mentioned above – I ran the Kramer SEGS facility, maintained long-term relationships with Edwards Air Force Base command and public relations personnel and the crop dusting service who maintains and air strip adjacent to the Kramer site, and I would have been the first to know if there were any complaints or problems.

Best regards,

Scott Frier
COO, ABENGOA SOLAR INC.
(760) 617-2570